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Earnings Growth as the Fundamental Driver of the Momentum Anomaly

The Theory

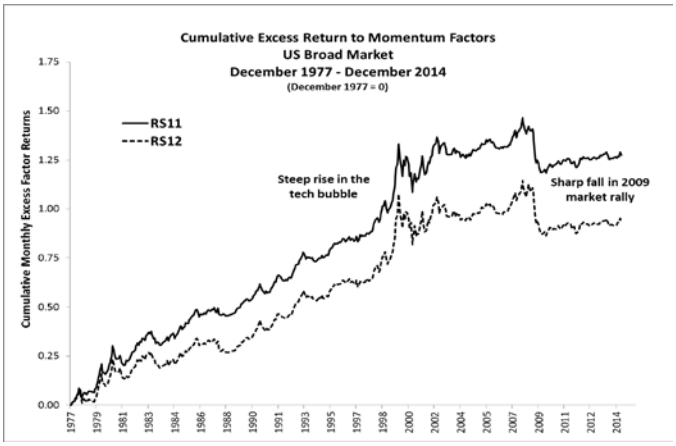
The connection between past stock market returns and subsequent performance is among the more analyzed stock market anomalies. In numerous studies, the trend in stock prices has been found to have a significant correlation with future stock prices, albeit with differing signs over differing time horizons. Rosenberg Equities research has focused on the connection between medium-term price momentum[1] and measures of trailing and expected earnings. We suggest a theoretical linkage and find empirical evidence for a connection between trailing relative performance and the evolution of company earnings. In short, we show that medium-term trailing price performance is a robust predictor of forward earnings growth at the individual company level. Importantly, we believe that momentum's positive and very stable correlation with year-ahead change in earnings yield aligns it with the fundamental driver of equity returns. It is this relationship that is at the core of the momentum anomaly.

The "momentum anomaly" typically refers to patterns in which the best performing stocks over the prior 3 to 12 months continue to outperform weaker performing stocks over the next 12 months[2]. We, and many others, have observed a return premium to the momentum anomaly.

Evidence of a Return Premium

Exhibit 1 shows the cumulative excess return for two commonly used measures of medium-term price momentum, RS12 and RS11. Respectively, they are defined as price momentum over the trailing twelve months and price momentum over that same period excluding the most recent month. While the excess return pattern is admittedly volatile, there appears to be a premium over the long run associated with momentum investing, even in the naïve form illustrated here.

Exhibit 1 | Cumulative Returns to Momentum Factors



Source: Rosenberg Equities. Cumulative returns are shown relative to Rosenberg Equities' US Broad Market Universe (USD, gross dividends). Momentum factor portfolios rebalanced monthly.

Medium-term trend following findings have been tested out of sample by many researchers, extending the initial investigation to markets outside the US and to different time periods. In seeking the drivers of the momentum anomaly researchers have investigated a variety of risk-based and behavioral explanations. The rewards to high medium-term momentum stocks were found to persist even after controlling for beta, size and value risk (see Fama and French (1996) and Carhart (1997)). Studies of behavioral inefficiencies have focused on delayed stock price reaction to the evolution in company fundamentals relative to initial expectations. Chan, Jegadeesh and Lakonishok (1996) find that both past prices and past earnings surprises explain stock returns over the subsequent six and twelve months, suggesting a delayed reaction of stock prices to both. Ghayur, et al (2010) similarly find a positive correlation between price momentum and changes in analyst short-term earnings expectations, with both trending over the subsequent twelve months. Generally, the consistency of the results from these and similar papers in support of the momentum anomaly provides evidence that the returns patterns for medium-term momentum strategies are not likely the result of data-mining.

While the success of the medium-term momentum anomaly appears robust, the "volatile and episodic" nature of the reward should be acknowledged (Dimson, et

[1] Medium-term momentum can be thought of as positive relative strength over a year-long period. It is distinct from short term momentum trends that can be daily or even intra-day in duration.

[2] Note that "price momentum" and "relative strength" are often used interchangeably. Both terms capture the concept of a stock (or group of stocks) being "on a roll" compared to peers.

al, 2008). Indeed, the volatility associated with momentum has been especially high since the start of the global financial crisis in 2008, heavily influenced by the large reversal in the returns to momentum in early 2009. Given the substantial shifts (sharp decline followed by sharp recovery) in both macroeconomic and equity market conditions during this recent period, it is not surprising that many researchers and investors in recent years have investigated the connection of momentum strategy returns with the macro and market environment, although Griffin, Ji and Martin (2003) previously found no evidence that macroeconomic risks explained momentum returns.

The Link to Company Earnings

We believe that the momentum anomaly can be explained by looking at the earnings profiles of stocks with higher momentum. Exhibit 2 illustrates the simple relationship between trailing price performance and forward earnings per share (EPS) growth. First, we parse the global universe into high, mid, and low momentum buckets (using RS11 as our measure of price momentum), and look at the resulting weighted EPS growth for the respective buckets over the subsequent year. More often than not, stocks with the strongest price momentum also exhibit the strongest forward EPS growth. Moreover, there is typically a monotonic relationship that is obeyed.

Of course, another important consideration is the volatility of EPS growth, and how it relates to relative strength. It is clear from the EPS growth patterns illustrated in Exhibit 2 that the low momentum bucket is more sensitive to the economic cycle, showing the most negative earnings growth during down-turns.

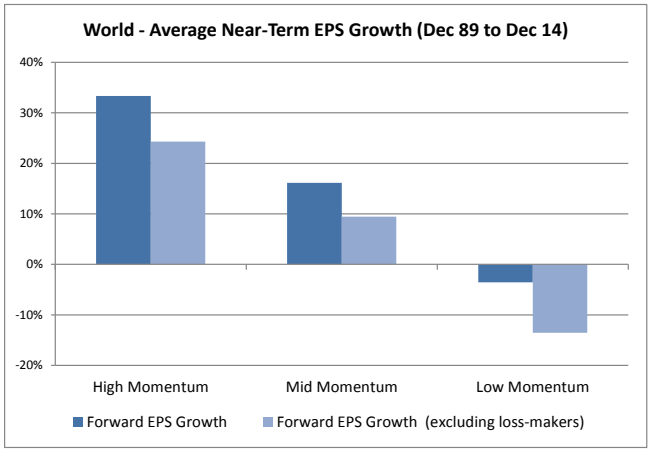
Exhibit 2 | Realized 12-Month Forward EPS Growth | High, Mid, and Low Momentum Buckets

Source: Rosenberg Equities, MSCI.

The high and mid momentum buckets deliver positive EPS growth at lower volatilities, on average[3].

Exhibit 3 shows that the low momentum bucket appears very unattractive from the perspective of earnings delivery, as the realized EPS growth is, on average, negative. Given that we can see big swings for the low momentum bucket which are associated with economic recovery, it is important to note that any measure of growth in earnings is highly sensitive to the base from which the growth starts and averages can be affected by the impact of big growth numbers for small or negative starting earnings level. One way to illustrate this is to exclude loss makers and focus on companies starting with positive earnings. We can see that the relationship of future earnings growth with past momentum is very clear using both calculations, a further indication of robustness.

Exhibit 3 | EPS Growth and Volatility of Growth for High, Mid, and Low Momentum Buckets



Source: Rosenberg Equities, MSCI

Using the Residual Income Valuation Framework

These exhibits suggest support for our core thesis that there should be a predictive power associated with price momentum. Specifically, that price momentum should predict forward change in earnings. Market participants anticipate and vote with their dollars to express their beliefs about where earnings growth will arise. In this way, prices should lead earnings growth generally.

[3] *Source: Rosenberg Equities (Exhibit created May 2015). Momentum is based on proprietary measure of medium-term excess return vs local index or Relative Strength over the 11 months ending one month prior to the date of calculation. Low = bottom 30%, Middle = next 40%, High = top 30% of MSCI World names within each region globally each month, using square-root of market cap as weighting scheme – not controlled for size bias nor investability. Average annualized forward EPS Growth delivered by each buckets and associated volatility are calculated each month from December 1989 to December 2013 using perfect foresight of next year's EPS adjusted for corporate actions. The information set forth above is based on hypothetical backtesting and is not an actual portfolio reflecting actual past performance and does not represent actual, current recommendations. Information presented is only for the use of Institutional Investors.*

We can more formally illustrate the fundamental link between momentum and forward earnings change by invoking the Residual Income Valuation model (RIV)[4]. We find the RIV framework helpful as it allows for an easy decomposition of the fundamental drivers of return.

Within the RIV context, market price is assumed to reflect book value plus the present value of expected future residual earnings:

$$Price = Book\ Value + PV\ (Expected\ Future\ Residual\ Earnings)$$

And we can define year-ahead residual earnings (RE) as trailing earnings minus the risk adjusted return (r) on current book value (B):

$$RE_{t+12} = E_t - rB_t$$

where E_t represents trailing 12-month earnings at time t

If a company is trading above book value, the gap between price and book value represents the present value of future residual earnings which can be thought of as the goodwill in the market price (GWIM). Switching to return space (RIVR), if we assume RIV holds, the 12-month rate of return is therefore defined as the sum of realized earnings yield and the change in goodwill in market price (ΔGWIM) divided by initial price:

$$Return_{t+12} = (E_{t+12} - P_t) + \Delta GWIM_{t+12}$$

$$where\ \ \Delta GWIM_{t+12} = [(P_{t+12} - B_t) - (P_t - B_t)] / P_t$$

Finally, we can further decompose realized year-ahead earnings yield into its component parts, a starting level and subsequent change:

$$Return_{t+12} = (E_t/P_t) + [(E_{t+12} - E_t)/P_t] + \Delta GWIM_{t+12}$$

In simple terms, we can therefore think of the drivers of return as being forward earnings yield and change in price multiple, if we allow the change in goodwill (ΔGWIM) to represent change in multiple[5].

[4] Originally attributed to Preinreich in 1938, later to Edwards and Bell [1961], then enhanced by Peasnell [1981], Ohlson[1995] and Feltham and Ohlson [1995].

[5] It is worth noting that the values of GWIM are directly proportional to price-to-book (PB) multiples, with PB multiples being a typical proxy for earnings growth expectations. It therefore follows that ΔGWIM reflects changes in multiples. If a company's growth prospects improve, its PB multiple will expand (ΔGWIM > 0). Conversely, if growth prospects deteriorate, the PB multiple will contract (ΔGWIM < 0).

Correlation of RIVR Components with Momentum

We can then test the relationship between momentum and the fundamental drivers of return by looking at the correlation of momentum (RS11) with the RIVR components. In Exhibit 4, the average positive correlation between momentum (as proxied by RS11) and 12-Month Total Return serves as general confirmation of a return premium. Additionally – and of critical interest to us – is that these results further indicate a positive correlation between momentum and Forward Earnings Yield. Recall that within the RIV context, Forward Earnings Yield is comprised of both Trailing Earnings Yield and Forward Earnings Yield Change. What is immediately apparent in the correlation study is that momentum is negatively related to trailing earnings yield.

The positive correlation with Forward Earnings Yield is exclusively driven by momentum's relationship to year-ahead earnings yield change. This positive correlation, accompanied by a low standard deviation, gives additional strength to the argument that the momentum anomaly is driven by the reward to near-term Earnings Growth delivery. Put simply, Forward Earnings Growth is the fundamental driver of the momentum return premium.

Exhibit 4: Correlation of RS11 with RIVR Components

Correlation of Momentum with RIVR Components
US Broad Market
Dec. 1977 - Dec. 2014

Realized Earnings Measure	Average	Standard Deviation
12-Month Total Returns	0.0301	0.1638
Forward (12-Month) Earnings Yield	0.0960	0.1429
Trailing (12-Month) Earnings Yield	-0.0577	0.1491
Forward (12-Month) Earnings Yield Change	0.1611	0.0661
12-Month Change in Multiple	0.0113	0.1587

Source: Rosenberg Equities

Also worth noting, the negative correlation to trailing earnings yield gives us the fundamental explanation as to why momentum is an ideal complement to valuation-oriented strategies which tend to exhibit higher exposure to Trailing Earnings Yield.

Conclusion

The RIV framework allows us to confirm the intuitive, fundamental link between momentum and earnings change. **In sum, we believe the momentum anomaly to be a real and sustainable source of excess return in equity markets because of its fundamental link to forward earnings yield change. Stocks that deliver superior forward earnings change are generally rewarded by investors. Momentum anticipates that earnings superiority and thus gives investors access to a return premium.**

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