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# **Institutional Investors, Intangible Information and the Book-to-Market Effect**

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## **Outline**

- **Motivation & Overview**
  - **Data**
  - **Main Results**
  - **Conclusions**
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## **The Book-to-Market Effect: A Brief Review**

### **➤ Rational side: *Distress***

**Fama and French (1992,1993,1995,1996, &1997)**

➤ High book-to-market firms are likely to be financially distressed.

**Vassalou and Xing (2004): yes**

**Campbell, Hilscher, and Szilagyi (2006): no**

### **➤ Behavioral side: *Overreaction***

**LSV (1994), BSV(1998)**

**La Porta et al (1997), Brav, Lehavy, and Michaely (2005)**

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## **Overreaction to Intangible Information: Daniel and Titman (2006)**

- **Scaled-price ratios like book-to-market predict returns because they proxy for the intangible return.**
  - **The intangible returns is the component of returns orthogonal to accounting-based performance, which captures market overreaction to *intangible* information.**
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## Research Question

- **Given that previous empirical evidence suggests that market overreaction is a driving force of the book-to-market effect, do sophisticated players in the stock market, namely institutions, trade against this mispricing?**
  - **More generally, do trades by institutions tend to move asset prices towards or away from fundamental values?**
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## Literature on Institutional Trading

**In theory, investor sophistication leads to price stabilization?**

**Yes,** Efficient Markets Hypothesis: Friedman (1953), Fama (1965)

**No,** Limits to arbitrage literature

Delegated portfolio management literature: Scharfsterin and Stein (1990)

DSSW(1990), Abreu and Brunnermeier (2003)

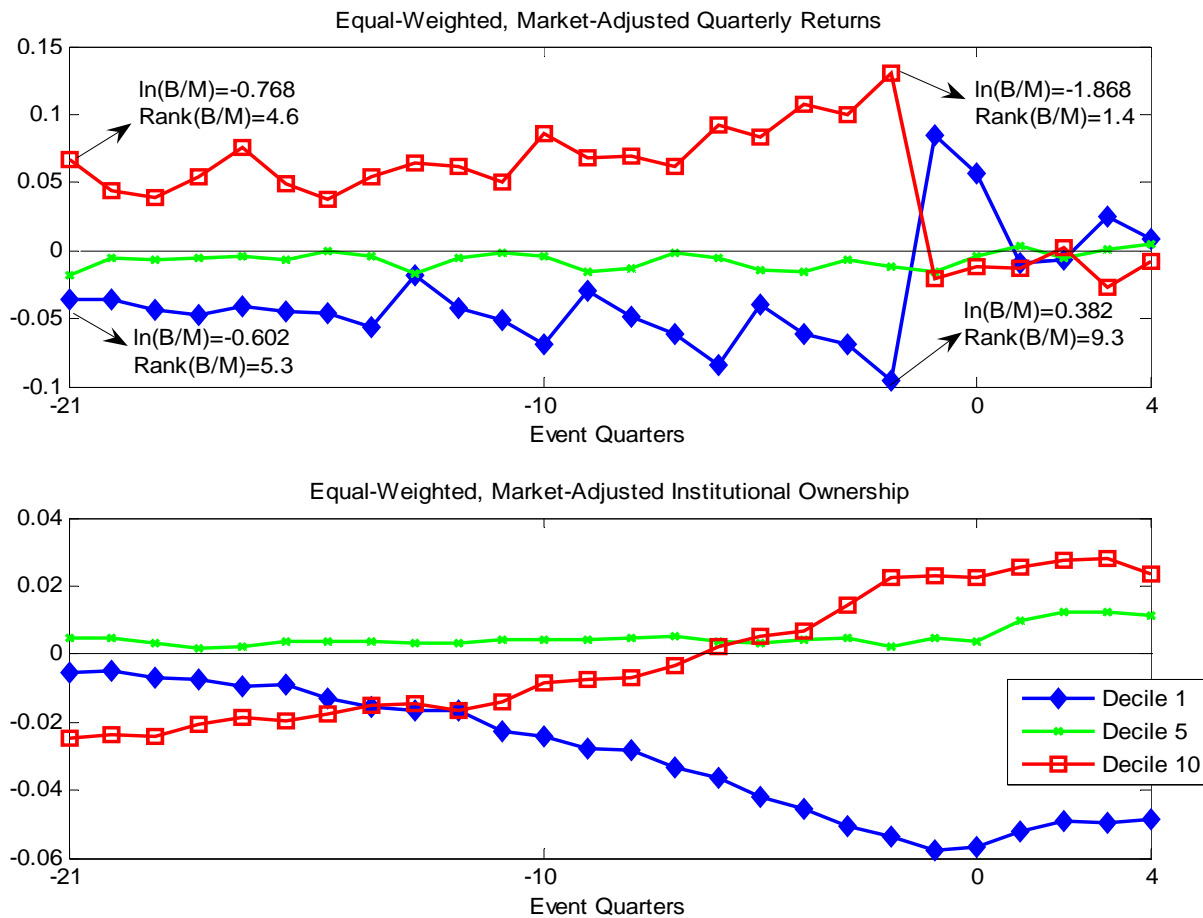
**Empirical evidence:**

**Yes,** Cohen, Gompers and Vuolteenaho (2002), Ke and Ramalingegowda (2004)

**No,** Brunnermeier and Nagel (2004), Frazzini (2005)

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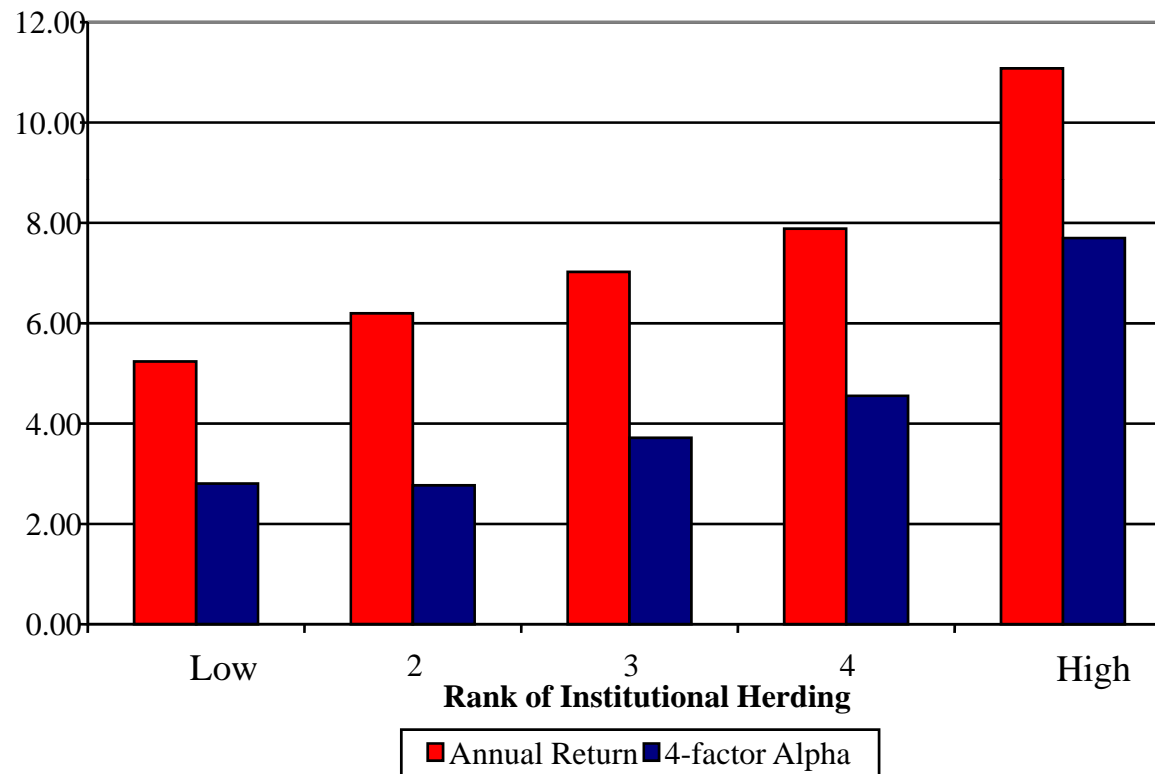
# Overview: Institutional Trading and Intangible Information



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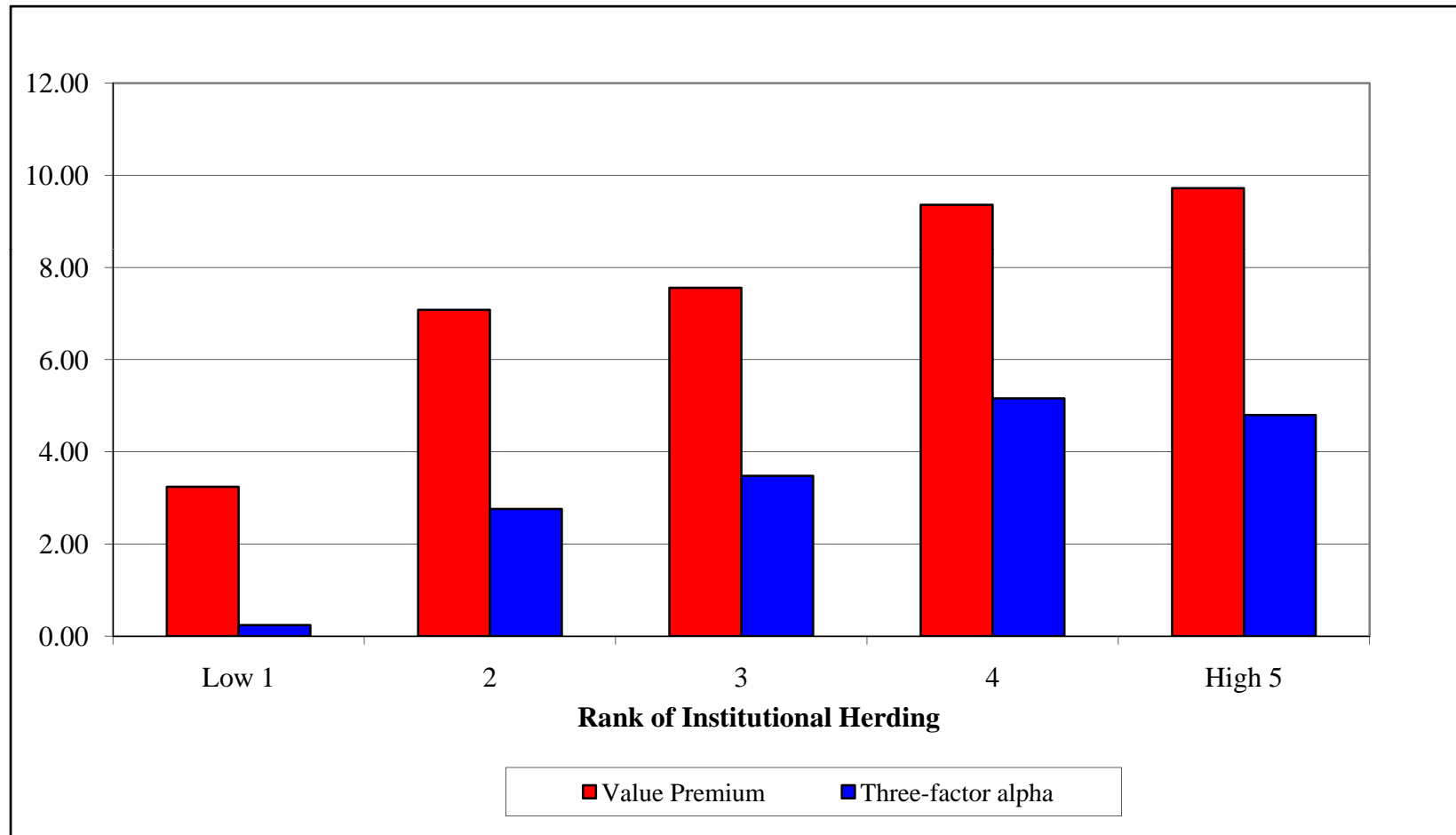
# Overview: Institutional Trading and Overreaction to Intangible Information

Annual Percentage Returns on Zero-cost Long/Short Portfolios  
Based on Past Intangible Returns and Institutional Herding



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## Overview: Institutional Trading and the Value Premium



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## Contribution

- **One of the first that stress the role of trading behavior of institutions as a driving force of the book-to-market effect.**
  
  - **Provide evidence that the tendency of institutions to herd in situations of intangible information destabilizes asset prices, leading to return predictability.**
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# **Institutional Trading and Intangible Information: a VAR Model**

**Firm-level VAR model, including**

- 1) Stock Returns**
  - 2) Intangible Returns**
  - 3) Institutional Ownership**
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## **Data**

- **CRSP-COMPUSTAT-CDA/SPECTRUM  
I/B/E/S**
  - **Sample Period: 1981-2004**
  - **Sample size: 66,852 firm-years**
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## Measure of Intangible Returns

### ➤ Return Decomposition

$$r_i(t - \tau, t) = \gamma_0 + \gamma_{BM} \cdot bm_{i,t-\tau} + \gamma_B \cdot r_i^B(t - \tau, t) + u_{i,t}.$$

### ➤ Intangible returns

$$r_i^T(t - \tau, t) = \hat{\gamma}_0 + \hat{\gamma}_{BM} \cdot bm_{i,t-\tau} + \hat{\gamma}_B \cdot r_i^B(t - \tau, t)$$

$$r_i^I(t - \tau, t) = u_{i,t}.$$

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## **Deciphering Intangible Returns (1)**

### **Fama-French 10 Industry Classifications**

- **Industries mostly likely to have extreme intangible returns**

High-tech: Computers, Software and Electronic Equipment

- **Industries most likely to have zero intangible returns**

Utilities;

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## Deciphering Intangible Returns (2)

Intangible Return	R&D/Sales	Turnover*	Volatility	Forecast Dispersion
Negative	<b>0.682</b>	<b>1.232</b>	<b>0.124</b>	<b>0.289</b>
P2	0.672	0.776	0.096	0.173
P3	0.530	0.755	0.091	0.118
P4	0.319	0.859	0.099	0.122
Positive	<b>1.057</b>	<b>1.411</b>	<b>0.141</b>	<b>0.167</b>

\* Partitioning firms into NASDAQ and NYSE groups generates a similar relation between intangible returns and turnover ratio

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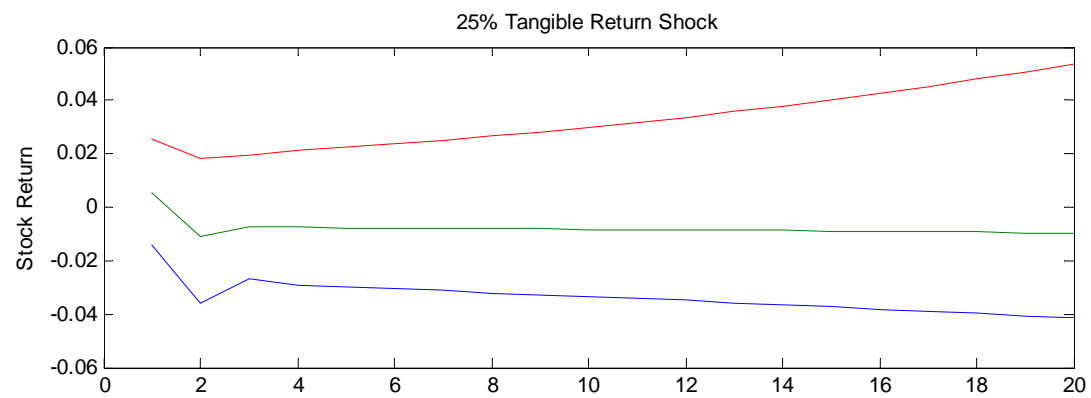
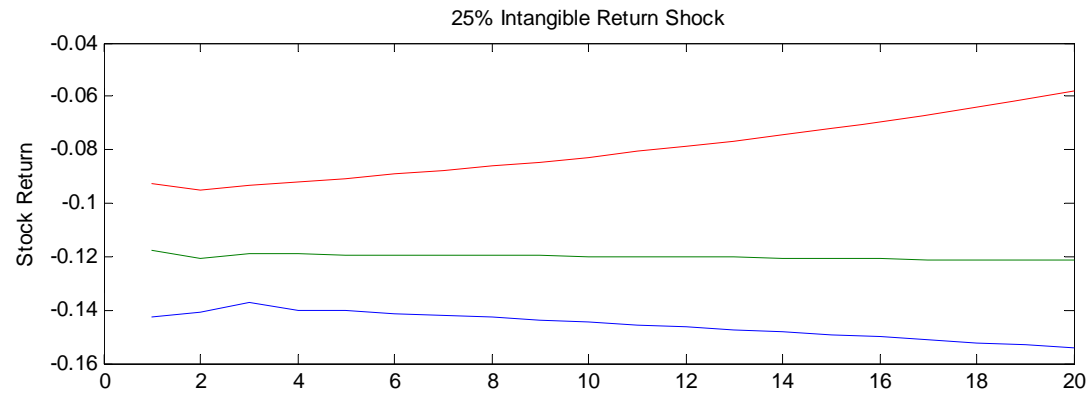
## VAR Parameter Estimates

	Intercept	Lagged Return	Lagged Intangible	Lagged IO
<b>EQ(1) Return</b>	<b>0.0585</b>	<b>0.0205</b>	<b>-0.1147</b>	<b>-0.0603</b>
Clustered S.E.	0.0105	0.0482	0.0301	0.0232
Jackknife S.E.	0.0111	0.0467	0.0293	0.0221
<b>EQ(2) Intangible return</b>	<b>-0.0550</b>	<b>0.5916</b>	<b>-0.2793</b>	<b>0.0204</b>
Clustered S.E.	0.0044	0.0373	0.0357	0.0178
Jackknife S.E.	0.0046	0.0336	0.0328	0.0163
<b>EQ(3) IO</b>	<b>0.0065</b>	<b>0.0579</b>	<b>0.0285</b>	<b>0.9390</b>
Clustered S.E.	0.0026	0.0055	0.0034	0.0064
Jackknife S.E.	0.0026	0.0050	0.0032	0.0064

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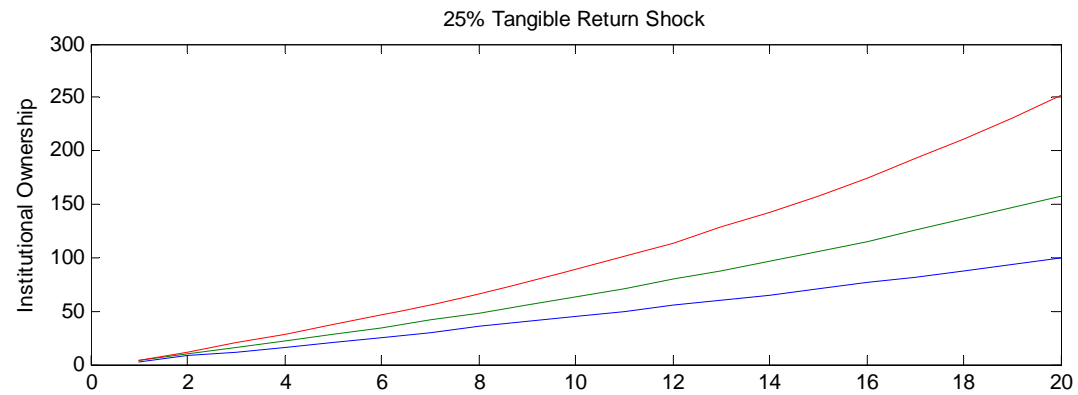
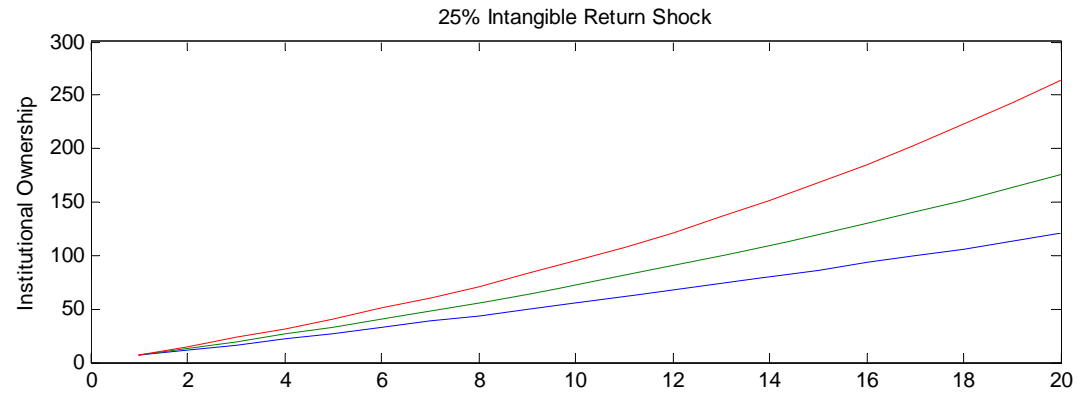
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# Cumulative Impulse Responses of Stock Returns



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# Cumulative Impulse Responses of IO



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# Institutional Herding and Intangible Information: Methodology

## ➤ LSV (1992) Herding Measure

$$HM_{i,t} = |p_{i,t} - E[p_{i,t}]| - E|p_{i,t} - E[p_{i,t}]|$$

## ➤ Grinblatt, Titman, and Wermers (1995) Conditional Herding Measure

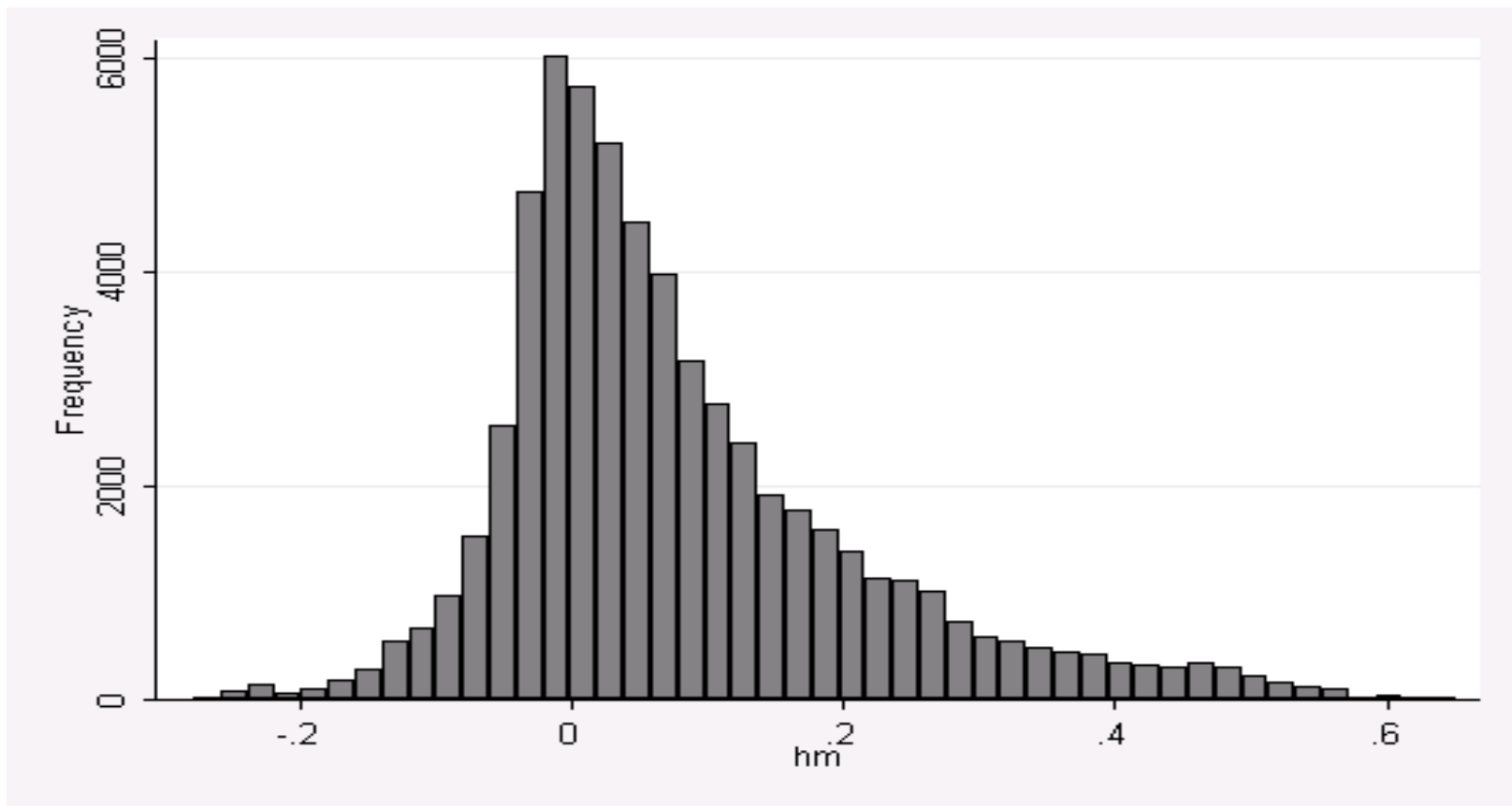
$$BHM_{i,t} = HM_{i,t} | p_{i,t} > E[p_{i,t}]$$

$$SHM_{i,t} = HM_{i,t} | p_{i,t} < E[p_{i,t}]$$

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## Distribution of Herding Measure



## Results

	Intangible Returns, December of $t-2$ to December of $t-1$				
	Low P1	P2	P3	P4	High P5
Panel A: Unconditional Herding Measure, $HM$ , June of $t-1$ to June of $t$					
Median	0.0447	0.0378	0.0394	0.0459	0.0653
Signrank Z-stat	58	54	56	60	65
Mean	0.077	0.0716	0.073	0.0801	0.0946
T-stat	64	60	61	67	76
# of stock-years	12220	12280	12323	12290	12025
	$\chi^2(4) = 270.47$ (Pr=0.000)				
Panel B: Herding Measure Conditional on Buying, $BHM$ , June of $t-1$ to June of $t$					
Median	0.0523	0.0508	0.0578	0.0676	0.0924
Signrank Z-stat	44	43	48	53	62
Mean	0.0833	0.0807	0.0858	0.0923	0.1069
T-stat	52	52	57	65	80
# of stock-years	6101	6288	6671	7133	8113
	$\chi^2(4) = 289.98$ (Pr=0.000), $Z=-13.45$ (Pr=0.000)				
Panel C: Herding Measure Conditional on Selling, $SHM$ , June of $t-1$ to June of $t$					
Median	0.0384	0.0302	0.0264	0.0261	0.0245
Signrank Z-stat	37	33	30	30	23
Mean	0.0708	0.062	0.0579	0.0632	0.0689
T-stat	40	34	31	31	27
# of stock-years	6119	5992	5652	5157	3912
	$\chi^2(4) = 55.26$ (Pr=0.000), $Z=5.03$ (Pr=0.000)				

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## **Summary**

Institutions tend to buy (sell) shares in herds in response to positive (negative) intangible information. Their trading behavior could exacerbate the overreaction to intangible information.

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## Price Impact: Interaction between Institutional Trading and the Reversal of the Intangible Return

	Past Intangible Returns					
	Low	2	3	4	High	Low-High
Low HM	<b>1.78</b>	<b>1.55</b>	<b>1.53</b>	<b>1.53</b>	<b>1.35</b>	<b>0.44</b>
	[6.00]	[6.33]	[6.62]	[5.87]	[4.20]	[2.75]
2	<b>1.72</b>	<b>1.45</b>	<b>1.36</b>	<b>1.41</b>	<b>1.21</b>	<b>0.52</b>
	[5.15]	[5.25]	[5.42]	[5.20]	[3.54]	[2.73]
3	<b>1.68</b>	<b>1.57</b>	<b>1.42</b>	<b>1.35</b>	<b>1.09</b>	<b>0.59</b>
	[5.04]	[5.74]	[5.55]	[5.05]	[3.20]	[2.98]
4	<b>1.9</b>	<b>1.57</b>	<b>1.32</b>	<b>1.44</b>	<b>1.24</b>	<b>0.66</b>
	[5.68]	[5.80]	[5.28]	[5.26]	[3.31]	[3.09]
High HM	<b>2.13</b>	<b>1.59</b>	<b>1.41</b>	<b>1.36</b>	<b>1.21</b>	<b>0.92</b>
	[6.34]	[6.03]	[5.48]	[5.00]	[3.15]	[3.74]
Low-High	<b>-0.35</b>	-0.04	0.11	0.17	0.14	
	[-2.49]	[-0.34]	[0.93]	[1.47]	[0.71]	

## Changes in Institutional Ownership

Panel B: Average Changes in Institutional Ownership from June of Year  $t-1$  to June of  $t$

$HM(t-1,t)$	Intangible Returns, December of $t-2$ to December of $t-1$					
	Low	2	3	4	High	Low-High
Low $HM$	-0.431	0.153	0.320	0.230	0.460	-0.891
	[-1.26]	[0.45]	[1.07]	[0.90]	[1.39]	[-2.94]
2	-0.279	0.266	<b>0.490</b>	<b>0.921</b>	<b>1.329</b>	-1.608
	[-0.79]	[0.88]	[2.31]	[2.66]	[3.83]	[-5.29]
3	-1.373	-0.298	[0.371]	<b>1.054</b>	<b>1.605</b>	-2.978
	[-3.68]	[-0.77]	[1.22]	[3.81]	[3.56]	[-8.05]
4	-2.186	-0.213	0.485	<b>1.543</b>	<b>2.971</b>	-5.156
	[-4.85]	[-0.70]	[1.17]	[4.41]	[5.62]	[-7.33]
High $HM$	-2.109	0.906	<b>2.000</b>	<b>3.212</b>	<b>6.745</b>	-8.854
	[-2.35]	[1.12]	[2.61]	[4.76]	[7.95]	[-7.84]
High-Low						-7.96
						[-6.93]

## Comparison: Institutional Trading and Tangible Returns

	Past Tangible Returns					
	Low	2	3	4	High	Low-High
Low HM	<b>1.83</b> [5.14]	<b>1.37</b> [4.96]	<b>1.41</b> [5.59]	<b>1.62</b> [6.66]	<b>1.59</b> [5.93]	0.24 [1.14]
2	<b>1.51</b> [4.40]	<b>1.33</b> [4.56]	<b>1.36</b> [5.06]	<b>1.43</b> [5.49]	<b>1.57</b> [5.46]	-0.06 [-0.33]
3	<b>1.52</b> [4.50]	<b>1.39</b> [4.81]	<b>1.34</b> [4.92]	<b>1.32</b> [5.33]	<b>1.53</b> [5.07]	-0.01 [-0.04]
4	<b>1.62</b> [4.67]	<b>1.34</b> [4.35]	<b>1.4</b> [5.14]	<b>1.63</b> [6.11]	<b>1.39</b> [4.46]	0.23 [1.26]
High HM	<b>1.59</b> [4.38]	<b>1.49</b> [5.03]	<b>1.5</b> [5.42]	<b>1.49</b> [5.50]	<b>1.38</b> [4.26]	0.22 [1.07]
Low-High	0.24 [1.37]	-0.12 [-0.96]	-0.09 [-0.72]	0.13 [0.99]	0.21 [1.32]	

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## Risk or Mispricing? CAPM

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### CAPM Monthly Percentage Alphas

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	L/S1	L/S2	L/S3	L/S4	L/S5
Alpha	<b>0.53</b>	<b>0.58</b>	<b>0.67</b>	<b>0.8</b>	<b>1.09</b>
	[3.43]	[3.04]	[3.41]	[3.88]	[4.53]
MKT	<b>-0.15</b>	<b>-0.1</b>	<b>-0.13</b>	<b>-0.23</b>	<b>-0.26</b>
	[-4.48]	[-2.30]	[-3.01]	[-5.01]	[-4.90]
R2	0.07	0.02	0.03	0.08	0.08

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## Risk or Mispricing? Fama-French 3-Factor Model

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### Fama-French Monthly Percentage Alphas

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	L/S1	L/S2	L/S3	L/S4	L/S5
Alpha	0.26	0.27	0.29	0.36	<b>0.52</b>
	[1.73	[1.54]	[1.62]	[1.91]	[2.47]
MKT	-0.02	0.02	0.03	-0.01	0.01
	[-0.62]	[0.38]	[0.57]	[-0.27]	[0.25]
SMB	<b>0.15</b>	<b>0.39</b>	<b>0.38</b>	<b>0.2</b>	<b>0.26</b>
	[3.22]	[6.97]	[6.60]	[3.31]	[3.86]
HML	<b>0.41</b>	<b>0.45</b>	<b>0.56</b>	<b>0.66</b>	<b>0.83</b>
	[7.31]	[6.72]	[8.25]	[9.22]	[10.37]
R-squared	0.22	0.21	0.25	0.3	0.34

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## Risk or Mispricing? Carhart 4-Factor Model

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Carhart Monthly Percentage Alphas					
	L/S1	L/S2	L/S3	L/S4	L/S5
Alpha	0.23	0.23	0.31	0.38	<b>0.64</b>
	[1.54]	[1.27]	[1.69]	[1.98]	[2.99]
MKT	-0.02	0.02	0.02	-0.02	-0.01
	[-0.51]	[0.54]	[0.48]	[-0.35]	[-0.17]
SMB	<b>0.15</b>	<b>0.39</b>	<b>0.38</b>	<b>0.2</b>	<b>0.28</b>
	[3.15]	[6.86]	[6.61]	[3.35]	[4.10]
HML	<b>0.42</b>	<b>0.46</b>	<b>0.56</b>	<b>0.65</b>	<b>0.81</b>
	[7.33]	[6.79]	[8.14]	[9.10]	[10.14]
MOM	0.02	0.04	[-0.02]	-0.02	<b>-0.12</b>
	[0.64]	[1.04]	[-0.49]	[-0.55]	[-2.49]
R-squared	0.22	0.21	0.25	0.3	0.35

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## Institutional Herding and the Value Premium: Raw Return

	Book-to-Market Ratio					
	Low BM	2	3	4	High BM	High-Low
Low HM	<b>1.67</b> [4.25]	<b>1.52</b> [4.82]	<b>1.50</b> [5.79]	<b>1.73</b> [7.31]	<b>1.93</b> [7.86]	<b>0.27</b> [1.05]
2	<b>1.21</b> [3.34]	<b>1.36</b> [4.41]	<b>1.40</b> [5.16]	<b>1.55</b> [5.91]	<b>1.80</b> [6.60]	<b>0.59</b> [2.77]
3	<b>1.15</b> [3.06]	<b>1.36</b> [4.30]	<b>1.45</b> [5.35]	<b>1.62</b> [6.15]	<b>1.77</b> [6.70]	<b>0.63</b> [2.73]
4	<b>1.10</b> [2.76]	<b>1.41</b> [4.23]	<b>1.51</b> [5.53]	<b>1.65</b> [6.37]	<b>1.88</b> [6.66]	<b>0.78</b> [3.23]
High HM	<b>1.21</b> [2.85]	<b>1.33</b> [4.16]	<b>1.67</b> [5.92]	<b>1.80</b> [7.13]	<b>2.02</b> [7.44]	<b>0.81</b> [2.77]
Low-High	<b>0.45</b> [2.38]	0.18 [1.30]	-0.17 [-1.61]	-0.07 [-0.66]	-0.09 [-0.78]	

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## Institutional Herding and the Value Premium: 3-Factor Alpha

$HM(t-1,t)$	Book-to-Market Ratio, December of Year $t-1$					
	Low	2	3	4	High	High-Low
Low $HM$	0.61 [4.04]	0.34 [3.00]	0.29 [5.79]	0.49 [5.03]	0.63 [7.86]	0.02 [0.14]
2	0.12 [0.88]	0.06 [0.50]	0.07 [0.72]	0.15 [1.65]	0.35 [3.73]	0.23 [1.71]
3	0.03 [0.24]	0.07 [0.68]	0.12 [1.19]	0.20 [2.21]	0.33 [3.33]	0.29 [2.09]
4	-0.01 [-0.07]	0.11 [0.90]	0.18 [1.64]	0.29 [3.03]	0.42 [3.60]	0.43 [2.96]
High $HM$	0.19 [1.40]	0.13 [1.01]	0.36 [3.08]	0.48 [4.31]	0.59 [4.92]	0.40 [2.48]
High-Low						0.38 [1.81]

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## **Further Robustness Checks**

- **The Share Issuance Effect**
  - **The Effect of Indexing**
  - **Sub-period Analysis**
  - **Different Types of Institutions**
  - **The Effect of Delisting Returns**
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## Conclusions

- **Daniel and Titman (2006) find that the reversal of the intangible return drives the book-to-market effect. I find that the tendency of institutions to herd drives the reversal of the intangible return and hence the book-to-market effect.**
  - **The trading behavior of institutions in situations of intangible information destabilizes asset prices, leading to return predictability.**
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