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Interaction of Stock Return Momentum with Earnings Measures

Ilya Figelman, CFA

Examination of the interaction of stock return momentum with various earnings measures finds that large-capitalization companies with poor past returns and high return on equity (ROE) significantly underperform the market and companies with poor past returns and low ROE. Thus, the profitability of high-ROE companies with poor past returns may have peaked. In addition, companies with poor past returns and poor earnings quality (as measured by accruals) significantly underperform the market and companies with poor past returns and good earnings quality. Therefore, the market may not fully recognize manipulation of earnings. The findings are consistent with the explanation that momentum is driven by slow reaction to news.

This examination of the interaction of stock return momentum with various measures of earnings has two goals. First, such an analysis could help investors and portfolio managers understand the dynamics of the stocks in their portfolios and thus enhance portfolio performance. Second, and as important, the analysis deepens the profession's theoretical understanding of the intermediate-term momentum phenomenon.

This study involved computing the historical performance of 25 bivariate stock quintile portfolios—stocks placed into the first set of quintiles based on their past year's return and into a second set of quintiles based on an earnings measure. The earnings measures considered are (trailing and forecast) return on equity and change in ROE (as a proxy for earnings growth) and earnings quality (defined by balance sheet accruals). I analyzed both one- and six-month holding periods for the quintile portfolios and report here the results for the one-month holding period.[1] The universe is the S&P 500 Index, and the historical time period is 1970–2004.

An Explanation of Momentum

Intermediate-term momentum in stock returns has been extensively studied since it was reported academically by Jegadeesh and Titman (1993) and subsequently examined by Chan, Jegadeesh, and Lakonishok (1996, 1999), extended by Jegadeesh and Titman (2001), and analyzed by Figelman (forthcoming 2007), among many other studies. Its fundamental cause, however, is still the subject of great debate.[2]

I believe that intermediate-term momentum is caused by the slow dissemination of news in the market and/or the slow interpretation of such news.[3] Slow dissemination of news implies that different investors obtain new information at different times, which causes the stock price to reflect this news only gradually. Slow interpretation of news implies that prices will only gradually reflect investors acting on new information even if the information is available to all investors at the same time. Therefore, a good stock return in the intermediate term is a sign of future company strength that is not fully reflected in the company's current stock price and a poor stock return in the intermediate term signifies future, unrecognized, weakness.

This article supports this explanation of momentum and examines the interaction of momentum with various earnings measures.

I focus on the interaction between momentum and ROE in this article for two reasons. There are two plausible, and not necessarily mutually exclusive, explanations for a possible interaction of momentum and ROE, change in ROE, or forecast ROE. One is that companies with poor past returns and high ROEs tend to manipulate their earnings. Because this manipulation is only gradually understood by the market, future stock returns are eventually disappointing. Another explanation is that poor past returns and a high ROE are a sign that a company's true profitability has already peaked and will deteriorate in the future. This sign also is only gradually understood by the market, which causes poor relative future stock returns.

Ilya Figelman, CFA, is a quantitative analyst at AllianceBernstein, New York City.

Data and Methodology

In this study, I used all the stocks in the S&P 500 as the universe. The reason for this choice is that using liquid large-capitalization stocks provides much greater economic insight than would using a broad universe dominated by highly illiquid small- or micro-cap stocks. The time period for the analysis is 1970–2004; I obtained monthly data from CRSP for stock returns, Standard & Poor's Compustat for earnings measures, and I/B/E/S for forecast earnings measures.

To measure the effectiveness of the interaction of momentum and various earnings measures, I used a historical bivariate quintile–based analysis.[4] The method was carried out in the following steps:

Step 1. Two separate variables were chosen.

The first variable was always the stock return for the previous months 2–12. For the S&P 500 universe, research has found that the momentum effect is strongest when using a 12-month look-back period (see Figelman forthcoming 2007). I skipped the closest month to eliminate the short-term reversal documented by Jegadeesh (1990). Skipping the nearest month is done in most momentum literature.

The second variable was one of the following earnings measures: ROE, change in ROE, forecast ROE, change in forecast ROE, earnings quality (measured by balance sheet accruals, as explained in the next section), P/E, or the price-to-book ratio.

Step 2. For each month in the historical period, the stocks were independently ranked by both variables and placed into two sets of quintiles—one quintile based on the past-return variable and another quintile based on an earnings variable. The two sets of quintiles were merged to yield 25 quintile pairs.

Step 3. For each of the 25 quintile pairs, the forward monthly relative return was computed (for each month in the historical period) by taking an equally weighted average return of all the stocks in each quintile pair relative to an equally weighted average return of all stocks in the S&P 500. (Returns included dividends.) The tables in the article report average monthly returns for a one-month holding (rebalancing) period. Ranking variables overlap from month to month.

Step 4. The historical average monthly relative return (without transaction costs) was computed for each of the 25 quintile pairs. In addition, for each quintile of the past-return variable, the historical average return on the Q1–Q5 spread is provided for the earnings variable. Also, for each quintile of the earnings variable, the historical average Q1–Q5 return is provided for the past-return variable. To be consistent with the existing literature, the returns were not annualized.

Results

Table 1, **Table 2**, and **Table 3** show the interaction of momentum with, respectively, ROE, change in ROE, and earnings quality. Calculations were carried out by the bivariate quintile methodology for a one-month holding period. For the Q1–Q5 spread, the tables provide the average return, standard deviation of return, and resulting annualized information ratio (IR).[5]

Table 1 shows that for those companies with high returns in the past year, ROE does not tend to distinguish their next month's returns. The average Q1–Q5 (based on ROE) forward monthly return in Table 1 is 0.05 percent. For companies with low past returns, however, those with high ROEs actually underperformed those with low ROEs in the future. For the lowest past-return quintile, the average Q1–Q5 (based on ROE) forward monthly return is –0.30 percent. Even though this spread is not statistically different from zero (*t*-statistic of –1.12), the results are still interesting and will be supported by further analyses in this article. Basically, among companies that have experienced poor past stock returns, those that reported high ROEs performed worse than those that reported low ROEs.

Examining Table 1 from a different perspective shows that momentum works better for companies with high ROEs. For the highest ROE quintile, the average Q1–Q5 (based on past return) forward monthly return is 0.98 percent, and for the lowest ROE quintile, it is 0.63 percent.

Table 2 shows that the interaction of momentum with the change in ROE (a proxy for earnings growth) is very similar to its interaction with the level of ROE shown in Table 1.[6] Scott et al. (2003, Table 3) showed an interaction between momentum and long-term analyst earnings growth forecasts that is consistent with our results.

Now, consider the possible explanations. If a company has experienced poor stock returns in the past year, it is a sign that the company's business is weakening. But this fact is not fully grasped by the market and thus not fully reflected in the stock price. If that company also has a high ROE, then the high ROE could be viewed as a separate signal of a company's strength and could counterbalance the effect of the poor past stock returns on future returns. But the market does not view the high ROE

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Table 1. ROE and Past Returns: One-Month Holding Period, Data for 1970–2004
(*t*-statistics in parentheses)

	Return on Equity					Q1–Q5 Spread		
Momentum (months 2–12)	Q1 (highest ROE)	Q2	Q3	Q4	Q5 (lowest ROE)	Average Return	Standard Deviation	IR (annual)
Q1 (high past return)	0.46%	0.22%	0.23%	0.31%	0.41%	0.05%	4.21%	0.04
	(2.65)	(1.38)	(1.51)	(1.80)	(2.05)	(0.23)		
Q2	0.11%	–0.03%	0.10%	–0.03%	0.20%	–0.09%	4.20%	–0.08
	(0.87)	(–0.35)	(0.98)	(–0.28)	(1.27)	(–0.45)		
Q3	–0.10%	–0.06%	–0.13%	–0.02%	0.13%	–0.23%	4.37%	–0.18
	(–0.83)	(–0.60)	(–1.37)	(–0.23)	(0.90)	(–1.06)		
Q4	–0.03%	–0.12%	–0.09%	0.09%	0.16%	–0.18%	4.37%	–0.14
	(–0.21)	(–1.12)	(–0.84)	(0.80)	(1.02)	(–0.84)		
Q5 (low past return)	–0.52%	–0.52%	–0.06%	–0.13%	–0.23%	–0.30%	5.35%	–0.19
	(–2.93)	(–2.91)	(–0.30)	(–0.80)	(–0.90)	(–1.12)		
Q1–Q5 Spread								
Average return	0.98%	0.73%	0.29%	0.44%	0.63%			
	(3.39)	(2.61)	(0.99)	(1.55)	(1.77)			
Standard deviation	5.83%	5.66%	5.90%	5.73%	7.22%			
IR (annual)	0.58	0.45	0.17	0.27	0.30			

Table 2. Change in ROE and Past Returns: One-Month Holding Period, Data for 1970–2004
(*t*-statistics in parentheses)

	Change in ROE (current reported vs. previous year's reported)					Q1–Q5 Spread		
Momentum (months 2–12)	Q1 (largest increase)	Q2	Q3	Q4	Q5 (least increase)	Average Return	Standard Deviation	IR (annual)
Q1 (high past return)	0.39%	0.38%	0.36%	0.29%	0.24%	0.14%	3.91%	0.13
	(2.14)	(2.57)	(2.31)	(1.81)	(1.27)	(0.73)		
Q2	0.18%	0.12%	0.09%	0.03%	–0.02%	0.21%	3.53%	0.20
	(1.63)	(1.12)	(0.80)	(0.26)	(–0.17)	(1.19)		
Q3	–0.17%	0.09%	0.11%	–0.18%	–0.06%	–0.11%	3.57%	–0.11
	(–1.50)	(0.90)	(1.12)	(–1.82)	(–0.50)	(–0.62)		
Q4	–0.20%	0.25%	–0.15%	–0.08%	0.04%	–0.24%	3.97%	–0.21
	(–1.43)	(2.21)	(–1.38)	(–0.81)	(0.33)	(–1.22)		
Q5 (low past return)	–0.48%	–0.14%	–0.36%	–0.14%	–0.21%	–0.27%	4.29%	–0.22
	(–2.28)	(–0.76)	(–2.00)	(–0.84)	(–0.96)	(–1.27)		
Q1–Q5 Spread								
Average return	0.87%	0.52%	0.71%	0.43%	0.45%			
	(2.74)	(1.90)	(2.49)	(1.52)	(1.36)			
Standard deviation	6.37%	5.52%	5.78%	5.69%	6.75%			
IR (annual)	0.47	0.33	0.43	0.26	0.23			

that way. Two reasons for the poor return momentum of stocks with high ROEs and poor past performance are possible: (1) A high ROE in combination with poor past returns is a sign that a company's management was aggressive in its earnings measurement, thereby compounding the effect of its poor past stock returns on future returns. (2) A high ROE in combination with poor past returns is a sign, not yet fully reflected in its stock price, that the company's true profitability has already peaked and will deteriorate in the future.

Given that Table 1 shows that companies in the lowest past-return quintile and the highest ROE quintile have the worst future average relative stock performance (–0.52 percent, *t*-statistic of –2.93) of the 25 quintile pairs, these explanations appear to be plausible. Because Table 2 reveals a similar result for change in ROE, this argument holds for both

Table 3. Earnings Quality (Inverse of Balance Sheet Accruals) and Past Returns: One-Month Holding Period, Data for 1970–2004
(*t*-statistics in parentheses)

	Earnings Quality (current reported vs. previous year's reported)					Q1–Q5 Spread		
Momentum (months 2–12)	Q1 (highest quality, lowest accruals)	Q2	Q3	Q4	Q5 (lowest quality, highest accruals)	Average Return	Standard Deviation	IR (annual)
Q1 (high past return)	0.56%	0.33%	0.33%	0.13%	0.12%	0.44%	3.29%	0.46
	(3.27)	(2.01)	(1.95)	(0.80)	(0.65)	(2.64)		
Q2	0.53%	0.14%	0.25%	–0.18%	–0.26%	0.76%	3.48%	0.75
	(3.99)	(1.24)	(2.10)	(–1.58)	(–2.11)	(4.28)		
Q3	0.41%	0.08%	–0.17%	–0.25%	–0.47%	0.88%	3.46%	0.88
	(3.38)	(0.88)	(–1.78)	(–2.74)	(–4.12)	(4.97)		
Q4	0.45%	0.22%	0.08%	–0.17%	–0.60%	1.10%	3.56%	1.07
	(3.07)	(2.11)	(0.69)	(–1.50)	(–5.12)	(6.04)		
Q5 (low past return)	0.01%	–0.18%	–0.07%	–0.27%	–0.94%	0.97%	4.50%	0.74
	(0.05)	(–0.94)	(–0.39)	(–1.53)	(–4.13)	(4.22)		
Q1–Q5 Spread								
Average return	0.54%	0.51%	0.40%	0.40%	1.06%			
	(1.65)	(1.70)	(1.25)	(1.34)	(3.07)			
Standard deviation	6.47%	5.91%	6.19%	5.84%	6.80%			
IR (annual)	0.29	0.30	0.22	0.24	0.54			

rising as well as high ROE (and for forecast ROE, as shown in **Table A1** in Appendix A, and change in forecast ROE, as shown in **Table A2**), so the result holds for trailing and forecast ROE.

The second explanation is consistent with the findings of Richardson, Sloan, Soliman, and Tuna (2005), who showed that high earnings quality, as measured by low balance sheet accruals, is a much better indicator of strong future stock performance than are measures of total earnings.[7] In a regression analysis, Richardson et al. found that high return on assets (ROA) has a negative influence on future stock returns.[8] This finding is consistent with the results of Table 1 because the average Q1–Q5 (based on ROE) forward monthly return is negative for four of the five past-return quintiles. Richardson et al. also found, however, that high earnings quality is a strong indicator of positive future returns.

Similarly, Table 3 shows that earnings quality, unlike ROE, has a strong positive effect on future stock returns for companies with both high and low past returns. Of the 25 quintile pairs, companies in the highest past-return quintile and highest earnings-quality quintile had the highest average monthly relative future return (0.56 percent) whereas stocks in the lowest past-return quintile and lowest earnings-quality quintile had the lowest average monthly relative future return (–0.94 percent). Also, for the lowest past-return quintile, the average Q1–Q5 (based on earnings quality) forward monthly return is 0.97 percent.

Examining Table 3 from a different perspective shows that momentum works better for companies with lower earnings quality (higher balance sheet accruals). For the lowest earnings-quality quintile, the average Q1–Q5 (based on past returns) forward monthly return is 1.06 percent (*t*-statistic of 3.07) and for the highest earnings-quality quintile, the average Q1–Q5 (based on past returns) forward monthly return is only about half that amount.

These results provide evidence that high balance sheet accruals tend to hide poor business performance from investors, which is probably a result of earnings manipulation by company managers. Investors learn more slowly about poor results for companies with poor earnings quality than they do for companies with good earnings quality. This enhances the momentum effect for the companies with low earnings quality. Note also that company manipulation of earnings only enhances the momentum effect; it does not completely explain it. As Tables 1–3 demonstrate, momentum exists for companies with low ROE, decreasing ROE, and high earnings quality, although it is weaker than for companies with high ROE, increasing ROE, and low earnings quality.

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Related Research

Chan et al. (1996, 1999) also analyzed the interaction of earnings growth and momentum. They showed that stocks with low past returns and high earnings growth outperform those with low past returns and low earnings growth, which is opposite to what we documented in Table 2. This discrepancy is most likely a result of the difference in stock universes used in the two analyses; we used stocks in the S&P 500, whereas Chan et al. used all stocks in the NYSE.[9] In fact, when Chan et al. reduced their universe to the largest 50 percent of stocks in the NYSE, which would still be dominated by small-cap names, their results approached our findings but did not change: Stocks with low past returns and high earnings growth slightly outperformed those with low past returns and low earnings growth.

One explanation for the difference between our results and those of Chan et al. is that perhaps earnings growth in general is more important for small-cap than for large-cap stocks. This idea makes fundamental sense because small companies tend to be less developed than large companies and many of them would need strong earnings growth to succeed. Thus, the future of the ones that have poor earnings growth is probably bleak. For large-cap companies, earnings growth may be less important. In fact, as we argued previously, when combined with poor past returns, strong past earnings growth may be a signal that a large-cap company's profitability has already peaked or that its managers were aggressive in measuring earnings. The interaction of momentum and earnings for small-cap stocks versus large-cap stocks is an interesting topic for further research.

In a separate line of research, Asness (1997) analyzed the interaction of valuation, measured as the price-to-book ratio (P/B), and momentum. He showed that momentum is stronger in stocks with high P/Bs (growth stocks) but also exists in stocks with low P/Bs (value stocks).[10] Some overlap exists between ROE and P/B quintiles because companies with high ROEs are likely to be growth companies (and those with low ROEs are likely to be value companies).[11] Yet, there are some distinct differences between ROE and P/B. On a univariate basis, P/B is a much stronger negative signal than ROE for future returns.[12] More fundamentally, ROE and P/B measure different things; P/B is driven by market valuations, but ROE is driven by reported earnings.[13]

Conclusion

In analyzing the interaction of stock return momentum with various earnings measures, I have argued that momentum is driven by the slow reaction of the market to news and that it is enhanced (but not completely explained) by company manipulation of earnings. I also argue that poor past returns combined with high ROE or increasing ROE is a sign that a company's true profitability has already peaked or that its earnings are of low quality. Thus, companies with such characteristics are likely to underperform the market in the future.

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This article qualifies for 1 PD credit.

Appendix A. Tables with Various Other Ranking Variables

Table A1. Forecast ROE and Past Returns: One-Month Holding Period, 1970–2004
(*t*-statistics in parentheses)

	Forecast ROE					Q1–Q5 Spread		
Intermediate-Term Momentum (months 2–12)	Q1 (highest forecast ROE)	Q2	Q3	Q4	Q5 (lowest forecast ROE)	Average Return	Standard Deviation	IR (annual)
Q1 (high past return)	0.37%	0.27%	0.31%	0.23%	0.22%	0.16%	4.55%	0.12
	(1.76)	(1.73)	(1.88)	(1.26)	(0.99)	(0.66)		
Q2	0.08%	–0.13%	0.05%	–0.05%	0.24%	–0.16%	3.75%	–0.15
	(0.61)	(–1.24)	(0.48)	(–0.42)	(1.45)	(–0.80)		
Q3	–0.27%	–0.19%	0.04%	–0.04%	0.12%	–0.39%	3.81%	–0.36
	(–2.18)	(–1.78)	(0.39)	(–0.38)	(0.85)	(–1.91)		
Q4	–0.18%	–0.12%	–0.07%	0.03%	0.13%	–0.31%	3.97%	–0.27
	(–1.26)	(–1.08)	(–0.64)	(0.30)	(0.88)	(–1.43)		
Q5 (low past return)	–0.51%	–0.70%	–0.13%	0.19%	–0.10%	–0.41%	5.33%	–0.27
	(–2.55)	(–3.53)	(–0.62)	(0.99)	(–0.43)	(–1.43)		
Q1–Q5 Spread								
Average return	0.88%	0.96%	0.44%	0.04%	0.33%			
	(2.79)	(3.27)	(1.36)	(0.11)	(0.88)			
Standard deviation	5.89%	5.48%	5.97%	6.04%	6.95%			
IR (annual)	0.52	0.61	0.25	0.02	0.16			

Table A2. Change in Forecast ROE and Past Returns: One-Month Holding Period, 1970–2004
(*t*-statistics in parentheses)

	Change in Forecast ROE (current forecast vs. previous year's forecast)					Q1–Q5 Spread		
Intermediate-Term Momentum (months 2–12)	Q1 (largest increase)	Q2	Q3	Q4	Q5 (least increase)	Average Return	Standard Deviation	IR (annual)
Q1 (high past return)	0.27%	0.22%	0.31%	0.24%	0.59%	–0.26%	4.30%	–0.21
	(1.43)	(1.29)	(1.79)	(1.17)	(2.37)	(–1.10)		
Q2	0.19%	0.02%	–0.15%	0.05%	–0.20%	0.39%	4.08%	0.33
	(1.48)	(0.14)	(–1.20)	(0.38)	(–1.00)	(1.78)		
Q3	–0.02%	–0.17%	–0.07%	0.10%	–0.10%	0.06%	3.59%	0.06
	(–0.12)	(–1.40)	(–0.64)	(0.87)	(–0.80)	(0.33)		
Q4	–0.09%	–0.16%	–0.10%	0.17%	–0.24%	0.10%	3.97%	0.09
	(–0.49)	(–1.09)	(–0.74)	(1.37)	(–1.81)	(0.48)		
Q5 (low past return)	–0.88%	0.32%	–0.16%	–0.27%	–0.27%	–0.62%	5.00%	–0.43
	(–2.99)	(1.15)	(–0.70)	(–1.51)	(–1.21)	(–2.31)		
Q1–Q5 Spread								
Average return	1.11%	–0.06%	0.46%	0.55%	0.79%			
	(2.86)	(–0.18)	(1.38)	(1.79)	(2.10)			
Standard deviation	7.20%	6.73%	6.18%	5.70%	6.92%			
IR (annual)	0.54	–0.03	0.26	0.34	0.40			

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Table A3. P/B and Past Returns: One-Month Holding Period, 1970–2004
(*t*-statistics in parentheses)

	Price to Book					Q1–Q5 Spread		
Intermediate-Term Momentum (months 2–12)	Q1 (highest P/B, growth)	Q2	Q3	Q4	Q5 (lowest P/B, value)	Average Return	Standard Deviation	IR (annual)
Q1 (high past return)	0.38%	0.23%	0.32%	0.30%	0.71%	–0.32%	5.71%	–0.19
	(2.02)	(1.51)	(2.16)	(1.80)	(3.02)	(–1.11)		
Q2	0.00%	–0.14%	0.07%	0.14%	0.45%	–0.45%	4.24%	–0.37
	(–0.01)	(–1.34)	(0.65)	(1.15)	(3.05)	(–2.16)		
Q3	–0.35%	–0.12%	–0.22%	0.12%	0.31%	–0.66%	4.24%	–0.54
	(–2.60)	(–1.27)	(–2.33)	(1.22)	(2.38)	(–3.12)		
Q4	–0.25%	–0.26%	–0.01%	0.02%	0.35%	–0.60%	4.72%	–0.44
	(–1.50)	(–2.34)	(–0.08)	(0.20)	(2.61)	(–2.58)		
Q5 (low past return)	–0.86%	–0.50%	–0.25%	–0.15%	0.05%	–0.94%	6.04%	–0.54
	(–3.19)	(–2.46)	(–1.38)	(–0.87)	(0.23)	(–3.12)		
Q1–Q5 Spread								
Average return	1.23%	0.73%	0.57%	0.45%	0.69%			
	(3.40)	(2.52)	(2.06)	(1.61)	(1.96)			
Standard deviation	7.30%	5.86%	5.61%	5.60%	7.03%			
IR (annual)	0.59	0.43	0.35	0.28	0.34			

Table A4. P/E and Past Returns: One-Month Holding Period, 1970–2004
(*t*-statistics in parentheses)

	Price to Earnings					Q1–Q5 Spread		
Intermediate-Term Momentum (months 2–12)	Q1 (highest P/E, growth)	Q2	Q3	Q4	Q5 (lowest P/E, value)	Average Return	Standard Deviation	IR (annual)
Q1 (high past return)	0.25%	0.27%	0.41%	0.33%	0.40%	–0.15%	5.71%	–0.09
	(1.26)	(1.84)	(2.67)	(1.90)	(1.91)	(–0.54)		
Q2	0.06%	–0.19%	–0.11%	0.23%	0.45%	–0.39%	4.24%	–0.30
	(0.39)	(–1.67)	(–1.03)	(2.11)	(3.46)	(–1.76)		
Q3	–0.11%	–0.31%	–0.13%	–0.01%	0.27%	–0.38%	4.24%	–0.31
	(–0.75)	(–2.92)	(–1.35)	(–0.14)	(2.38)	(–1.81)		
Q4	–0.02%	–0.37%	–0.15%	0.11%	0.27%	–0.29%	4.72%	–0.24
	(–0.13)	(–2.98)	(–1.42)	(1.05)	(2.39)	(–1.41)		
Q5 (low past return)	–0.53%	–0.41%	–0.25%	–0.21%	0.02%	–0.55%	6.04%	–0.36
	(–2.01)	(–1.93)	(–1.44)	(–1.32)	(0.08)	(–2.08)		
Q1–Q5 Spread								
Average return	0.78%	0.68%	0.66%	0.55%	0.38%			
	(2.12)	(2.29)	(2.39)	(1.95)	(1.20)			
Standard deviation	7.46%	5.97%	5.53%	5.65%	6.44%			
IR (annual)	0.36	0.39	0.41	0.34	0.21			

Notes

1. Tables reporting average monthly returns for a six-month holding (rebalancing) period are available as supplemental material in the *FAJ* area of www.cfapubs.org.
2. A good article on momentum in general is Scowcroft and Sefton (2005).
3. This explanation is consistent with the behavioral models of Barberis, Shleifer, and Vishny (1998), Hong and Stein (1999), and Hong, Lim, and Stein (2000), which are based on investor underreaction to news. Scott, Stumpp, and Xu (2003) also argued that slow market reaction to news drives intermediate-term momentum.
4. This methodology was also used by Asness (1997) and by Scott et al. (2003).
5. All these interaction effects are stable with respect to the forward holding period; thus, the numbers for the six-month holding period (see Note 1) are very similar to the corresponding numbers in Tables 1–3.
6. Tables reporting the interaction of momentum with sell-side analyst forecast ROE and change in forecast ROE are available as supplemental material in the *FAJ* area of www.cfapubs.org. These tables show that the effects of forecast ROE and of change in forecast ROE on momentum are also similar to the effect of the level of ROE.
7. Balance sheet accruals measure noncash earnings and were defined by Richardson et al. (2005) as change in working capital plus change in net noncurrent operating assets plus change in net financial assets—all divided by total average assets. Specifically: Change in working capital = Current operating assets – Current operating liabilities; Current operating assets = Current assets – Cash and short-term investments; Current operating liabilities = Current liabilities – Debt in current liabilities; Net noncurrent operating assets = Noncurrent operating assets – Noncurrent operating liabilities; Noncurrent operating assets = Total assets – Current assets – Investments and advances; Noncurrent operating liabilities = Total liabilities – Current liabilities – Long-term debt; Net financial assets = Financial assets – Financial liabilities; Financial assets = Short-term investments + Long-term investments; Financial liabilities = Long-term debt + Debt in current liabilities + Preferred stock.
8. In this analysis, ROA is very similar to ROE because ROA is dominated by the numerator—that is, earnings.
9. Most academic articles on momentum analyze a comprehensive stock universe dominated by highly illiquid micro-cap stocks. This universe is not relevant for institutional investors because (1) the majority of the stocks in this universe are too small for them to invest in and (2) the historical prices of these stocks can be quite different from their executable prices.
10. **Table A3** in Appendix A provides similar results. **Table A4** shows the interaction of momentum and P/E.
11. An overlap also exists for change in ROE, forecast ROE, and change in forecast ROE.
12. For all momentum quintiles, the Q1–Q5 spread between high P/B and low P/B is significantly stronger (more negative) than the Q1–Q5 spread between high ROE and low ROE (consider Table A3 versus Table 1).
13. The difference between the efficacy of P/B and earnings growth would be much more significant in small-cap stocks. As mentioned, Chan et al. (1999) found that in a stock universe dominated by small-cap names, past earnings growth is positively related to future returns. It is well known (e.g., see Fama and French 1993), however, that small-cap growth stocks underperform small-cap value stocks (where growth versus value is based on P/B).

References

Asness, Clifford S. 1997. "The Interaction of Value and Momentum Strategies." *Financial Analysts Journal*, vol. 53, no. 2 (March/April):29–36.

Barberis, Nicholas, Andrei Shleifer, and Robert Vishny. 1998. "A Model of Investor Sentiment." *Journal of Financial Economics*, vol. 49, no. 3 (September):307–343.

Chan, Louis K.C., Narasimhan Jegadeesh, and Josef Lakonishok. 1996. "Momentum Strategies." *Journal of Finance*, vol. 51, no. 5 (December):1681–1713.

———. 1999. "The Profitability of Momentum Strategies." *Financial Analysts Journal*, vol. 55, no. 6 (November/December):80–90.

Fama, Eugene F., and Kenneth R. French. 1993. "Common Risk Factors in the Returns on Stocks and Bonds." *Journal of Financial Economics*, vol. 33, no. 1 (February):3–56.

Figelman, Ilya. Forthcoming 2007. "Stock Return Momentum and Reversal: A Comprehensive Study." *Journal of Portfolio Management*.

Hong, Harrison, and Jeremy C. Stein. 1999. "A Unified Theory of Underreaction, Momentum Trading, and Overreaction in Asset Markets." *Journal of Finance*, vol. 54, no. 6 (December): 2143–2184.

Hong, Harrison, Terence Lim, and Jeremy C. Stein. 2000. "Bad News Travels Slowly: Size, Analyst Coverage, and Profitability of Momentum Strategies." *Journal of Finance*, vol. 55, no. 1 (February):265–295.

Jegadeesh, Narasimhan. 1990. "Evidence of Predictable Behavior of Security Returns." *Journal of Finance*, vol. 45, no. 3 (July):881–898.

Jegadeesh, Narasimhan, and Sheridan Titman. 1993. "Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency." *Journal of Finance*, vol. 48, no. 1 (March):65–91.

———. 2001. "Profitability of Momentum Strategies: An Evaluation of Alternative Explanations." *Journal of Finance*, vol. 56, no. 2 (April):699–720.

Richardson, Scott A., Richard G. Sloan, Mark T. Soliman, and Irem Tuna. 2005. "Accrual Reliability, Earnings Persistence and Stock Prices." *Journal of Accounting and Economics*, vol. 39, no. 3 (September):437–485.

Scott, James, Margaret Stumpp, and Peter Xu. 2003. "News, Not Trading Volume, Builds Momentum." *Financial Analysts Journal*, vol. 59, no. 2 (March/April):45–54.

Scowcroft, Alan, and James Sefton. 2005. "Understanding Momentum." *Financial Analysts Journal*, vol. 61, no. 2 (March/April):64–82.

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