Discussion of:

A Tale of Two Anomalies: The Implications of Investor Attention for Price and Earnings Momentum

by Kewei Hou, Lin Peng and Wei Xiong

Kent Daniel[1]

[1]Goldman Sachs Asset Management,
Kellogg-Northwestern and NBER

American Finance Association Meetings
January 2007

Price and Earnings Momentum

- This paper explores the different characteristics of price and earnings momentum
- HPX add to the literature documenting the distinctions between the two anomalies
- HPX argue that these differences are explained by limited attention, interacting with other behavioral biases.

Price and Earnings Momentum

- This paper explores the different characteristics of price and earnings momentum
- HPX add to the literature documenting the distinctions between the two anomalies
- HPX argue that these differences are explained by limited attention, interacting with other behavioral biases.

Price and Earnings Momentum

- This paper explores the different characteristics of price and earnings momentum
- HPX add to the literature documenting the distinctions between the two anomalies
- HPX argue that these differences are explained by limited attention, interacting with other behavioral biases.

Discussion Outline

1. Review of Results
2. Theory
   - What is “limited attention”?
     - What are the implications?
     - Are the tests consistent with these implications?
3. The Empirical Evidence
   - Orthogonalization Procedure
   - Other Momentum-Interaction Studies
4. Concluding Recommendations

Discussion Outline

1. Review of Results
2. Theory
   - What is “limited attention”?
     - What are the implications?
     - Are the tests consistent with these implications?
3. The Empirical Evidence
   - Orthogonalization Procedure
   - Other Momentum-Interaction Studies
4. Concluding Recommendations

Discussion Outline

1. Review of Results
2. Theory
   - What is “limited attention”?
     - What are the implications?
     - Are the tests consistent with these implications?
3. The Empirical Evidence
   - Orthogonalization Procedure
   - Other Momentum-Interaction Studies
4. Concluding Recommendations

Discussion Outline

1. Review of Results
2. Theory
   - What is “limited attention”?
     - What are the implications?
     - Are the tests consistent with these implications?
3. The Empirical Evidence
   - Orthogonalization Procedure
   - Other Momentum-Interaction Studies
4. Concluding Recommendations

Limited Attention Hypothesis

- Limited-Attention is frequently viewed as a reason why prices should underreact to information. Here HPX argue:

  > *When investors pay less attention to a company's stock, they are more likely to ignore the company's earnings announcements and, therefore, they are unable to fully incorporate the information into the stock price. (p. 1)*

- However, the story for limited-attention is necessarily a bit more complicated than this.

Limited Attention Hypothesis

- To explain underreaction on earnings-announcement dates (EADs), the argument would have to be that those trading on EADs do not observe the earnings information.
  - This would contrast with a theory where investors observe the announcement, but underestimate its importance for firm value.
- Particularly since we see large trading volume on EADs, is it plausible that a large fraction of those trading do so without knowledge of the EA?
- It would be nice to see a better developed theory section, and a tighter link between the empirical tests and this theory.
  - *e.g*, should the ratio of EAD to non-EAD turnover be used as the interactive variable?

Review of Empirical Results

1. Price Momentum is *stronger* for high volume stocks.
   - Earnings momentum is *weaker*. **
2. Price Momentum profits *reverse*.
   - Earnings Momentum profits *do not.*
3. Price Momentum is *stronger* following positive Mkt returns.
   - Earnings Momentum is *weaker*

Review of Empirical Results

1. Price Momentum is *stronger* for high volume stocks.
   - Earnings momentum is *weaker*. **
2. Price Momentum profits *reverse*.
   - Earnings Momentum profits *do not.*
3. Price Momentum is *stronger* following positive Mkt returns.
   - Earnings Momentum is *weaker*

Review of Empirical Results

1. Price Momentum is *stronger* for high volume stocks.
   - Earnings momentum is *weaker*. **
2. Price Momentum profits *reverse*.
   - Earnings Momentum profits *do not.*
3. Price Momentum is *stronger* following positive Mkt returns.
   - Earnings Momentum is *weaker*

Other Interactive Variables

Other Momentum Interaction Results:

1. Value/Momentum Interaction
   - Asness (1997), Daniel and Titman (1999)
2. Trading Volume/Turnover
   - Lee and Swaminathan (2000), Grinblatt and Han (2005)
3. Capital Gains Overhang
   - Frazzini (2006)
4. Analyst Coverage (slow diffusion)
   - Hong, Lim, and Stein (2000)
5. Dispersion in Analysts' Forecasts
   - Diether, Malloy, and Scherbina (2002)
6. Credit Rating
   - Avramov, Chordia, Jostova, and Philipov (2006)

Long Term Reversal

- Daniel and Titman (2006, JF) examines the long-term reversal effect, and the link between this and the value effect.
- We find *no evidence* that prices overreact to any fundamental growth measures – or to what we call *tangible* information.
  - and *strong evidence* that prices overreact to the component of past returns orthogonal to fundamental growth measures – that is to what we call *intangible information*.
  - Related to HPX's "orthogonalized price momentum."

Price Momentum Orthogonalization - Table 7A

Panel A: Price Momentum Profits

Not Controlling for Earnings Momentum								Controlling for Earnings Momentum							
	Mom1	2	3	4	Mom5	5-1	FF α		Mom1	2	3	4	Mom5	5-1	FF α
Turnover1	-0.0024	-0.0008	0.0009	0.0018	0.0023	**0.0047**	**0.0069**	Turnover1	-0.0017	-0.0002	0.0009	0.0015	0.0013	**0.0031**	**0.0051**
	-1.37	*-0.62*	*0.71*	*1.32*	*1.62*	*1.85*	*2.72*		*-1.03*	*-0.19*	*0.72*	*1.08*	*0.97*	*1.25*	*2.04*
2	-0.0040	0.0006	0.0008	0.0017	0.0033	**0.0073**	**0.0087**	2	-0.0029	0.0011	0.0002	0.0007	0.0035	**0.0063**	**0.0079**
	-2.59	*0.61*	*1.10*	*1.82*	*3.07*	*3.26*	*3.79*		*-1.91*	*1.13*	*0.30*	*0.80*	*3.34*	*2.94*	*3.57*
3	-0.0051	-0.0015	-0.0004	0.0013	0.0042	**0.0093**	**0.0113**	3	-0.0039	-0.0014	0.0000	-0.0001	0.0036	**0.0074**	**0.0093**
	-2.95	*-1.45*	*-0.60*	*1.75*	*4.00*	*3.91*	*4.70*		*-2.35*	*-1.35*	*0.05*	*-0.12*	*3.27*	*3.17*	*3.92*
4	-0.0042	-0.0020	-0.0010	0.0016	0.0062	**0.0104**	**0.0125**	4	-0.0038	-0.0019	-0.0001	0.0011	0.0058	**0.0095**	**0.0113**
	-2.32	*-1.81*	*-1.24*	*1.76*	*4.41*	*4.03*	*4.85*		*-2.12*	*-1.87*	*-0.17*	*1.17*	*4.19*	*3.84*	*4.49*
Turnover5	-0.0090	-0.0020	0.0011	0.0038	0.0085	**0.0175**	**0.0193**	Turnover5	-0.0082	-0.0017	0.0009	0.0029	0.0084	**0.0167**	**0.0183**
	-4.00	*-1.53*	*0.87*	*2.40*	*4.02*	*5.52*	*5.93*		*-3.81*	*-1.26*	*0.72*	*1.79*	*4.02*	*5.46*	*5.85*
Test (turnover1=turnover5)						3.16	8.95							3.47	10.89
P-value						0.0017	0.0028							0.0006	0.0010

Earnings Momentum Orthogonalization - Table 7B

Panel B: Earnings Momentum Profits

	Not Controlling for Price Momentum								Controlling for Price Momentum							
	Mom1	2	3	4	Mom5	5-1	FF α		Mom1	2	3	4	Mom5	5-1	FF α
Turnover1	-0.0024	-0.0028	0.0015	0.0023	0.0052	**0.0075**	**0.0090**	Turnover1	-0.0017	-0.0018	-0.0003	0.0024	0.0047	**0.0064**	**0.0072**
	-2.12	*-2.30*	*1.25*	*2.11*	*4.44*	*5.61*	*6.74*		*-1.59*	*-1.49*	*-0.29*	*2.11*	*4.05*	*5.31*	*5.82*
2	-0.0021	-0.0024	0.0009	0.0027	0.0042	**0.0063**	**0.0066**	2	-0.0016	-0.0012	-0.0010	0.0040	0.0032	**0.0048**	**0.0049**
	-2.11	*-2.30*	*0.91*	*2.62*	*4.64*	*4.77*	*4.80*		*-1.67*	*-1.19*	*-1.05*	*3.94*	*3.13*	*3.52*	*3.42*
3	-0.0025	-0.0017	-0.0004	0.0025	0.0032	**0.0057**	**0.0050**	3	-0.0020	-0.0018	0.0000	0.0023	0.0027	**0.0047**	**0.0035**
	-2.19	*-1.41*	*-0.35*	*2.80*	*3.19*	*3.52*	*2.98*		*-1.89*	*-1.64*	*-0.01*	*2.13*	*2.47*	*3.06*	*2.24*
4	-0.0022	-0.0002	0.0007	0.0014	0.0059	**0.0081**	**0.0080**	4	-0.0004	0.0009	0.0006	0.0002	0.0042	**0.0046**	**0.0040**
	-1.78	*-0.15*	*0.61*	*1.19*	*4.81*	*4.66*	*4.54*		*-0.31*	*0.77*	*0.54*	*0.14*	*3.34*	*2.75*	*2.38*
Turnover5	-0.0024	-0.0005	0.0019	0.0038	0.0055	**0.0079**	**0.0082**	Turnover5	0.0016	0.0025	0.0014	0.0019	0.0022	**0.0007**	**0.0007**
	-1.26	*-0.28*	*1.24*	*2.24*	*3.40*	*3.70*	*3.72*		*0.86*	*1.43*	*0.93*	*1.18*	*1.50*	*0.37*	*0.36*
Test (turnover1=turnover5)						0.14	0.09							2.64	8.52
P-value						0.8922	0.7682							0.0086	0.0036

Price Momentum Orthogonalization Procedure

- At each t, HPX run a cross-sectional regression (over i):

$$\tilde{R}_{i,1yr} = \alpha + \beta \left(\sum_{\tau \in T} \text{SUE}_{i,\tau} \right) + \tilde{u}_i$$

  - The residual, $\tilde{u}_i$, is now orthogonalized relative to earnings momentum.
- This orthogonalization makes sense because returns reflect both fundamental and "intangible" information $\tilde{\imath}$:

$$\tilde{R}_{i,1yr} = \gamma_F \cdot \tilde{\text{SUE}}_{i,1yr} + \gamma_I \cdot \tilde{\imath}_{i,1yr}$$

where $\tilde{\imath} \perp \tilde{\text{SUE}}$

Earnings Momentum Orthogonalization Procedure

- To orthogonalize earnings momentum, HPX run the reverse regression:

$$\left(\sum_{\tau \in T} \text{SUE}_{i,\tau}\right) = \alpha^{\dagger} + \beta^{\dagger} \tilde{R}_{i,1yr} + \tilde{u}_i^{\dagger}$$

  - $\tilde{u}_i^{\dagger}$ is now taken to be orthogonalized relative to earnings momentum.
- However, here since SUE and R are positively correlated, $u^{\dagger}$ will be negatively correlated with past (intangible) returns:

$$\begin{aligned} u^{\dagger} &\approx \text{SUE} - \beta^{\dagger}\left(\gamma_F \cdot \text{SUE} + \gamma_I \cdot \tilde{\iota}\right) \\ &\approx (1 - \beta^{\dagger}\gamma_F)\text{SUE} - \beta^{\dagger}\gamma_I \cdot \tilde{\iota} \end{aligned}$$

Ambiguity & Momentum – *Additional Evidence*

- Zhang (2006) and Jiang, Lee, and Zhang (2005) also examine "information uncertainty" variables and the interaction with price-momentum *and earnings-momentum.*
- Based the evidence that overconfidence is stronger when ambiguity/information-uncertainty is stronger, they argue that high IU firms should exhibit higher price- and earnings-momentum
- Using a number of IU proxies, they find evidence consistent with this.

Zhang & JLZ Variables

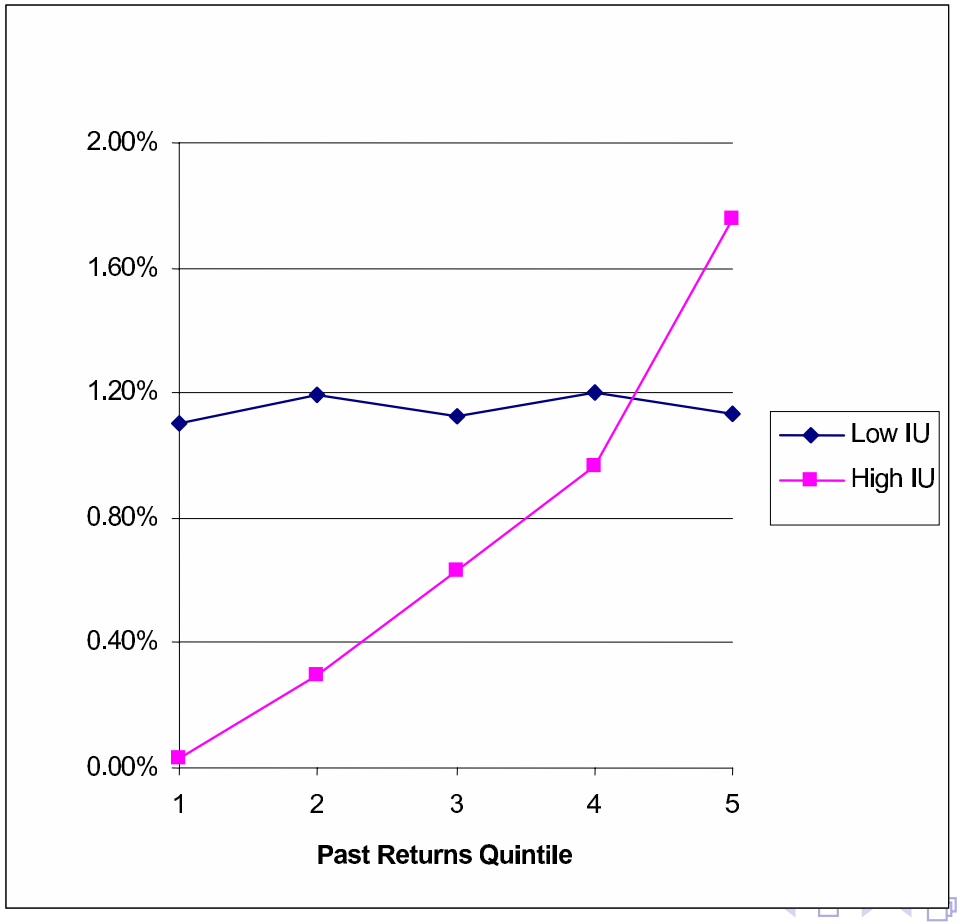
As proxies for Information Uncertainty, (Ambiguity) Zhang (2006) and Jiang, Lee, and Zhang (2005) use:

1. Firm age
2. Firm return volatility
3. Average daily turnover
4. Dispersion of analysts' earnings forecasts
5. Duration of the firm's cash flows
   - Closely related to cashflow/price

IU & Price Momentum

From Jiang, Lee, and Zhang (2005), Figure 1:

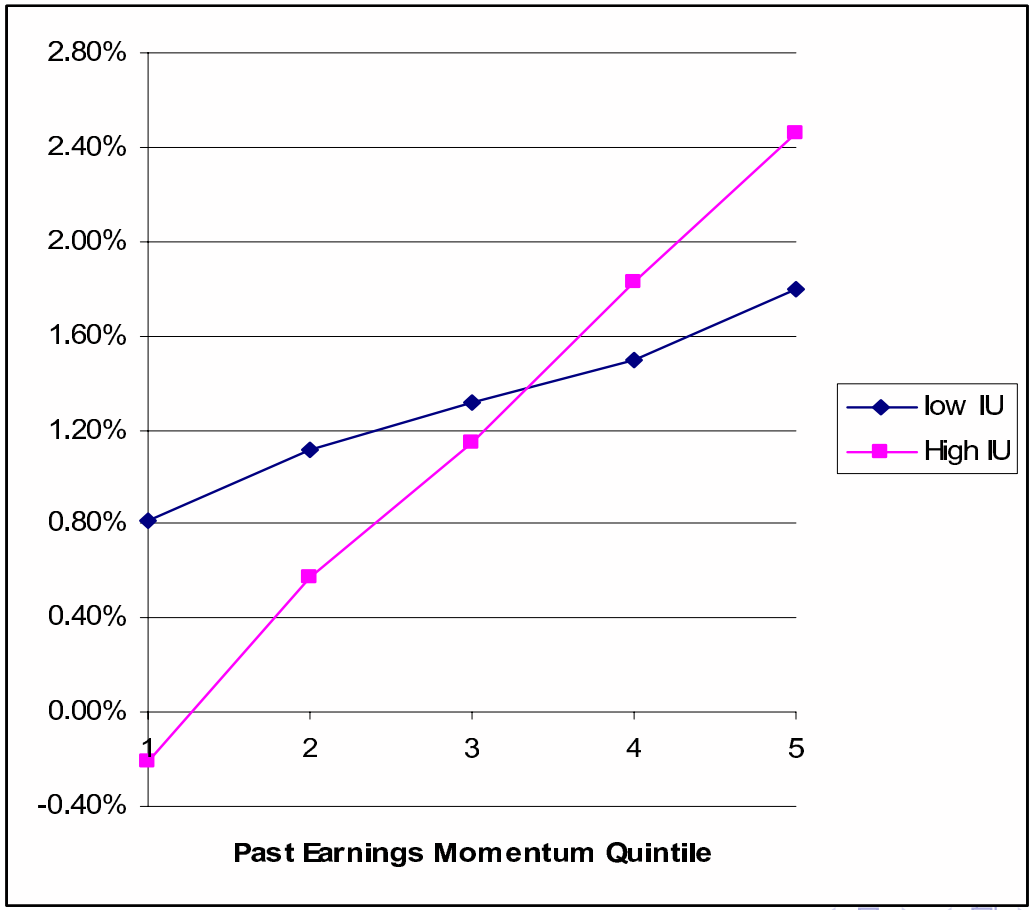
Average Monthly Returns to Portfolios Formed using Combined Measures of Information Uncertainty (IU) and Past Price Momentum



IU & Earnings Momentum

Jiang, Lee, and Zhang (2005), Figure 2:

Average Monthly Returns to Portfolios Formed using Combined Measures of Information Uncertainty (IU) and Past Earnings Momentum



Concluding Recommendations

- Better linking of good limited attention theory and empirical tests.
- Robustness Checks, particularly for earnings momentum results:
  - Alternative proxies for “attention”
  - Alternative measures of earnings momentum
- Reconcile results here with extant results from the literature.
- Are turnover (and other interactive variables) limits-to-arbitrage proxies?

References I

Asness, Clifford S., 1997, The interaction of value and momentum strategies, *Financial Analysts' Journal* 53, 29–36.

Avramov, Doron, Tarun Chordia, Gergana Jostova, and Alexander Philipov, 2006, Momentum and credit rating, *Journal of Finance,* forthcoming.

Barberis, Nicholas, Andrei Shleifer, and Robert Vishny, 1998, A model of investor sentiment, *Journal of Financial Economics* 49, 307–343.

Daniel, Kent D., David Hirshleifer, and Avanidhar Subrahmanyam, 1998, Investor psychology and security market under- and over-reactions, *Journal of Finance* 53, 1839–1886.

Daniel, Kent D., and Sheridan Titman, 1999, Market efficiency in an irrational world, *Financial Analysts' Journal* 55, 28–40.

———, 2006, Market reactions to tangible and intangible information, *Journal of Finance* 61, 1605–1643.

Diether, Karl B., Christopher J. Malloy, and Anna Scherbina, 2002, Differences of opinion and the cross-section of stock returns, *Journal of Finance* 57, 2113–2141.

Frazzini, Andrea, 2006, The disposition effect and underreaction to news, *Journal of Finance* 61, 2017–2046.

Grinblatt, Mark, and Bing Han, 2005, Prospect theory, mental accounting, and momentum,, *Journal of Financial Economics* 78, 311–339.

References II

Hong, Harrison, Terence Lim, and Jeremy Stein, 2000, Bad news travels slowly: Size, analyst coverage and the profitability of momentum strategies, *Journal of Finance* 55, 265–295.

Jiang, Guohua, Charles M. C. Lee, and Grace Y. Zhang, 2005, Information uncertainty and expected returns, *Review of Accounting Studies* 10, 185–221.

Lee, Charles M.C., and Bhaskaran Swaminathan, 2000, Price momentum and trading volume, *Journal of Finance* 55, 2017 – 2069.

Zhang, X. Frank, 2006, Information uncertainty and stock returns, *Journal of Finance* 61, 105–137.