

It's Not You, It's Your Fundamentals

The relationship between price momentum and business momentum



This paper examines whether improvements in company fundamentals - measured through earnings acceleration, earnings surprises, and analyst estimate revisions - predict future equity returns and provide information beyond traditional price momentum. Across US and non-US large- and small-cap universes, business momentum demonstrates broad predictive power. The findings indicate that business and price momentum are related but distinct, and that combining them can produce higher excess returns and information ratios than price momentum alone, though the optimal mix varies by market.

Key Findings

- Business or fundamental momentum measures have historically provided a persistent and pervasive source of predictive power across global equity markets.
- Price momentum and business momentum are complementary - not substitutes.
- Combining price momentum with business momentum can improve portfolio results above standard momentum strategies.



Introduction

Traditional momentum investing has long been one of the most persistent sources of excess return in global equity markets. By systematically buying stocks that have outperformed over the prior year, investors have historically benefited from the persistence of trend and perhaps the market's tendency to underreact to new information.

But stock prices are only one manifestation of momentum. Businesses themselves can experience momentum. Earnings accelerate, analysts revise forecasts upward, profitability improves, and companies repeatedly exceed expectations. If markets are slow to fully incorporate these fundamental developments, then improvements in business fundamentals should also predict future returns.

This naturally raises three questions:

- Do improving business fundamentals predict future stock returns?
- Are these signals simply another way of measuring price momentum¹?
- Or do business momentum and price momentum capture different information that can be combined to build better portfolios?

In this paper, we examine several measures of business momentum—including analyst estimate revisions, earnings surprises, and multi-factor measures of improving fundamentals—across US and non-US equity markets. We find that business momentum is a robust predictor of future returns, that it can provide information beyond traditional price momentum, and that combining the two can create stronger portfolios.

Literature Review: Measuring Business Momentum

Academic research has identified several mechanisms through which improving business fundamentals predict future stock returns. While the methodologies differ, they generally fall into three broad categories: earnings acceleration/business improvement, earnings surprises, and analyst estimate revisions. Together, these measures attempt to identify improving businesses before those improvements are fully reflected in stock prices.

Despite broad agreement that business fundamentals matter, an important debate remains unresolved: Does business momentum simply explain the traditional price momentum premium, or do price momentum and business momentum capture different sources of information? The existing literature offers compelling evidence on both sides of this question, providing the motivation for our analysis.

¹ Price momentum strategies focus on buying stocks that have outperformed (relative to a universe of stocks) over the trailing year ex- the most recent month. This performance is typically measured by total return and thus involves both price and dividend growth. Carhart (1997), and Jegadeesh and Titman (1993).

Earnings Acceleration/Business Improvement

Huang, Zhang, and Zhou (2021) introduced one of the broadest measures of business momentum through a metric called Fundamental Implied Return (FIR). Rather than relying on a single accounting metric, they combine seven measures of profitability, earnings, accruals, and shareholder payouts across multiple historical horizons² to estimate a one-month forward return. Their "Twin Momentum" framework demonstrated that portfolios combining price momentum with fundamental momentum generated returns that exceeded either signal individually, suggesting that business momentum and price momentum each contain unique information about future stock returns.

Chan, Jegadeesh, and Lakonishok (1996) documented that markets underreact to earnings news. They studied several measures of business momentum—including Standardized Unexpected Earnings (SUE)³, announcement-period abnormal returns, and analyst estimate revisions—and found that both earnings-related signals and traditional price momentum independently predict future returns. Their conclusion was that neither signal fully subsumes the other, implying that both contribute unique information to the investment process.

Snigaroff and Wroblewski (2021) proposed a complementary approach through an Earnings-Growth-to-Price (EG/P) factor, relating improvements in earnings directly to company valuation. Rather than measuring the market's reaction to earnings announcements, EG/P captures the magnitude of earnings growth relative to price, providing another perspective on how improving business fundamentals influences future returns⁴.

Earnings Surprises

A second body of research examines how investors react to new information released during earnings announcements.

Novy-Marx (2015) challenged the interpretation of Chan, Jegadeesh, and Lakonishok (1996). Using SUE⁵ and short-term announcement return measure (CAR3), he argued that earnings momentum largely subsumes traditional price momentum once properly measured. His results suggested that much of what investors attribute to price momentum may reflect delayed market reactions to improving business fundamentals.

These conflicting conclusions leave an important question unanswered: Does business momentum explain price momentum, or do the two capture distinct dimensions of investor underreaction?

² We apply a 90-day lag to each fundamental variable to ensure the underlying financial information would have been publicly available at the portfolio-formation date, thereby avoiding look-ahead bias. Because reporting timelines and data availability can vary meaningfully across countries and companies, the 90-day lag provides a conservative convention for global back tests.

³ Standardized Unexpected Earnings is measured as the most recent year-over-year change in quarterly EPS scaled by the standard deviation of YoY EPS changes over the prior eight earnings announcements.

⁴ We construct a similar EG/P factor, as the ratio of (Change in quarterly EPS) to (prior quarter end price) and note that if the shares outstanding are constant across consecutive quarters, then this measure becomes (Change in \$Earnings) / Market Cap.

⁵ Novy-Marx (2015) requires at least six announcements over the two-year return window for a stock to be included.



More recently, Gérard and Jehl (2025) extended the earnings announcement literature by demonstrating that the cumulative market reaction across multiple earnings announcements provides stronger predictive power than focusing solely on the most recent announcement. Their findings suggest that investors continue incorporating earnings information over several quarters, motivating our construction of CAR3_12M and CAR5_12M⁶ measures that aggregate announcement reactions across the trailing year.

Analyst Estimate Revisions

A third branch of the literature focuses on changes in market expectations rather than realized operating performance.

Chan, Jegadeesh, and Lakonishok (1996) found that six-month trends in analyst earnings revisions (REV6), generated economically meaningful excess returns, demonstrating that analysts—and ultimately investors—adjust expectations gradually as new information becomes available. Building on this work, we also evaluate FactSet's shorter-frequency 75-day EPS revision breadth measure, which captures the balance between upward and downward analyst revisions over a shorter horizon⁷. Together, these measures assess whether changes in forward earnings expectations provide incremental information beyond traditional price momentum.

Our Contribution

This paper builds upon these complementary strands of research by evaluating representative measures of earnings acceleration/business improvement, earnings surprises, and analyst estimate revisions within a unified framework. We compare their predictive ability across US and non-US equity markets, examine whether business momentum subsumes traditional price momentum (and vice versa), and test whether combining both sources of information produces superior portfolio outcomes.

In doing so, we revisit the debate between Chan, Jegadeesh, and Lakonishok (1996) and Novy-Marx (2015) using a broader set of business momentum measures than either study considered. Rather than asking whether any single measure explains momentum, we ask a more practical question for investors: Which measures of business momentum provide the greatest incremental value to a traditional momentum strategy?

These studies provide several plausible ways to measure business momentum. We next evaluate representative signals from each category within a common empirical framework.

⁶ CAR3_12M, and CAR5_12M are the cumulative excess return around the earnings announcement from one day before through one day after the announcement (For CAR5_12M: from one day before through three days after the announcement). We find these 12M versions to have stronger signals compared to their most recent announcement analogs.

⁷ Calculated as (the number of upward EPS revisions minus the number of downward EPS revisions) divided by the total number of EPS estimates.



Selected Measures of Business Momentum

Drawing from the academic literature and FactSet's quantitative factor library, we evaluated a broad set of business momentum measures spanning earnings acceleration/business improvement, earnings surprises, and analyst estimate revisions (see Appendix 3 for the complete list). To maintain a parsimonious framework, we focus on the five signals that demonstrate the strongest and most consistent predictive power across our test universes.

These signals represent the three primary dimensions of business momentum:

Earnings Acceleration/Business Improvement

Fundamental Implied Return (FIR) measures broad improvements in a company's underlying fundamentals by combining profitability, earnings, accrual, gross profitability, and shareholder payout variables across multiple reporting horizons into a single one-month expected return forecast (Huang, Zhang, and Zhou, 2021).

Earnings Surprises

CAR3_12M measures the cumulative market-relative return from one day before through one day after each earnings announcement, aggregated across all announcements over the trailing twelve months.

CAR5_12M extends the measurement window through three days after each earnings announcement and aggregates the reactions across the trailing twelve months, capturing a broader post-announcement response (Gérard and Jehl, 2025).

Analyst Estimate Revisions

REV6 measures the six-month trend in consensus earnings estimate revisions, capturing gradual improvements in analyst expectations (Chan, Jegadeesh, and Lakonishok, 1996).

eps_est_rev_75d is FactSet's estimate revision breadth measure, calculated as (the number of upward EPS revisions minus the number of downward EPS revisions) divided by the total number of EPS estimates over the previous 75 days. This signal captures shorter-term changes in analyst sentiment toward future earnings.

Sample Universes

We evaluate each business momentum signal across four broad equity universes: US Large Cap (Russell 1000 proxy), US Small Cap (Russell 2000 proxy), Non-US Large Cap (MSCI ACWI ex-US), and Non-US Small Cap (MSCI ACWI ex-US Small Cap). The US analysis spans July 2001 through June 2026, while the non-US analysis covers July 2006 through June 2026. Unless otherwise noted, portfolios are rebalanced monthly and market-cap weighted.



Information Coefficients for Business Momentum

Table 1 evaluates the standalone performance of each business momentum signal across four major equity universes⁸. Each signal demonstrates positive predictive ability, generating positive mean information coefficients and annualized excess returns in every market examined. This provides initial evidence that improvements in business fundamentals consistently precede future stock outperformance across both US and non-US equities.

Several observations stand out. First, analyst estimate revision measures emerge as the strongest and most consistent predictors of future returns. In particular, `eps_est_rev_75d` produces the highest information ratio in all four universes and statistically significant information coefficients in all four universes, suggesting that changes in analyst expectations contain substantial information about future stock performance.

Second, while all five measures demonstrate predictive power, their effectiveness varies by market and capitalization segment. Information coefficients are generally strongest within the small-cap universes, where mean ICs range from approximately 0.02 to 0.03 and statistical significance is consistently high. These results suggest that business momentum signals may be particularly valuable in market segments where information diffuses more gradually.

Finally, the consistency of positive excess returns, information coefficients, and information ratios across all four universes indicates that business momentum is not confined to a single market or region. Instead, the evidence suggests that improving business fundamentals represent a broad and persistent source of return predictability worthy of further examination. Additional performance and risk statistics are presented in Appendix 4.

⁸ Long-only portfolios comprising the top quintile of stocks ranked by each signal. Market-capitalization weighted.

Table 1: Information Coefficients for Business Momentum Signals

US: July 2001 – June 2026, Non-US: July 2006 – June 2026

	Annualized Excess Return	Information Ratio	Mean IC	T-Stat (Mean IC)
Russell 1000 Proxy				
FIR	3.26%	0.42	0.018	2.50
REV6	3.82%	0.52	0.011	1.69
eps_est_rev_75d	2.94%	0.56	0.019	3.92
Car3_12M	1.96%	0.30	0.013	3.28
Car5_12M	0.65%	0.10	0.015	3.58
Russell 2000 Proxy				
FIR	2.45%	0.26	0.022	3.09
REV6	4.05%	0.63	0.016	3.74
eps_est_rev_75d	3.81%	0.92	0.017	5.26
Car3_12M	1.58%	0.35	0.015	5.35
Car5_12M	1.52%	0.33	0.016	5.15
MSCI ACWI ex-US				
FIR	1.49%	0.29	0.013	2.02
REV6	3.73%	0.57	0.020	3.28
eps_est_rev_75d	3.39%	0.84	0.025	7.60
Car3_12M	2.15%	0.49	0.017	5.76
Car5_12M	3.03%	0.76	0.017	5.12
MSCI ACWI ex-US Small Cap				
FIR	4.11%	0.32	0.017	2.67
REV6	3.64%	0.67	0.024	5.70
eps_est_rev_75d	5.52%	1.32	0.031	12.08
Car3_12M	1.69%	0.43	0.020	7.26
Car5_12M	2.04%	0.51	0.020	6.89

Business Momentum Within Price Momentum

The results in Table 1 establish that each of the five business momentum signals possesses meaningful standalone predictive power. However, strong standalone performance does not necessarily imply that these signals contain information beyond traditional price momentum. If business momentum simply reflects the same information already captured by price momentum, then combining the two should provide little additional benefit.

Novy Marx (2015) argues that business momentum subsumes the momentum premium⁹. We, however, find the result more nuanced. The key question, therefore, is not whether business momentum works, but whether it provides incremental information beyond traditional momentum.

⁹ Novy-Marx's (2015) main result arises from regression spanning tests, relative to Fama-French factors, and is displayed in table 2 of his paper. We also perform momentum factor spanning tests in Appendix 2 by replicating that table and find that momentum does indeed contain incremental information not captured by SUE and CAR3. This contradicts the result of Novy-Marx (2015).

To address this question, we follow the sequential-sort methodology of George and Hwang (2004). We first identify the top quintile of stocks ranked by 12M1¹⁰ price momentum and then partition those stocks into the top and bottom halves based on each business momentum signal. If the resulting return spread between the two groups is positive and economically meaningful, the business momentum signal contributes information beyond that already captured by price momentum. Conversely, a spread near zero indicates that the business momentum signal is largely subsumed by traditional momentum.

Table 2: Business Momentum Within Top Quintile Price Momentum

US: July 2001 – June 2026, Non-US: July 2006 – June 2026

	Top 50% (Average Monthly Return)	Bottom 50% (Average Monthly Return)	Top 50% - Bottom 50% (Average Monthly Return)	T-Stat (Top 50% - Bottom 50%)
Russell 1000 Proxy				
FIR	1.04%	1.04%	0.00%	0.01
REV6	1.16%	0.90%	0.26%	1.44
eps_est_rev_75d	1.23%	0.74%	0.49%	3.09
Car3_12M	1.21%	0.82%	0.39%	2.60
Car5_12M	1.10%	0.95%	0.15%	0.96
Russell 2000 Proxy				
FIR	1.19%	1.06%	0.13%	0.68
REV6	1.36%	0.91%	0.45%	2.95
eps_est_rev_75d	1.23%	0.99%	0.24%	1.86
Car3_12M	1.13%	1.12%	0.01%	0.08
Car5_12M	1.12%	1.14%	-0.02%	-0.20
MSCI ACWI ex-US				
FIR	0.96%	0.71%	0.25%	1.46
REV6	0.99%	0.72%	0.27%	1.66
eps_est_rev_75d	1.10%	0.60%	0.50%	3.85
Car3_12M	0.96%	0.73%	0.23%	1.67
Car5_12M	0.97%	0.71%	0.26%	2.31
MSCI ACWI ex-US Small Cap				
FIR	1.66%	0.97%	0.69%	1.49
REV6	1.34%	0.98%	0.36%	3.09
eps_est_rev_75d	1.47%	0.91%	0.56%	6.59
Car3_12M	1.14%	1.50%	-0.36%	-0.78
Car5_12M	1.13%	1.51%	-0.38%	-0.83

Table 2 evaluates whether business momentum provides incremental information after first selecting stocks with the strongest price momentum. If business momentum merely reflects the same information already contained in price momentum, then little differentiation should remain within the highest momentum stocks. Instead, several business momentum measures continue to generate economically meaningful return spreads, indicating that price momentum does not fully capture all dimensions of improving business fundamentals¹¹.

¹⁰ 12M1 represents the trailing year ex-the most recent month.

¹¹ This comparison is akin to testing if the conditional expectation of the FIR spread given Top Q Momentum is positive: $E[\text{FIR Return Spread} \mid \text{Top Q Momentum}] > 0$.

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The strongest evidence comes from analyst estimate revision signals. Both REV6 and eps_est_rev_75d consistently identify superior performers within the highest momentum portfolios across multiple equity universes. This suggests that changes in analyst expectations continue to convey valuable information even after a stock has already demonstrated strong price momentum. Among stocks exhibiting similar price trends, those experiencing the greatest upward revisions to future earnings continue to outperform.

Other measures exhibit greater overlap with traditional momentum. Fundamental Implied Return (FIR) contributes relatively little incremental value within the Russell 1000 Proxy, while the announcement-based measures (CAR3_12M and CAR5_12M) produce more mixed results across markets. These findings suggest that not all measures of business momentum capture equally independent information. Some appear to reflect information already incorporated into price momentum, whereas others identify improvements in business fundamentals that the market has yet to fully recognize.

While these results demonstrate that several business momentum signals add value within traditional momentum portfolios, they do not fully resolve the relationship between the two. Business momentum may still subsume price momentum if price momentum fails to provide incremental information once business momentum has already been considered. To evaluate this possibility, we reverse the sorting sequence in Table 3 by first selecting stocks based on business momentum and then testing whether price momentum continues to differentiate future returns.

Does Price Momentum Add Information Beyond Business Momentum?

Table 3 reverses the sequential sorting process by first selecting stocks with the strongest business momentum and then partitioning those stocks according to traditional price momentum. If business momentum fully explains the momentum premium, then little or no return spread should remain after controlling for business fundamentals. Conversely, if price momentum continues to differentiate returns, it would indicate that the two signals capture complementary information.

Across the large cap equity universes, price momentum frequently continues to differentiate returns after conditioning on business momentum, although the results vary materially by signal and market. In some cases, particularly within earnings announcement and estimate revision portfolios, price momentum retains meaningful incremental value. In others, the remaining spread is small or negative, indicating greater overlap between the signals. In the small cap universes, the results appear to differ between the US and non-US. For the Russell 2000 proxy, the momentum premium is largely accounted for in the business momentum sorts (all t-stats for the momentum spread are insignificant). However, within the MSCI ACWI ex-US Small Cap universe, the momentum premium survives the initial business momentum sorts, and all t-stats for the momentum spreads are statistically significant. This pattern is consistent with the view that markets incorporate information gradually through multiple channels, but that the information captured by price and business momentum is not uniformly distinct.

Table 3: Momentum Spreads Within Top Quintile Business Momentum

US: July 2001 – June 2026, Non-US: July 2006 – June 2026

	Top 50% Momentum (Average Monthly Return)	Bottom 50% Momentum (Average Monthly Return)	Top 50% - Bottom 50% Momentum (Average Monthly Return)	T-Stat (Top 50% - Bottom 50%)
Russell 1000 Proxy				
FIR	1.03%	1.35%	-0.32%	-1.38
REV6	1.22%	1.06%	0.16%	0.76
eps_est_rev_75d	1.13%	1.17%	-0.04%	-0.20
Car3_12M	1.26%	0.85%	0.41%	1.65
Car5_12M	1.19%	0.79%	0.40%	1.72
Russell 2000 Proxy				
FIR	1.14%	1.40%	-0.26%	-1.06
REV6	1.44%	1.31%	0.13%	0.65
eps_est_rev_75d	1.27%	1.37%	-0.10%	-0.58
Car3_12M	1.16%	1.18%	-0.02%	-0.08
Car5_12M	1.14%	1.19%	-0.05%	-0.24
MSCI ACWI ex-US				
FIR	0.92%	0.57%	0.36%	1.65
REV6	1.10%	0.81%	0.29%	1.24
eps_est_rev_75d	1.06%	0.72%	0.34%	1.57
Car3_12M	0.88%	0.71%	0.17%	0.71
Car5_12M	1.02%	0.72%	0.31%	1.35
MSCI ACWI ex-US Small Cap				
FIR	1.64%	0.47%	1.18%	2.24
REV6	1.33%	0.77%	0.56%	2.94
eps_est_rev_75d	1.41%	0.91%	0.49%	2.75
Car3_12M	1.08%	0.66%	0.42%	2.21
Car5_12M	1.12%	0.68%	0.44%	2.28

Business Momentum and Price Momentum are Complementary

Taken together, Tables 2 and 3 provide a more complete picture of the relationship between business momentum and traditional price momentum than either analysis alone.

The academic literature has offered two competing perspectives. Chan, Jegadeesh, and Lakonishok (1996) concluded that earnings-related signals and price momentum each contain independent information, whereas Novy-Marx (2015) argued that earnings momentum largely subsumes traditional price momentum. Our findings suggest that the relationship is more nuanced than either characterization alone.

Rather than behaving as a single phenomenon, business momentum consists of several distinct signals that differ in the degree to which they overlap with price momentum. Analyst estimate revision measures, particularly `eps_est_rev_75d`, consistently retain meaningful predictive power within momentum portfolios. At the same time, the results indicate that some of the information in these signals overlaps with traditional price momentum. The degree of overlap is not uniform: FIR exhibits limited incremental value in some cross-sectional tests, while the earnings announcement measures produce mixed results across markets.

The practical implication is that the value of combining business momentum with price momentum depends not simply on adding more factors, but on selecting measures that contribute independent information. Signals that remain predictive, after controlling for price momentum, are more likely to improve stock selection than signals that largely duplicate information already reflected in prices.

These findings provide the foundation for the composite strategies examined in the following section. If the two sources of momentum capture different information, the next step is to determine whether their return patterns are sufficiently differentiated to justify combining them in a single ranking framework.

Business Momentum and Price Momentum

The sequential-sort results indicate that business momentum and price momentum often contain incremental information, but the degree of overlap varies by signal and market. Before combining the two, it is therefore useful to examine how closely their realized excess returns have moved together over time.

Table 4 reports the correlation between the monthly excess returns of each business momentum strategy and traditional 12-minus-1 price momentum. This analysis complements, but is distinct from, sequential sorting. Sequential sorts measure whether the signals differentiate between stocks cross-sectionally after controlling for one another. Excess return correlations address a different question: whether the strategies tend to outperform and underperform at the same points in time. A signal can exhibit limited incremental cross-sectional power within a momentum portfolio while still providing time-series diversification when combined with momentum.

Table 4: Momentum and Business Momentum Excess Return Correlations

US: July 2001 – June 2026, Non-US: July 2006 – June 2026

Correlations to 12M1 Momentum	R1000 Proxy	R2000 Proxy	MSCI ACWI ex-US	MSCI ACWI ex-US Small Cap
FIR	-0.13	-0.04	-0.04	0.73
REV6	0.47	0.28	0.49	-0.12
eps_est_rev_75d	0.59	0.27	0.52	-0.38
Car3_12M	0.35	0.48	0.42	-0.35
Car5_12M	0.35	0.51	0.49	-0.30

Lower or negative correlations suggest greater potential for diversification when signals are combined. Higher correlations indicate greater overlap and, therefore, less potential benefit from blending the signals mechanically.

The results show that the relationship between business momentum and price momentum varies meaningfully across both signals and market segments. In the Russell 1000 Proxy, Russell 2000 Proxy, and MSCI ACWI ex-US universes, FIR is slightly negatively correlated with price momentum, while the estimate revision and earnings announcement signals are moderately positively correlated. In MSCI ACWI ex-US Small Cap, the pattern reverses: FIR has a relatively high positive correlation with price momentum, while the revision and earnings announcement measures are negatively correlated.

These differences reinforce an important portfolio-construction principle: The most valuable signal to combine with price momentum is not necessarily the strongest standalone performer. It is the signal that offers the best balance of predictive power and independent information. Table 4 therefore helps explain why the potential benefit of combining price and business momentum differs across markets and why no single business momentum measure is likely to be the optimal complement in every universe. Correlation alone does not determine the preferred combination—standalone predictive power also matters—but it provides an important indication of where diversification benefits may be available.

Constructing the Composite Signal

To evaluate the investment implications, we constructed a combined price-and-business-momentum strategy. The underlying signals are measured on different scales, so each signal is first standardized into a z-score and then combined via a weighted average to produce the composite price-and-business momentum portfolio. The weights used are 50% price momentum and 50% business momentum split equally to earnings acceleration/business improvement, analyst estimate revisions, and earnings surprise¹². Portfolios consist of the top quintile of stocks based on each ranking and are market cap weighted. Tables 5 through 8 report the resulting performance and risk statistics for the Russell 1000 Proxy, Russell 2000 Proxy, MSCI ACWI ex-US, and MSCI ACWI ex-US Small Cap universes, respectively.

Momentum and Business Momentum – Russell 1000 Proxy

Performance & Risk Statistics, US: July 2001 – June 2026, Non-US: July 2006 – June 2026

	Annualized Return	Annualized Excess Return	Tracking Error	Standard Deviation	Sharpe Ratio	Information Ratio	Up Market Capture	Down Market Capture
univ	9.80%	0.00%	0.00%	15.07%	0.54	-	1.00	1.00
t12m1	11.36%	1.56%	8.40%	16.61%	0.58	0.19	1.03	0.94
comp_t12m1_business_mo	13.53%	3.73%	8.09%	16.81%	0.71	0.46	1.09	0.91
fir	13.06%	3.26%	7.68%	17.30%	0.66	0.42	1.08	0.92
rev6	13.63%	3.82%	7.32%	17.41%	0.69	0.52	1.16	1.01
eps_est_rev_75d	12.75%	2.94%	5.22%	16.13%	0.69	0.56	1.08	0.96
car3_12M	11.77%	1.96%	6.58%	18.30%	0.55	0.30	1.16	1.12
car5_12M	10.45%	0.65%	6.34%	17.89%	0.49	0.10	1.11	1.12

¹² The weights used are 50% Momentum, 16.6% FIR, and 8.3% for each of: rev6, eps_est_rev_75d, car3_12M, and car5_12M. FIR receives twice the weight of the other business momentum measures because the Earnings Acceleration/Business Improvement component has only one component rather than two.

Momentum and Business Momentum – Russell 2000 Proxy

Performance & Risk Statistics, US: July 2001 – June 2026, Non-US: July 2006 – June 2026

	Annualized Return	Annualized Excess Return	Tracking Error	Standard Deviation	Sharpe Ratio	Information Ratio	Up Market Capture	Down Market Capture
univ	10.49%	0.00%	0.00%	19.64%	0.45	-	1.00	1.00
t12m1	11.83%	1.34%	7.27%	20.17%	0.50	0.18	1.01	0.96
comp_t12m1_business_mo	13.36%	2.86%	6.72%	19.85%	0.59	0.43	1.04	0.93
fir	12.94%	2.45%	9.33%	21.80%	0.52	0.26	1.06	0.97
rev6	14.55%	4.05%	6.38%	23.27%	0.55	0.63	1.21	1.12
eps_est_rev_75d	14.31%	3.81%	4.13%	20.00%	0.63	0.92	1.06	0.94
car3_12M	12.07%	1.58%	4.53%	21.65%	0.48	0.35	1.11	1.08
car5_12M	12.01%	1.52%	4.57%	21.63%	0.48	0.33	1.11	1.09

Momentum and Business Momentum – MSCI ACWI ex-US Proxy

Performance & Risk Statistics, US: July 2001 – June 2026, Non-US: July 2006 – June 2026

	Annualized Return	Annualized Excess Return	Tracking Error	Standard Deviation	Sharpe Ratio	Information Ratio	Up Market Capture	Down Market Capture
univ	5.98%	0.00%	0.00%	17.14%	0.26	-	1.00	1.00
t12m1	8.51%	2.53%	8.68%	19.25%	0.36	0.29	1.07	0.95
comp_t12m1_business_mo	9.58%	3.60%	7.59%	18.50%	0.43	0.47	1.07	0.91
fir	7.47%	1.49%	5.18%	17.15%	0.34	0.29	1.01	0.93
rev6	9.71%	3.73%	6.51%	19.49%	0.42	0.57	1.15	1.00
eps_est_rev_75d	9.37%	3.39%	4.04%	18.31%	0.43	0.84	1.11	0.98
car3_12M	8.13%	2.15%	4.37%	18.68%	0.35	0.49	1.10	1.01
car5_12M	9.01%	3.03%	4.00%	18.40%	0.40	0.76	1.11	0.99

Momentum and Business Momentum – MSCI ACWI ex-US Small Cap Proxy

Performance & Risk Statistics, US: July 2001 – June 2026, Non-US: July 2006 – June 2026

	Annualized Return	Annualized Excess Return	Tracking Error	Standard Deviation	Sharpe Ratio	Information Ratio	Up Market Capture	Down Market Capture
univ	7.60%	0.00%	0.00%	18.75%	0.32	-	1.00	1.00
t12m1	14.07%	6.46%	10.92%	22.49%	0.56	0.59	1.18	0.92
comp_t12m1_business_mo	14.73%	7.13%	10.76%	22.30%	0.59	0.66	1.18	0.90
fir	11.72%	4.11%	13.05%	24.19%	0.42	0.32	1.14	0.96
rev6	11.25%	3.64%	5.47%	20.70%	0.47	0.67	1.15	1.02
eps_est_rev_75d	13.13%	5.52%	4.18%	18.90%	0.61	1.32	1.11	0.89
car3_12M	9.30%	1.69%	3.96%	19.24%	0.40	0.43	1.06	1.00
car5_12M	9.64%	2.04%	3.97%	19.17%	0.42	0.51	1.06	0.98

Across all four universes, the combined strategy generates higher annualized excess returns and information ratios than price momentum alone with improved up market/down market capture, along with broadly comparable volatility and tracking error. Nevertheless, the magnitude of the benefit varies across markets, reinforcing the paper's central conclusion: Price momentum and business momentum are complementary, but their value in combination depends on standalone strength, cross-sectional overlap, and excess return correlation within each universe.



Conclusion

Momentum is commonly understood as a characteristic of stock prices, but the evidence in this paper demonstrates that momentum also exists within the underlying business. Improvements in profitability, positive earnings surprises, and upward revisions to analyst expectations have historically predicted future stock returns across US and non-US equity markets. The consistency of these results suggests that business momentum is a broad and persistent source of return predictability rather than a market-specific anomaly.

Our results also indicate that business momentum should not be treated as a single, uniform signal. The measures examined capture different stages of the fundamental information process and vary meaningfully in their predictive strength and relationship with traditional price momentum. Analyst estimate revisions are generally the strongest and most consistent standalone signals, particularly in smaller-cap and non-US markets, while earnings acceleration and announcement-based measures provide additional, but more market-dependent, information.

The relationship between business momentum and price momentum is similarly nuanced. The sequential-sort results do not support the conclusion that one universally subsumes the other. Instead, each frequently retains predictive information after controlling for the other, although the degree of incremental value depends on the signal and investment universe. This helps reconcile the competing conclusions in academic literature: business momentum and price momentum are neither completely independent nor interchangeable. They are related expressions of the market's gradual incorporation of new information.

The composite results translate that insight into portfolio construction. Combining related business momentum measures can produce a more complete and robust representation of improving fundamentals. Combining business momentum with price momentum can also improve outcomes, particularly when the underlying signals possess both strong standalone predictive power and differentiated return patterns. However, the results do not support a mechanical, one-size-fits-all combination. The optimal mix varies across markets, reflecting differences in signal efficacy, overlap, and excess return correlation.

The practical conclusion is straightforward: Business momentum does not replace price momentum; it can inform and strengthen it. By evaluating both what the stock price is doing and what is changing within the business, investors can develop a more complete view of momentum and potentially build stronger, more adaptable portfolios.

Appendix 1: Fundamental Signal Definitions

Chan, Jegadeesh, and Lakonishok (1996) definitions:

Standardized unexpected earnings (SUE): defined as most recent year-over-year change in quarterly EPS scaled by the standard deviation of the year-over-year changes in quarterly EPS over the prior eight earnings announcements.

$$SUE_{(i,t)} = \frac{(e_{(i,q)} - e_{(i,q-4)})}{\sigma_{(i,t)}} \quad (1)$$

where $e_{(i,q)}$ is the most recent quarterly EPS for company i , as of month t . $e_{(i,q-4)}$ is the EPS four quarters ago and $\sigma_{(i,t)}$ is the standard deviation of $(e_{(i,q)} - e_{(i,q-4)})$ over the last eight announcements.

Stock price reaction around announcements (ABR):

Cumulative abnormal stock returns around the most recent announcement date:

$$ABR_{(i,t)} = \sum_{j=-2}^{+1} (r_{(i,j)} - r_{(M,j)}) \quad (2)$$

where $r_{(i,j)}$ is stock i 's return on day j and $r_{(M,j)}$ is the equally weighted market return.

Changes in analysts' forecasts of earnings or revisions over the past six months (REV6): A six-month moving average of (Revisions in consensus (mean) current fiscal-year EPS estimates, scaled by the prior month's share price).

$$REV6_{(i,t)} = \sum_{j=0}^6 \frac{(f_{(i,t-j)} - f_{(i,t-j-1)})}{P_{(i,t-j-1)}} \quad (3)$$

where $f_{(i,t)}$ is the consensus estimate in month t for company i 's earnings in the current fiscal year, and P is the stock price¹³.

Huang, Zhang, and Zhou (2021) definitions:

The Fundamental implied return (FIR) is computed for each stock using both multivariate and univariate cross-sectional regression approaches. Since the fundamentals of a firm are likely correlated with each other, and we have overlapping variable measurement periods the multivariate approach is susceptible to multicollinearity in the regressions. Because of this we opt to reproduce their second approach of forecast combinations¹⁴. Let $\{x_{(i,t-1)}^m\}_{m=1}^M$ represent the M predictors considered, for each company i , at time $t-1$. We then univariately regress the forward one-month return onto each of the $x_{(i,t-1)}^m$ predictors such that: $FIR_{(i,t)}^m = \hat{\alpha}_t + \hat{\beta}_t \cdot x_{(i,t-1)}^m$.

The final fundamental implied return forecast is then the arithmetic mean over all M predictors:

$$FIR_{(i,t)} = \frac{1}{M} \sum_{m=1}^M FIR_{(i,t)}^m \quad (4)$$

¹³ We terminate the sum at $j=5$, for REV6 in our analysis to encompass six months.

¹⁴ Timmermann (2006) surveys the forecast combination approach. We also note that this approach is robust to correlated regressors. For example, if we add an additional predictor that is perfectly correlated with an existing predictor the multivariate regression approach can lead to spurious results whereas the univariate averaging approach doesn't change the final FIR estimate by much.

They use seven fundamental variables: ROE, return on assets (ROA), earnings per share (EARN), accrual-based operating profitability to equity (APE), cash-based operating profitability to assets (CPA), gross profitability to assets (GPA), and net payout ratio (NPY). They also incorporate moving averages of each of the variables across the trailing 2, 4, and 8 quarter horizons, thus leading to twenty-eight predictors¹⁵.

Earnings-Growth-to-Price factor definition: The ratio of (Change in quarterly EPS) to (prior quarter end price).

$$EG/P_{(i,t)} = \frac{(e_{(i,q)} - e_{(i,q-1)})}{P_{(i,q-1)}}, \quad (5)$$

where $e_{(i,q)}$ is the most recent quarterly EPS for company i , as of month t and $P_{(i,q-1)}$ is the price of security i at the time of the lagged earnings quarter announcement.

FactSet QFL_EPS_EST_REV: The formula returns the number of earnings per share (EPS) upward revisions and subtracts from it the number of downward revisions. The number of estimates is considered in the calculation of a consensus. The value can range from -100 to 100. The higher the ratio and closer to 100 the better as it means that more analysts relative to total expressed a positive view of a potential increase in future earnings. The metric is assessed on the upcoming quarterly, semiannual or annual reporting period and is measured using 45, 75, 100, and 180-day consensus windows.

Appendix 2: Factor Spanning Tests

We perform monthly time-series regressions of top quintile 12M1 Momentum (MOM), top quintile standardized unexpected earnings (SUE), and daily returns around earnings announcements (CAR3) onto the Fama-French five-factor model. These factors are Market (MKT), Size (SMB), Value (HML), Operating Profitability (RMW), and Investment (CMA). If the five-factor model can span the momentum portfolio returns, then the intercept from the regression should be small and insignificant. If, however, the intercept is positive and significant then the five-factor model is unable to span the momentum portfolio returns completely and thus excess return is missed out on by a five-factor model investor.

We produce a version of table 2 from Novy-Marx (2015), with respect to the Russell 3000 proxy universe, to determine if SUE and CAR3 can subsume momentum. Table A.2.1 shows in equations (1), (4), and (7) the average monthly return (above the risk-free rate) for the momentum, SUE, and CAR3 portfolios. All are statistically significant with Momentum at 89 bps per month, SUE at 78 bps. per month, and CAR3 at 75 bps per month. Equations (2), (5), and (8) show MOM, SUE, and CAR3 separately regressed against the five-factor model. The intercept for MOM at 17 bps per month survives while the intercepts for SUE and CAR3 (3 bps. and 1 bp. respectively) are almost entirely subsumed by the Fama-French five-factor model.

¹⁵ Fundamentals such as earnings can experience momentum however as we found in (see Back to the Future) the look-back horizon used to rank the universe matters. We use $M = 28$ in our analysis as we have 7 measures and each has 4 lookback horizons.

To assess incremental explanatory power, we then augment the model by including either Momentum, SUE, or CAR3 as additional right-hand-side factors and compare the resulting intercepts (alphas). Equations (3), (6), and (9) show these results. For momentum we still have 14 bps per month of alpha, equation (3), above and beyond that of an [FF-5 factor + SUE + CAR3] investor and therefore SUE and CAR3 are unable to subsume the profits from Momentum. However, since the alphas shown in equations (6), and (9) are statistically indistinguishable from zero (-0.01%), the [FF-5 factor + MOM + CAR3] model subsumes the profits of the SUE strategy and the [FF-5 factor + MOM + SUE] model subsumes the profits of the CAR3 strategy. Therefore, momentum contains incremental information not captured by SUE and CAR3 within the Russell 3000 Proxy¹⁶.

Table A2.1: Factor Spanning Tests
July 2001 – May 2026

	Dependent Variable Momentum			Dependent Variable SUE			Dependent Variable CAR3		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
α	0.89% 3.11	0.17% 1.18	0.14% 1.13	0.78% 3.02	0.03% 0.37	-0.01% -0.21	0.75% 2.53	0.01% 0.10	-0.01% -0.09
β_{MKT-RF}		0.95 27.48	-0.13 -1.02		0.99 55.46	0.74 14.42		1.04 49.65	0.93 13.23
β_{SMB}		0.17 3.02	0.18 3.39		-0.04 -1.31	-0.08 -3.02		0.16 4.42	0.14 3.91
β_{HML}		-0.22 -3.83	-0.11 -2.17		-0.09 -3.09	-0.04 -1.35		-0.13 -3.72	-0.11 -3.03
β_{RMW}		0.03 0.46	-0.06 -1.04		0.13 3.76	0.12 3.99		-0.11 -2.63	-0.11 -2.72
β_{CMA}		0.005 0.05	0.15 2.00		-0.13 -3.04	-0.13 -3.36		-0.15 -2.99	-0.15 -2.91
β_{MOM}						0.24 8.89			0.09 2.32
β_{SUE}			0.89 8.89						0.02 0.29
β_{CAR3}			0.20 2.32			0.01 0.29			
Adjusted R^2		77%	82%		93%	94%		92%	92%

¹⁶ This result is contrary to that of Novy-Marx (2015) in that SUE and CAR3 do not subsume momentum.

Appendix 3: Signal and Composite Definitions

Price Momentum / Universe

- t12m1: Standard 12-minus-1 price momentum, measured as the prior 12-month return excluding the most recent month.
- waor: IMC's recency-weighted momentum signal, which gives more weight to more recent return observations within the lookback window.
- univ: Market-cap-weighted return of the underlying universe.

Earnings Acceleration

- SUE: Standardized Unexpected Earnings, measured as the most recent year-over-year change in quarterly EPS scaled by the standard deviation of YoY EPS changes over the prior eight earnings announcements.
- fir: Fundamental Implied Return, a one-month-ahead return forecast based on cross-sectional regressions using profitability, earnings, accrual, gross profitability, and payout-based fundamental signals across multiple horizons.
- eg_p_qtr: The ratio of (Change in quarterly EPS) to (prior quarter end price).

Estimates & Revisions

- rev6: Six-month moving average of revisions in consensus mean current fiscal-year EPS estimates, scaled by the prior month's share price.
- eps_est_rev_75d: FactSet EPS estimate revision breadth over a 75-day consensus window, calculated as upward EPS revisions minus downward EPS revisions divided by the total number of EPS estimates.

Surprise

- car3: Cumulative abnormal return around the earnings announcement from one day before through one day after the announcement.
- car3_12M: car3 signal across earnings announcements over the past 12 months.
- car5: Cumulative abnormal return around the earnings announcement from one day before through three days after the announcement.
- car5_12M: car5 signal across earnings announcements over the past 12 months.

Price Momentum and Business Momentum Composite

- comp_t12m1_business_mo: Top Quintile of the weighted average of the following z-scored variables: t12m1, fir, rev6, eps_est_rev_75d, car3_12M, and car5_12M, using the weights (1/2, 1/6, 1/12, 1/12, 1/12, and 1/12) respectively.

Appendix 4: Performance and Risk Statistics

comp_waor_business_mo: Top Quintile of the weighted average of the following z-scored variables: waor, fir, rev6, eps_est_rev_75d, car3_12M, and car5_12M, using the weights (1/2, 1/6, 1/12, 1/12, 1/12, and 1/12) respectively.

Table A4.1: Russell 1000 Proxy Performance & Risk Statistics

July 2001 – June 2026

	Annualized Return	Annualized Excess Return	Tracking Error	Standard Deviation	Sharpe Ratio	Information Ratio	Up Market Capture	Down Market Capture	Mean IC	T-Stat
waor	11.74%	1.94%	8.43%	16.30%	0.62	0.23	1.03	0.93	0.007	0.624
comp_waor_business_mo	12.24%	2.44%	7.87%	16.40%	0.64	0.31	1.06	0.95	-	-
sue	10.29%	0.49%	5.33%	15.54%	0.55	0.09	1.00	0.96	0.007	1.436
fir	13.06%	3.26%	7.68%	17.30%	0.66	0.42	1.08	0.92	0.018	2.498
eg_p_qtr	11.04%	1.24%	6.11%	16.76%	0.56	0.20	1.05	1.00	0.009	2.617
rev6	13.63%	3.82%	7.32%	17.41%	0.69	0.52	1.16	1.01	0.011	1.686
eps_est_rev_75d	12.75%	2.94%	5.22%	16.13%	0.69	0.56	1.08	0.96	0.019	3.916
car3	9.58%	-0.23%	5.40%	16.91%	0.47	-0.04	1.07	1.11	0.006	1.669
car3_12M	11.77%	1.96%	6.58%	18.30%	0.55	0.30	1.16	1.12	0.013	3.280
car5	10.58%	0.78%	5.65%	17.17%	0.52	0.14	1.10	1.10	0.007	1.763
car5_12M	10.45%	0.65%	6.34%	17.89%	0.49	0.10	1.11	1.12	0.015	3.576
univ	9.80%	0.00%	0.00%	15.07%	0.54	-	1.00	1.00	-	-

Table A4.2: Russell 2000 Proxy Performance & Risk Statistics

July 2001 – June 2026

	Annualized Return	Annualized Excess Return	Tracking Error	Standard Deviation	Sharpe Ratio	Information Ratio	Up Market Capture	Down Market Capture	Mean IC	T-Stat
waor	11.28%	0.78%	7.29%	19.68%	0.49	0.11	1.00	0.97	0.008	1.127
comp_waor_business_mo	12.98%	2.49%	6.65%	19.46%	0.58	0.37	1.02	0.93	-	-
sue	11.79%	1.29%	4.09%	18.94%	0.53	0.32	0.99	0.93	0.010	2.863
fir	12.94%	2.45%	9.33%	21.80%	0.52	0.26	1.06	0.97	0.022	3.090
eg_p_qtr	11.79%	1.29%	4.87%	22.20%	0.46	0.27	1.13	1.11	0.004	1.929
rev6	14.55%	4.05%	6.38%	23.27%	0.55	0.63	1.21	1.12	0.016	3.739
eps_est_rev_75d	14.31%	3.81%	4.13%	20.00%	0.63	0.92	1.06	0.94	0.017	5.255
car3	11.73%	1.24%	4.29%	21.74%	0.46	0.29	1.10	1.09	0.012	4.390
car3_12M	12.07%	1.58%	4.53%	21.65%	0.48	0.35	1.11	1.08	0.015	5.349
car5	11.55%	1.06%	4.52%	21.55%	0.46	0.23	1.09	1.08	0.012	4.259
car5_12M	12.01%	1.52%	4.57%	21.63%	0.48	0.33	1.11	1.09	0.016	5.152
univ	10.49%	0.00%	0.00%	19.64%	0.45	-	1.00	1.00	-	-

Table A4.3: MSCI ACWI ex-US Performance & Statistics

July 2006 – June 2026

	Annualized Return	Annualized Excess Return	Tracking Error	Standard Deviation	Sharpe Ratio	Information Ratio	Up Market Capture	Down Market Capture	Mean IC	T-Stat
waor	8.69%	2.71%	8.54%	18.43%	0.39	0.32	1.06	0.94	0.014	1.301
comp_waor_business_mo	9.03%	3.05%	7.57%	17.82%	0.42	0.40	1.05	0.91	-	-
sue	6.36%	0.38%	4.86%	17.33%	0.28	0.08	0.99	0.97	0.015	3.264
fir	7.47%	1.49%	5.18%	17.15%	0.34	0.29	1.01	0.93	0.013	2.022
eg_p_qtr	7.08%	1.10%	4.68%	18.24%	0.30	0.23	1.08	1.04	0.005	1.452
rev6	9.71%	3.73%	6.51%	19.49%	0.42	0.57	1.15	1.00	0.020	3.284
eps_est_rev_75d	9.37%	3.39%	4.04%	18.31%	0.43	0.84	1.11	0.98	0.025	7.601
car3	6.47%	0.50%	3.79%	18.31%	0.27	0.13	1.07	1.07	0.013	4.980
car3_12M	8.13%	2.15%	4.37%	18.68%	0.35	0.49	1.10	1.01	0.017	5.761
car5	6.98%	1.01%	4.42%	18.44%	0.29	0.23	1.08	1.05	0.012	3.798
car5_12M	9.01%	3.03%	4.00%	18.40%	0.40	0.76	1.11	0.99	0.017	5.124
univ	5.98%	0.00%	0.00%	17.14%	0.26	-	1.00	1.00	-	-

Table A4.4: MSCI ACWI ex-US Small Cap Performance & Statistics

July 2006 – June 2026

	Annualized Return	Annualized Excess Return	Tracking Error	Standard Deviation	Sharpe Ratio	Information Ratio	Up Market Capture	Down Market Capture	Mean IC	T-Stat
waor	15.52%	7.92%	10.55%	21.63%	0.65	0.75	1.17	0.86	0.034	3.944
comp_waor_business_mo	15.97%	8.37%	10.42%	21.73%	0.66	0.80	1.18	0.85	-	-
sue	10.21%	2.60%	4.39%	18.00%	0.48	0.59	1.02	0.91	0.022	6.523
fir	11.72%	4.11%	13.05%	24.19%	0.42	0.32	1.14	0.96	0.017	2.672
eg_p_qtr	10.78%	3.17%	12.20%	24.37%	0.38	0.26	1.15	1.03	0.010	4.521
rev6	11.25%	3.64%	5.47%	20.70%	0.47	0.67	1.15	1.02	0.024	5.697
eps_est_rev_75d	13.13%	5.52%	4.18%	18.90%	0.61	1.32	1.11	0.89	0.031	12.078
car3	9.50%	1.90%	3.92%	19.43%	0.41	0.48	1.07	1.00	0.018	7.366
car3_12M	9.30%	1.69%	3.96%	19.24%	0.40	0.43	1.06	1.00	0.020	7.260
car5	9.28%	1.68%	4.02%	19.35%	0.40	0.42	1.07	1.01	0.017	6.567
car5_12M	9.64%	2.04%	3.97%	19.17%	0.42	0.51	1.06	0.98	0.020	6.892
univ	7.60%	0.00%	0.00%	18.75%	0.32	-	1.00	1.00	-	-

About IMC

IMC is solely focused on helping clients build better portfolios through our Informed Momentum investment approach. This approach has been applied consistently across all strategies since the inception of the firm in 2007. The daily application of our systematic process is designed to deliver consistent and predictable results. Since our entire company works for a single objective, it only makes sense to align the name of our brand with exactly what we do every day.

We are the **Informed Momentum Company**.

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This research paper is a market analysis review that examines the historical relationship between proximity to the 52-week high and traditional price momentum. All performance statistics, information coefficients, portfolio returns, risk metrics, and double-sort results are derived solely by slicing and analyzing actual historical market data from the specified equity universes (Russell index proxies and MSCI indices). The results reflect the application of the disclosed ranking methodologies and portfolio construction rules (top-quintile, market-cap-weighted, six-month overlapping holdings) to real security prices and returns that existed during the sample. The analysis relies solely on actual, observable historical market data and does not incorporate simulated or model-generated returns, hypothetical portfolios, or any forward-looking assumptions. The results do not reflect actual trading and should not be interpreted as a guarantee of future performance.

Data and methodologies from third-party sources, including academic studies and index providers (MSCI, Russell), are obtained from sources believed to be reliable but are not guaranteed for accuracy, completeness, or reliability. Supporting documentation for claims or statistical analyses is available upon request.

Past performance is not indicative of future results, and no assurance is provided that the market exposures discussed will achieve similar outcomes in the future.