Do Institutional Incentives Distort Asset Prices?

Lines (2017)

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New Developments in Long-Term Asset Management Conference

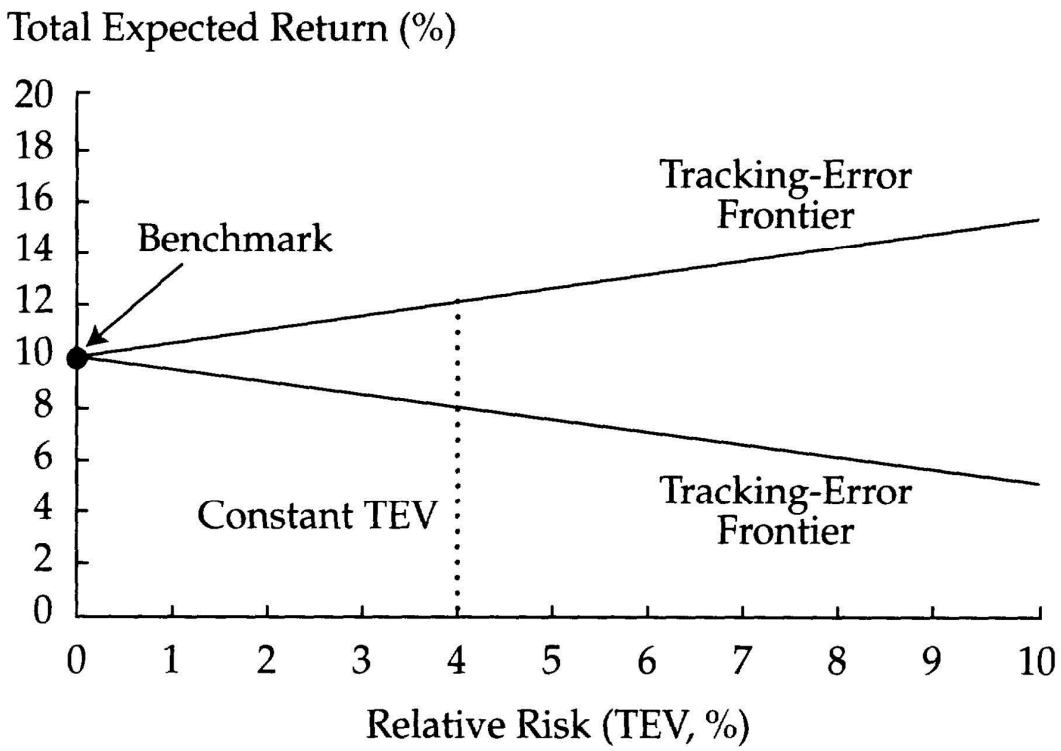
Summary

Importance of Delegated Asset Mangement

- Asset pricing has moved beyond a simple Modigliani and Miller null
- Growing literature empirical and theoretical
- This paper: Tracking error plays an important role in delegated investment management, affecting positions and prices

Tracking-Error Frontier

Benchmarked manager chooses tilts to maximize expected return given some tracking error variance, *TEV*

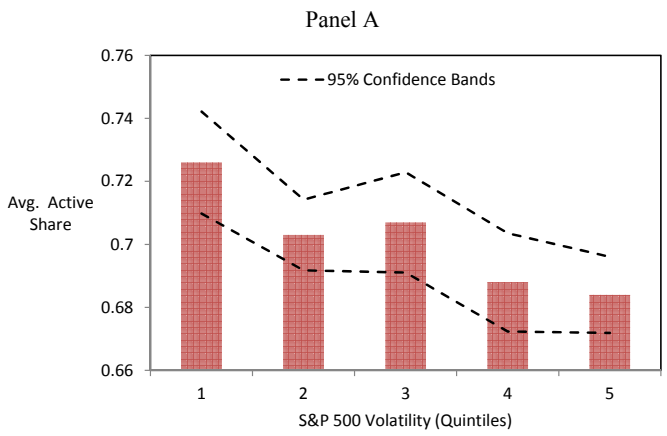


Say $\sigma_{ij} = 0$ for $i \neq j$ and $\sigma_i = \overline{\sigma} + \xi_i$.
When $\overline{\sigma}$ increases, all else equal, tilts decrease to keep *TEV* constant

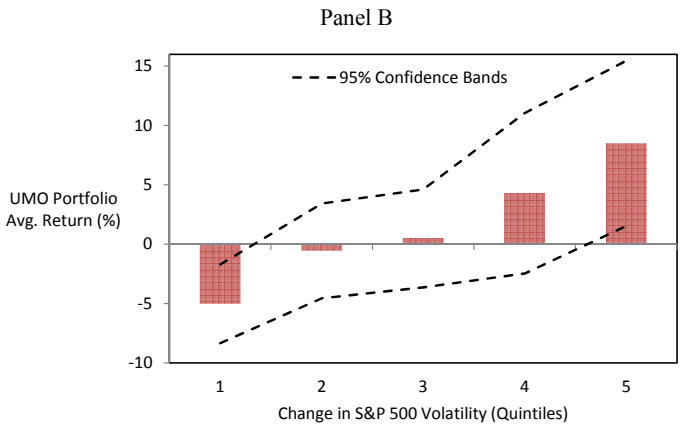
Core Findings

As aggregate vol increases (and likely tracking error for a given portfolio),

- Investment Advisors in the 13F data are less aggressive



- S&P500-underweight stocks outperform S&P500-overweight stocks



Robustness

1. 13F data at the level of the institution, not the fund => confirm using the mutual fund data
2. Aggregate volatility measures risk => confirm using the cross-section
3. Outflows may drive the reduced risk-taking and are correlated with volatility => control for flows
4. Link to benchmarking indirect given lack of data on explicit contracts => placebo tests using banks, insurance companies, and index funds find no relation

Data<=>Theory?

How Important is Tracking Error for Investment Advisors?

- Some funds' fees explicitly depend on relative returns, though often in an asymmetric way
- Fees on other funds may be a constant fraction of AUM but performance is explicitly linked to a benchmark
  - Relative returns presumably drive flows and thus fees indirectly depend on relative returns
- The contract between the investment advisor and the portfolio manager may depend on performance even if fees do not

$\Longrightarrow$ Tracking error probably important for some funds that investment advisors may manage

Data Issues and Heterogeneity

- But strong assumption that institutional holdings of investment advisors depend solely on these sorts of products
  - 13F type data are plagued with error
  - Paper excludes hedge funds but investment advisor category oftens includes broker dealers and pension funds
  - Analysis begs for fund-level analysis
- One table re-estimates the link between active share and aggregate volatility using the mutual fund data
  - But mutual funds are typically (though not always) categorized as investment companies (type 3) not investment advisors
  - Inconsistent to drill down into the funds of institutions that are purposefully excluded in the institution-level analysis

Some Evidence that Mutual Funds Behave Differently

- And the empirical link between retail mutual fund flows and tracking error may go the wrong way (Del Guercio and Tkac, 2002)
- 75% of mutual fund purchasers did not know the investment style of their fund; only 27% compare their fund's return to a benchmark

TABLE 2

OLS Regressions of Pension Fund and Mutual Fund Manager Flow on Performance Measures

	Pension Fund Managers		Mutual Fund Managers	
	Dollar Flow	Percentage Flow	Dollar Flow	Percentage Flow
Intercept	78.71**	0.80***,[a]	17.04	0.24***
	(2.27)	(9.06)	(1.31)	(4.58)
Jensen's alpha	1152.96***,[a]	2.09***	203.28*	2.70***
	(3.87)	(5.64)	(1.91)	(6.82)
Lagged excess return	287.41***	0.67***	345.85***	0.93***
	(3.19)	(3.41)	(6.18)	(7.94)
Tracking error	−717.43***,[a]	−0.89**,[a]	20.22	1.03**
	(−3.07)	(−2.41)	(0.15)	(2.40)
Control variables included in each regression:	Fund age, asset size, lagged flow, and year and style (growth, value) interaction term dummies			
Adjusted R^2	0.118	0.109	0.505	0.245
N	2462	2462	2677	2677

Casts doubt on fund-level results; suggests heterogeneity important

Dynamic Nature of the Decision Important

- Paper models a one-period (two-date) economy, generating predictions from comparative statics

"Consistent with the equilibrium view, initially large increases in volatility are followed by significantly negative changes in volatility in the next quarter. According to the model, these volatility reversions would incentive fund managers to return to larger deviations from the benchmark after volatility peaks."

- Neither the theory nor the empirical work considers dynamic effects
- Likely that changes in tilts depend not only on transaction costs but also the persistence of the particular shock
  - Campbell, Giglio, Polk, and Turley (2017) (CGPT) uncover novel low-frequency variation in aggregate volatility

Low-frequency Movements in Volatility

Varying the Horizon h in $(4 * \sum_{k=1}^{h} \rho^{(k-1)} RVAR_{t+k} / \sum_{k=1}^{h} \rho^{(k-1)})$

Constant	r_M	$RVAR$	PE	r_{Tbill}	DEF	VS	$R^2\%$
$h = 1$ (**1 quarter ahead**)							
-0.020	-0.005	0.374	0.006	-0.042	0.006	0.000	37.80%
[0.009]	[0.005]	[0.066]	[0.002]	[0.057]	[0.001]	[0.003]	
$h = 4$ (**1 year ahead**)							
-0.083	-0.025	0.198	0.027	-0.178	0.028	-0.001	47.20%
[0.024]	[0.023]	[0.101]	[0.009]	[0.195]	[0.010]	[0.010]	
$h = 8$ (**2 years ahead**)							
-0.101	-0.024	0.125	0.032	-0.137	0.027	0.003	44.21%
[0.028]	[0.017]	[0.082]	[0.011]	[0.206]	[0.011]	[0.010]	
$h = 20$ (**5 years ahead**)							
-0.078	-0.006	0.091	0.028	-0.120	0.020	-0.002	44.33%
[0.017]	[0.008]	[0.062]	[0.007]	[0.127]	[0.007]	[0.008]	

Methodology?

Active Share Is Not Tracking Error

Cremers and Petajisto's (2009) measure purposefully designed to capture aspects of asset management missed by tracking error

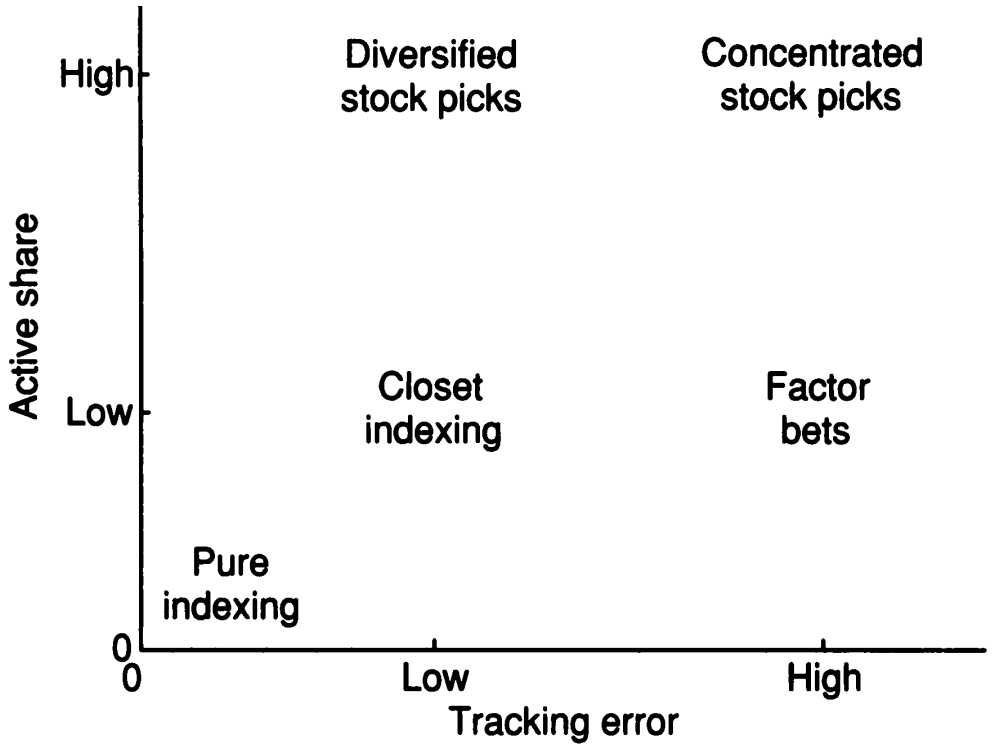


Figure 1
Different types of active and passive management
Active Share represents the fraction of portfolio holdings that differ from the benchmark index, thus emphasizing stock selection. Tracking error is the volatility of fund return in excess of the benchmark, so it emphasizes bets on systematic risk.

Active Share Is Not Tracking Error

Indeed, tracking error explains little variation (13%) in active share

Determinants of Active Share for all-equity mutual funds in 1992–2003

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Tracking error	1.4015	1.8111	1.7002	1.5965	1.5210	1.4439	
	(19.16)	(18.15)	(17.40)	(16.09)	(12.81)	(12.17)	
Turnover				−0.0016		−0.0021	
				(0.65)		(0.66)	
Expenses				4.4359	4.6230	4.6267	7.7859
				(6.33)	(5.28)	(5.33)	(9.72)
lg(TNA)			0.0554	0.0601	0.0451	0.0614	0.0389
			(2.96)	(3.16)	(2.02)	(2.87)	(1.62)
$(\lg(\text{TNA}))^2$			−0.0177	−0.0171	−0.0150	−0.0177	−0.0166
			(4.85)	(4.58)	(3.56)	(4.36)	(3.65)
Number of stocks						−0.0001	
						(2.04)	
Fund age						−0.0005	−0.0003
						(2.26)	(1.06)
Manager tenure						0.0036	0.0041
						(6.72)	(7.00)
Inflow, $t-1$ to t						0.0052	0.0045
						(1.30)	(1.04)
Inflow, $t-3$ to $t-1$						0.0010	0.0019
						(0.94)	(1.53)
Return over index, $t-1$ to t					0.1068	0.0996	0.1189
					(8.12)	(7.45)	(8.21)
Return over index,					0.1103	0.1089	0.1478
$t-3$ to $t-1$					(9.39)	(9.17)	(13.00)
Index return, $t-1$ to t						0.0655	0.0756
						(5.28)	(6.02)
Index return, $t-3$ to $t-1$					−0.0619	−0.0570	−0.0469
					(7.87)	(6.93)	(5.19)
Year dummies	No	Yes	Yes	Yes	Yes	Yes	Yes
N	11,726	11,726	11,726	11,554	8,417	8,320	8,374
R^2	0.1316	0.2373	0.2642	0.2781	0.2984	0.3235	0.2037

Paper's Indirect Approach Unconvincing

- Paper separately links tilts to aggregate and firm-level volatility
- Each link a partial view of the problem
  - Market beta may vary in the cross-section and the time series
  - Other sources of correlation are likely important
    - ★ A significant industry helps asset managers forecast correlations
    - ★ Managers do load on other factors in returns
    - ★ Not clear that an increase in aggregate volatility is associated with an increase in volatility of every factor
  - The interaction of tilts with a (time-varying) covariance matrix determines expected tracking error

Why not directly measure the variable of interest – expected tracking error?

Alternative Interpretations

Consistent With Market Timing During Recessions

- Kacperczyk, van Nieuwerburgh, and Veldkamp (NBER 2011) show fund R^2 increases in a recession
- Potentially related since volatility may be higher in a regression

	(1)	(2)	(3)	(4)	(5)	(6)
	Ftiming2		Fpicking2		R-squared	
Recession	0.004	0.004	-0.886	-0.897	3.040	2.891
	(0.001)	(0.001)	(0.201)	(0.191)	(1.451)	(1.315)
Log(Age)		-0.001		0.452		2.126
		(0.000)		(0.076)		(0.190)
Log(TNA)		0.000		-0.229		0.258
		(0.000)		(0.034)		(0.074)
Expenses		-0.158		111.982		-582.087
		(0.058)		(12.954)		(26.684)
Turnover		0.000		-0.329		-1.242
		(0.000)		(0.074)		(0.110)
Flow		-0.001		2.570		-6.614
		(0.003)		(0.723)		(2.885)
Load		0.021		-12.614		68.883
		(0.007)		(2.317)		(5.434)
Constant	-0.001	-0.001	3.962	3.962	77.361	77.331
	(0.000)	(0.000)	(0.089)	(0.089)	(0.854)	(0.846)
Observations	224,257	224,257	166,328	166,328	227,159	227,159

Consistent With Funds Underweighting Volatility Exposure

Dependent variable: $Ret_{n,t}$

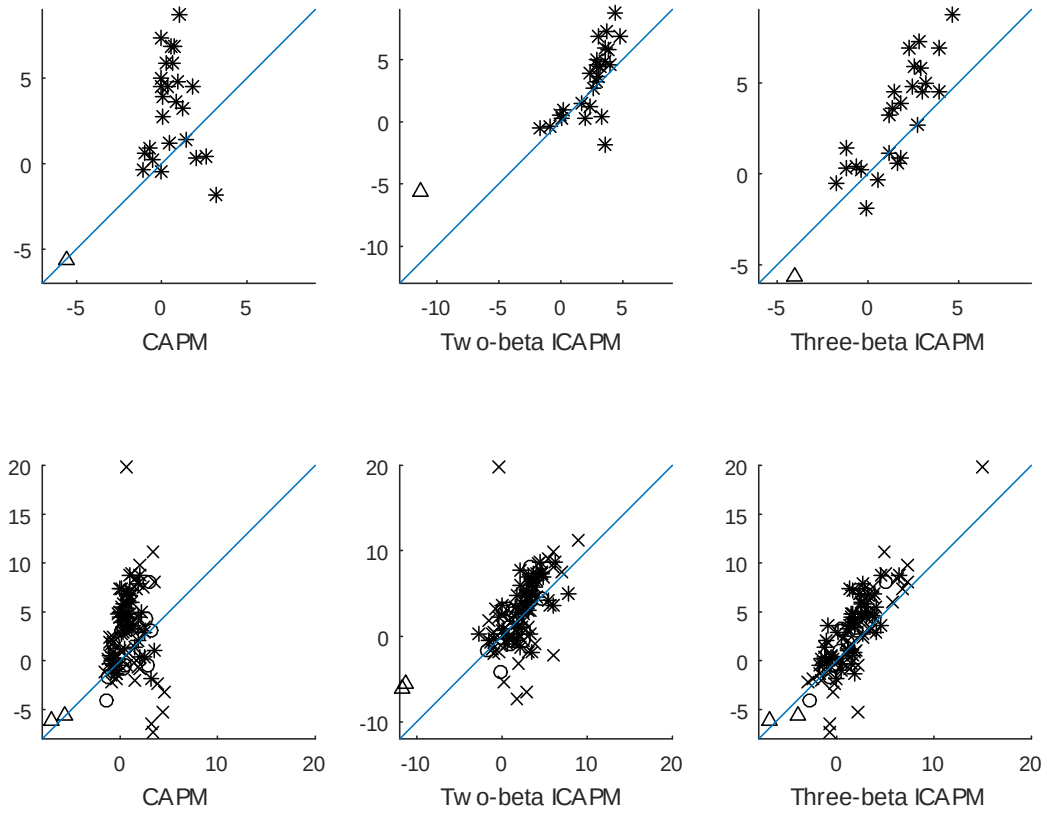
	(1)	(2)	(3)	(4)	(5)	(6)
$Dev_{n,t-1} \times \Delta\hat{\sigma}_t^{S\&P}$	-68.86***	-19.38***	-26.35***	-108.6***	-40.83***	-40.90***
	(-5.12)	(-2.95)	(-3.37)	(-4.93)	(-5.94)	(-4.77)
$Dev_{n,t-1} \times Flow_{n,t}$	19.96**	18.96***	20.25***	-1.79	23.78*	26.50**
	(2.00)	(3.06)	(3.21)	(-0.08)	(1.81)	(2.33)
$Dev_{n,t-1}$		-0.44	-1.40***		-1.17*	-2.35***
		(-1.14)	(-3.08)		(-1.95)	(-3.62)
$\Delta\hat{\sigma}_t^{S\&P}$		-58.65***	145.85		-63.28***	198.10**
		(-3.95)	(1.52)		(-3.03)	(2.27)
$Flow_{n,t}$		8.52	3.21		-22.54	-21.37
		(0.39)	(0.16)		(-1.15)	(-1.17)
Constant	Yes	Yes	Yes	Yes	Yes	Yes
Stock Characteristics	No	No	Yes	No	No	Yes
Char. Interactions	No	No	Yes	No	No	Yes
Start of Sample	1980	1980	1980	1997	1997	1997
Observations	66,878	66,878	57,774	34,532	34,532	32,562
Adj. R^2	0.058	0.098	0.132	0.080	0.125	0.153

Asset Pricing Important

Volatility is Priced

CGPT (2017) develop an approximate closed-form intertemporal asset pricing model incorporating stochastic volatility

$$\mu_i - r_f = \gamma\sigma^2\beta_{i,CF} + \sigma^2\beta_{i,DR} - (\omega\sigma^2/2)\beta_{i,V}$$



No Performance Attribution When Actually Needed

- The paper provocatively claims that "the incentive contracts of delegated investment managers may have unintended negative consequences for asset pricies"
- Tables 8 and 9 provide the possible evidence supporting that assertion
  - Table 8 reports **time-t raw** returns on portfolios formed using **time-t** $-$ **1** aggregate underweight/overweight and sorted on the **time-t** change in aggregate volatility
  - Table 9 reports the **time-t** $+$ **1 raw** returns to those portfolios
  - Only Table 9 studies a legitimate trading strategy; Table 8 simply confirms the alternative interpretation that managers overweight stocks with negative volatility beta
  - Though returns are eventually risk-adjusted later in the paper, only Table 8's **time-t** returns are analyzed in this way (results in Table 10)

The key results showing a reversal have no risk adjustment at all!

Returns Still Covary with Shocks to Vol

	UMO **time-t** returns									
	Paper	Updated								
Time-t ΔRV	Raw	Raw	Adj.	Mkt-RF	SMB	HML	RMW	CMA	UMD	STR
1	**-2.54%**	-1.36%	0.77%	0.09	**-0.68**	-0.06	-0.36	-0.18	0.14	-0.18
	-2.15	-1.63	0.86	1.00	**-4.66**	-0.36	-1.41	-0.72	1.90	-1.56
2	**0.12%**	-1.24%	-1.07%	0.08	**-0.31**	**-0.56**	0.16	0.2	0.2	0.17
	0.10	-1.64	-1.15	0.64	**-2.04**	**-2.95**	0.69	0.65	1.74	1.31
3	**-1.21%**	1.15%	1.47%	-0.19	**-0.7**	0.15	**-0.28**	-0.19	0.23	-0.56
	-0.66	0.89	1.27	-1.09	**-4.13**	0.70	**-1.77**	-0.67	1.59	-2.32
4	**2.43%**	0.88%	-0.88%	-0.16	**-1.27**	-0.28	0.34	0.4	0.25	0.34
	1.87	1.13	-0.95	-1.53	**-5.89**	-1.36	1.56	1.39	1.86	1.36
5	**7.05%**	**5.91%**	**3.04%**	**-0.36**	**-0.7**	-0.04	**-0.55**	-0.22	0.28	-0.08
	2.26	**3.95**	**2.36**	**-2.99**	**-3.10**	-0.14	**-2.78**	-0.60	1.38	-0.43

But No Reversal in Updated Data

	UMO **time-t+1** returns									
	Paper	Updated								
Time-t ΔRV	Raw	Raw	Adj.	Mkt-RF	SMB	HML	RMW	CMA	UMD	STR
1	2.30%	-0.26%	2.87%	-0.04	-0.12	0.54	-0.81	-1.18	0.34	-0.29
	1.06	-0.16	1.08	-0.13	-0.28	1.19	-1.06	-1.57	1.58	-0.84
2	-0.11%	1.46%	2.28%	-0.14	0.16	-0.82	-0.15	0.24	-0.01	0.08
	0.10	1.30	1.07	-0.49	0.45	-1.87	-0.28	0.34	-0.04	0.26
3	-2.14%	0.20%	-4.42%	0.64	-0.19	0.59	0.23	**-1.10**	0.47	0.28
	-1.02	0.14	-1.96	1.92	-0.56	1.45	0.75	**-2.04**	1.67	0.60
4	-0.30%	-1.46%	-1.89%	0.11	**0.67**	0.12	0.39	0.48	-0.21	-0.17
	-0.32	-1.76	-1.46	0.79	**2.22**	0.42	1.30	1.19	-1.11	-0.49
5	**-7.76%**	-0.86%	-0.55%	0.04	-0.14	**1.05**	-0.60	**-1.45**	0.44	-0.43
	-3.05	-0.49	-0.21	0.19	-0.33	**2.18**	-1.60	**-2.11**	1.15	-1.13

Managers Underweight Volatility Beta

UMO **time-t** returns

Int.	ΔRV	N_V	Mkt-RF	SMB	HML	RMW	CMA	UMD	STR	R^2
0.01	**6.02**									20%
2.17	**5.75**									
0.01		**0.55**								6%
1.99		**2.92**								
0.02	**2.33**		**-0.18**	**-0.70**	**-0.22**	**-0.32**	0.03	**0.12**	0.00	62%
5.00	**2.61**		**-3.26**	**-8.56**	**-2.45**	**-3.98**	0.25	**2.45**	0.02	
0.02		**0.38**	**-0.24**	**-0.72**	-0.14	**-0.33**	-0.01	**0.12**	-0.03	62%
5.35		**2.81**	**-4.83**	**-8.94**	-1.50	**-4.10**	-0.07	**2.42**	-0.43	

Econometrics

Econometrics

- Standard errors are understated
  - In the panel regressions, standard errors are clustered in the time dimension
  - However, most of the LHS variables (Active Share, Absolute Deviations, Signed Deviations) can be quite persistent through time
  - Double clustering (Thompson, 2011) in both the time *and* institution/fund/stock dimensions is the natural solution
    - ★ standard errors may increase by a factor of 3
- Managerial aggressiveness is endogenous
  - Tilts toward exotic beta would seem to be a natural choice made by professional investors
  - Difficult to say much without a persuasive instrument for tracking error

Summary

Summary

- A clever way in which agency issues arising from intermediation *may* affect asset prices
  - Growing literature suggesting professional investors can sometimes destabilize markets
  - But skepticism necessary - natural explanations based on risk and/or endogeneity
- The broad evidence suggests ways to improve theory and method
  - Decision being modeled calls for a dynamic view
  - The strength of the implicit links can be made more explicit
- Forecasting abnormal returns more persuasive than explaining contemporaneous decisions, but
  - An instrument (or perhaps a more structural approach) would help
  - If there were to be such extreme distortions, would raise new questions
    - ★ How could benchmarking be justified?
    - ★ Where are the Norwegians?