

Why Is Asymmetric Timeliness of Earnings Priced?

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Basu (1997) Regression

$$\frac{Earn_t}{P_{t-1}} = \gamma_0 + \gamma_1 \cdot DR_t + \gamma_2 \cdot CAR_t + \gamma_{AT} \cdot DR_t \cdot CAR_t$$

- CAR_t is cumulated between the day after the previous EA and the day after the current EA
- $DR_t = 1$ if $CAR_t < 0$ and zero otherwise
- $\gamma_{AT} > 0$ implies more timely recognition of losses (conservative accounting)

Pricing of Conservatism

$\gamma_{AT} =$	Low	Q2	Q3	Q4	High	H-L
$\alpha_{Carhart}$	-0.179	0.050	0.100	0.217	0.059	0.238
t-stat	-2.32	0.86	2.13	3.03	0.78	2.50
α_{FF5}	-0.350	0.015	0.025	0.031	0.051	0.402
t-stat	-4.09	0.25	0.55	0.43	0.68	4.20
α_{FF6}	-0.312	0.016	0.047	0.111	0.113	0.425
t-stat	-3.87	0.27	1.01	1.52	1.55	4.42

Pricing of Conservatism

	1	2	3	4	5	6
Beta	0.102	0.067	0.070	0.077	0.084	0.085
t-stat	<i>0.98</i>	<i>0.64</i>	<i>0.66</i>	<i>0.74</i>	<i>0.78</i>	<i>0.78</i>
Size	-4.109	-4.108	-3.952	-4.057	-3.642	-3.748
t-stat	<i>-10.9</i>	<i>-11.3</i>	<i>-11.0</i>	<i>-11.2</i>	<i>-10.2</i>	<i>-10.5</i>
MB	0.040	0.130	0.097	0.075	0.050	-0.034
t-stat	<i>0.14</i>	<i>0.49</i>	<i>0.33</i>	<i>0.26</i>	<i>0.19</i>	<i>-0.13</i>
Mom		0.966	0.902	0.876	0.996	0.994
t-stat		<i>3.06</i>	<i>2.93</i>	<i>2.85</i>	<i>3.04</i>	<i>3.05</i>
Rev		-1.905	-1.998	-1.991	-1.920	-1.927
t-stat		<i>-9.78</i>	<i>-10.3</i>	<i>-10.22</i>	<i>-8.63</i>	<i>-8.63</i>
Inv			-0.472	-0.505	-0.264	-0.296
t-stat			<i>-5.61</i>	<i>-6.01</i>	<i>-2.17</i>	<i>-2.49</i>
GProf			0.144	0.205	0.314	0.442
t-stat			<i>0.72</i>	<i>1.03</i>	<i>1.43</i>	<i>2.01</i>
Accrual				-0.803		-0.746
t-stat				<i>-8.50</i>		<i>-5.86</i>
Age					0.252	0.269
t-stat					<i>1.42</i>	<i>1.56</i>
Lev					0.179	0.079
t-stat					<i>0.91</i>	<i>0.40</i>
CVDA					0.067	0.064
t-stat					<i>0.82</i>	<i>0.75</i>
γ_{AT}	0.236	0.226	0.210	0.175	0.248	0.244
t-stat	<i>2.60</i>	<i>2.71</i>	<i>2.43</i>	<i>2.04</i>	<i>2.31</i>	<i>2.26</i>

Pricing of Conservatism

- γ_{AT} (conservatism) is positively related to future returns
- Rational stories: conservative accounting makes a firm more risky or less liquid (yet can still be useful on the cash flows side)
- Behavioral story #1: conservative accounting has a positive effect on cash flows, but investors do not appreciate that until later (and thus underprice conservative, $\gamma_{AT} > 0$, firms)
- Behavioral story #2: investors assume all firms are conservative and recognize losses early, and then are negatively surprised by bad (unrecognized) events hitting earnings of aggressive, $\gamma_{AT} < 0$, firms

Pricing of Conservatism

Table 4B. Alphas of the Bottom Quintile for 16 Quarters

Quarter=	1	2	3	4	5	6	7	8
α_{FF5}	-0.350	-0.339	-0.340	-0.232	-0.242	-0.223	-0.259	-0.266
t-stat	-4.09	-4.11	-3.92	-3.09	-3.20	-2.75	-3.31	-3.47
α_{FF6}	-0.312	-0.300	-0.283	-0.188	-0.208	-0.184	-0.227	-0.235
t-stat	-3.87	-3.83	-3.57	-2.74	-2.87	-2.47	-3.00	-3.07
Quarter=	9	10	11	12	13	14	15	16
α_{FF5}	-0.294	-0.262	-0.164	-0.215	-0.219	-0.207	-0.176	-0.170
t-stat	-3.62	-3.05	-1.96	-2.45	-2.38	-2.26	-1.82	-1.79
α_{FF6}	-0.270	-0.227	-0.128	-0.177	-0.179	-0.161	-0.119	-0.115
t-stat	-3.36	-2.76	-1.62	-2.09	-2.03	-1.87	-1.34	-1.33

AT Effect and IVol

	Low	Med	High	H-L
α_{FF5}	0.236	0.384	0.400	0.164
t-stat	<i>2.26</i>	<i>2.92</i>	<i>1.94</i>	<i>0.72</i>
α_{FF6}	0.238	0.423	0.482	0.244
t-stat	<i>2.33</i>	<i>3.16</i>	<i>2.00</i>	<i>0.94</i>

- AT effect is twice stronger in the high IVol subsample
- If we focus on its short leg, the difference is even greater and becomes significant

AT Effect and IO

	Low	Med	High	L-H
α_{FF5}	0.479	0.316	0.226	0.253
t-stat	<i>2.44</i>	<i>1.95</i>	<i>1.71</i>	<i>1.16</i>
α_{FF6}	0.462	0.365	0.284	0.178
t-stat	<i>2.46</i>	<i>2.19</i>	<i>2.20</i>	<i>0.85</i>

- AT effect is twice stronger in the low IO subsample and insignificant in the high IO subsample

Generic Mispricing Tests

- AT effect weakens by 50% after one year and dies after 9-10 quarters
- Negative alphas of the bottom AT quintile decline a bit slower and last longer, but are also gone after 3-4 years
- AT effect is stronger if limits to arbitrage are high (high IVol, low IO)

AT Effect at Earnings Announcements

Table 6A. All Earnings Announcements

	Low	Q2	Q3	Q4	High	H-L
EARet	0.137	0.203	0.286	0.287	0.247	0.110
t-stat	<i>1.19</i>	<i>2.41</i>	<i>3.70</i>	<i>2.96</i>	<i>2.79</i>	<i>0.92</i>
CAR	-0.043	0.083	0.148	0.140	0.191	0.230
t-stat	<i>-0.50</i>	<i>1.13</i>	<i>2.33</i>	<i>1.81</i>	<i>2.81</i>	<i>2.20</i>
CAR6	0.011	0.093	0.199	0.147	0.184	0.169
t-stat	<i>0.13</i>	<i>1.23</i>	<i>2.94</i>	<i>1.61</i>	<i>2.57</i>	<i>1.57</i>

AT Effect at Earnings Announcements

- Mispricing should be partially resolved at earnings announcements, when new information arrives
- AT effect is 40 bp per month, 120 bp per quarter – 16-23 bp of that happen during 3 days around earnings announcements
- This is statistically significant, but numerically modest (13-20% of the total)
- More importantly, where is the negative announcement return for the bottom AT quintile?

AT Effect with Writedowns

Table 6B. Earnings Announcements with Writedowns

	Low	Q2	Q3	Q4	High	H-L
EARet	-0.809	-0.343	-0.458	-0.730	-0.190	0.490
t-stat	<i>-4.01</i>	<i>-1.76</i>	<i>-2.09</i>	<i>-3.17</i>	<i>-0.92</i>	<i>1.78</i>
CAR	-0.858	-0.504	-0.652	-0.795	-0.266	0.484
t-stat	<i>-4.59</i>	<i>-2.73</i>	<i>-3.04</i>	<i>-3.89</i>	<i>-1.40</i>	<i>1.91</i>
CAR6	-0.953	-0.507	-0.564	-0.711	-0.261	0.543
t-stat	<i>-5.32</i>	<i>-2.76</i>	<i>-2.67</i>	<i>-3.28</i>	<i>-1.32</i>	<i>2.07</i>

AT Effect with Writedowns

- A writedown happens when special items are negative and exceed 1% of total assets
- The loss of value at earnings announcements with a writedown is insignificant for conservative firms (investors saw the writedown coming)
- Aggressive firms lose the most in response to a writedown (investors are more surprised)
- The difference is large, but writedowns are infrequent (6.3% of all quarters have a writedown)
- Same evidence arises if I look at goodwill impairments instead (the sample is shorter and smaller, so the standard errors are larger)

Goodwill Impairment Sample

Table 7E. 2001-2020 Sample, All Quarters

	Low	Q2	Q3	Q4	High	H-L
α_{FF5}	-0.423	-0.009	0.003	0.247	0.082	0.504
t-stat	-3.15	-0.10	0.05	2.32	0.77	3.06
α_{FF5}	-0.423	-0.009	0.003	0.247	0.082	0.504
t-stat	-3.15	-0.10	0.05	2.39	0.82	3.19

- In the sample with available goodwill impairments data, the AT effect is 50 bp per month

When Goodwill Impairment Happens

Table 7A. Goodwill Impairment Quarters

	Low	Q2	Q3	Q4	High	H-L
α_{FF5}	-3.347	-1.801	-2.768	-1.860	-1.801	1.189
t-stat	-5.12	-3.25	-4.23	-3.94	-1.93	0.94
α_{FF6}	-3.327	-1.788	-2.782	-1.859	-1.804	1.250
t-stat	-5.01	-3.19	-4.23	-3.91	-2.08	1.00

- The more negative response of aggressive firms to goodwill impairments stands out

...and the Quarter Before It Happens

Table 7C. Goodwill Impairment in the Next Quarter

	Low	Q2	Q3	Q4	High	H-L
α_{FF5}	-3.388	-1.830	-2.768	-1.858	-1.795	1.238
t-stat	<i>-5.18</i>	<i>-3.28</i>	<i>-4.23</i>	<i>-3.94</i>	<i>-1.92</i>	<i>0.98</i>
α_{FF6}	-3.365	-1.817	-2.781	-1.857	-1.798	1.296
t-stat	<i>-5.06</i>	<i>-3.23</i>	<i>-4.23</i>	<i>-3.91</i>	<i>-2.07</i>	<i>1.04</i>

- The more negative response of aggressive firms to goodwill impairments again stands out

No Goodwill Impairments Sample

Table 7D. No Goodwill Impairments in t-1, t, t+1 Quarters

	Low	Q2	Q3	Q4	High	H-L
α_{FF5}	-0.333	-0.029	0.075	0.083	0.076	0.409
t-stat	<i>-3.25</i>	<i>-0.41</i>	<i>1.41</i>	<i>0.91</i>	<i>0.86</i>	<i>3.65</i>
α_{FF6}	-0.301	-0.030	0.079	0.141	0.115	0.416
t-stat	<i>-3.05</i>	<i>-0.44</i>	<i>1.47</i>	<i>1.54</i>	<i>1.34</i>	<i>3.72</i>

- With less than 5% of all quarters gone, the AT effect is reduced by 20-25%

Earnings Fixation Story

- Investors assume conservative accounting is the norm, but cannot figure out if a particular firm follows the norm
- So they assume that aggressive firms are conservative - which leads to investors overvaluing aggressive firms
- The overvaluation is corrected at earnings announcements, during quarters with writedowns, impairments, and credit rating downgrades

Basu (1997) Regression, Again

$$\frac{Earn_t}{P_{t-1}} = \gamma_0 + \gamma_1 \cdot DR_t + \gamma_2 \cdot CAR_t + \gamma_{AT} \cdot DR_t \cdot CAR_t$$

- Normally the regression is run using a panel of all firms; for γ_{AT} sorts, I use a firm-level time-series regression
- Most biases in γ_{AT} are cross-sectional in nature and can be treated by using fixed effects, which the firm-level regression implicitly does
- The literature also suggests fixing the biases by adding more regressors and interaction terms, which is not feasible in firm-level time-series regressions

Cross-Sectional Conservatism Measures

	Low	Q2	Q3	Q4	High	H-L
Basu	-0.016	0.011	0.011	0.030	0.103	0.119
t-stat	-3.65	3.79	5.24	4.97	13.5	13.4
BKN1	-0.037	0.001	0.004	0.020	0.089	0.127
t-stat	-9.48	0.27	2.05	4.11	13.6	14.6
BDPR	-0.012	0.025	0.011	0.048	0.156	0.168
t-stat	-0.47	3.12	1.36	4.97	8.67	6.00
BBB	-0.012	0.012	0.012	0.024	0.094	0.106
t-stat	-2.71	4.65	7.12	9.13	12.9	12.4
BKN2	-0.071	-0.003	0.010	0.035	0.148	0.218
t-stat	-5.84	-0.59	3.90	6.93	12.9	12.9

Change in Earnings in Basu Regression

	Low	Q2	Q3	Q4	High	H-L
$\alpha_{Carhart}$	-0.175	0.022	0.151	0.019	0.059	0.234
t-stat	-1.46	0.16	2.65	0.26	0.57	2.07
α_{FF5}	-0.298	-0.104	0.083	-0.070	-0.055	0.242
t-stat	-2.59	-0.76	1.38	-0.98	-0.55	2.22
α_{FF6}	-0.265	-0.073	0.123	-0.023	0.025	0.289
t-stat	-2.31	-0.53	1.95	-0.33	0.24	2.57

Accruals in Basu Regression

	Low	Q2	Q3	Q4	High	H-L
$\alpha_{Carhart}$	-0.136	0.080	0.139	0.062	0.143	0.279
t-stat	<i>-1.82</i>	<i>1.41</i>	<i>2.46</i>	<i>1.02</i>	<i>1.98</i>	<i>3.09</i>
α_{FF5}	-0.250	0.026	0.066	-0.021	-0.065	0.186
t-stat	<i>-2.84</i>	<i>0.44</i>	<i>1.30</i>	<i>-0.33</i>	<i>-0.90</i>	<i>2.05</i>
α_{FF6}	-0.191	0.068	0.101	-0.015	-0.010	0.181
t-stat	<i>-2.37</i>	<i>1.15</i>	<i>1.84</i>	<i>-0.24</i>	<i>-0.14</i>	<i>1.81</i>

Is It Really Conservatism?

- If sorting on firm-level γ_{AT} creates a spread in future alphas, it is an interesting anomaly whether γ_{AT} measures conservatism or not
- Sorting on firm-level γ_{AT} does create a strong sort on conservatism measures estimated using more conventional panel regressions, whether I use corrections for bias in γ_{AT} or not
- Sorting on bias-corrected γ_{AT} still creates a significant spread in future alphas

AT Effect and Past Losses

Table 10A. Bottom Quintile

	Low	Med	High	H-L
α_{FF5}	-0.726	-0.324	-0.171	0.556
t-stat	-3.61	-2.99	-1.09	1.96
α_{FF6}	-0.396	-0.257	-0.401	-0.004
t-stat	-2.26	-2.61	-2.87	-0.02

AT Effect and Market-to-Book

Table 10C. Bottom Quintile

	Low	Med	High	L-H
α_{FF5}	-0.010	-0.341	-0.398	0.388
t-stat	<i>-0.06</i>	<i>-3.69</i>	<i>-3.49</i>	<i>2.33</i>
α_{FF6}	0.043	-0.308	-0.341	0.384
t-stat	<i>0.28</i>	<i>-3.12</i>	<i>-3.11</i>	<i>2.27</i>

AT Effect and Leverage

Table 10D. Bottom Quintile

	Low	Med	High	L-H
α_{FF5}	-0.042	-0.357	-0.530	0.489
t-stat	<i>-0.36</i>	<i>-2.66</i>	<i>-3.75</i>	<i>2.57</i>
α_{FF6}	0.017	-0.349	-0.478	0.495
t-stat	<i>0.14</i>	<i>-2.53</i>	<i>-3.64</i>	<i>2.57</i>

AT Effect and Conservatism Drivers

- Conservative accounting is more useful for cash flows of distressed firms (eases the concerns of investors) and growth firms (lack of pledgable assets)
- Prior research (e.g., Khan and Watts, 2009) shows that γ_{AT} is greater for such firms
- So if those firms engage in aggressive accounting, this choice will hurt them more and/or surprise investors more
- Consistent with that, the negative alpha of the bottom γ_{AT} quintile (and the AT effect in general) is stronger for loser firms, growth firms, highly levered firms

AT Effect, C-Score, and Q-Score

	1	2	3	4	5
γ_{AT}	0.360		0.380		0.440
t-stat	<i>2.18</i>		<i>2.02</i>		<i>2.24</i>
C-Score		0.245	0.209		
t-stat		<i>4.31</i>	<i>3.41</i>		
Q-Score				0.169	0.034
t-stat				<i>2.17</i>	<i>0.43</i>

AT Effect, C-Score, and Q-Score

- Penman and Zhang (2002) suggest conservatism measures based on reserves created by immediate expensing of R&D and advertising expenses
- C-score measures unconditional conservatism (downward bias in book value of assets)
- Q-score, which is effectively a change in C-score, measures conditional conservatism, the same thing γ_{AT} measures
- γ_{AT} has no overlap with C-score and subsumes Q-score

Risk and Asymmetric Information

- Risk is covariance with a state variable; positive alphas of high γ_{AT} then would mean that conservative firms do badly in bad times
- Or, a mispricing explanation can state that if conservative firms do well in bad times, but investors do not appreciate that at first, the alpha can become positive as investors correct their mistake
- Most stories in the literature that relate conservatism to expected returns, talk about "information risk", which looks more like a liquidity/trading cost effect
- E.g., if conservative accounting improves "information quality" and reduces information asymmetry, then conservative firms will have lower bid-ask spread and potentially negative alphas
- Alternatively, if conservative accounting produces less value-relevant numbers, then the information asymmetry and bid-ask spread will be higher for conservative firms, and those firms will have positive alphas

Predictive Regressions Slopes

$$Ret_t - RF_t = \gamma_0 + \gamma_1 \cdot X_{t-1}$$

$X_{t-1} =$	Low	Q2	Q3	Q4	High	H-L
DEF_{t-1}	0.305	0.080	0.250	0.234	0.442	0.137
t-stat	0.42	0.14	0.39	0.40	0.65	0.58
DY_{t-1}	0.273	0.104	0.025	0.028	0.210	-0.063
t-stat	1.44	0.65	0.14	0.16	1.00	-0.57
TB_{t-1}	-0.053	-0.054	-0.104	-0.098	-0.100	-0.047
t-stat	-0.83	-1.05	-1.97	-1.85	-1.66	-2.09
$TERM_{t-1}$	0.166	-0.007	0.157	0.101	0.287	0.121
t-stat	0.91	-0.04	0.99	0.67	1.46	1.21
VIX_{t-1}	-0.005	0.026	0.023	0.035	0.037	0.042
t-stat	-0.10	0.66	0.55	0.90	0.89	2.63
TED_{t-1}	-1.194	-0.647	-0.457	-0.583	-0.897	0.297
t-stat	-0.99	-0.73	-0.48	-0.66	-0.97	0.67

Loadings on Current Shocks

$$Ret_t - RF_t = \alpha + \beta \cdot (MKT_t - RF_t) + \gamma \cdot \Delta X_t$$

$X_{t-1} =$	Low	Q2	Q3	Q4	High	H-L
ΔDEF_t	-1.002	0.759	-0.200	0.277	0.095	1.097
t-stat	-0.70	1.59	-0.39	0.53	0.12	0.61
ΔDY_t	0.189	-0.859	-0.099	0.805	2.847	2.658
t-stat	0.12	-0.72	-0.10	0.70	1.73	1.46
ΔTB_t	0.017	-0.011	0.153	-0.022	0.048	0.031
t-stat	0.09	-0.08	1.12	-0.13	0.24	0.12
$\Delta TERM_t$	0.379	-0.066	-0.090	0.188	0.105	-0.274
t-stat	1.22	-0.29	-0.38	0.69	0.25	-0.49
ΔVIX_t	-0.089	0.017	0.060	-0.018	-0.017	0.071
t-stat	-2.86	0.75	3.41	-0.71	-0.65	1.96
ΔTED_t	-0.542	0.502	-0.393	0.235	0.277	0.819
t-stat	-1.07	2.55	-1.66	0.67	0.78	1.64

Liquidity-Augmented Alphas

	Low	Q2	Q3	Q4	High	H-L
$\alpha_{+Spread}$	-0.312	0.011	0.040	0.103	0.099	0.411
t-stat	-3.93	0.19	0.88	1.50	1.36	4.31
$\alpha_{+EffTick}$	-0.312	0.018	0.045	0.102	0.124	0.436
t-stat	-3.85	0.30	0.95	1.52	1.66	4.48
α_{+Roll}	-0.303	0.021	0.047	0.116	0.123	0.426
t-stat	-3.78	0.35	1.01	1.61	1.69	4.35
α_{+Zero}	-0.307	0.020	0.051	0.118	0.116	0.424
t-stat	-3.81	0.33	1.08	1.63	1.62	4.38
$\alpha_{+Amihud}$	-0.311	0.014	0.045	0.106	0.114	0.425
t-stat	-3.90	0.24	0.97	1.55	1.55	4.43

Conclusion

- Sorting firms on the Basu (1997) measure of asymmetric timeliness of earnings (conditional conservatism) creates the six-factor alpha spread of 40 bp per month
- The spread is entirely driven by the negative alpha of the bottom AT quintile (aggressive firms)
- The AT effect persists for at least two years and gradually weakens to insignificance as time passes
- The AT effect is stronger for firms with high limits to arbitrage

Conclusion

- The mispricing explanation I propose is an earnings fixation story: investors erroneously believe that all firms are conservative, overprice aggressive firms, and then suffer losses when bad events happen
- Consistent with that, the AT effect is abnormally concentrated around:
 - Earnings announcements
 - Earnings announcements that report writedowns and goodwill impairments
 - Quarters with and right before writedowns and goodwill impairments
 - Quarters after credit rating downgrades