Mixed Momentum Strategy

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A good strategy

A good strategy should hold its basis in a mispricing of some investors and the inability of others investors to correct it fully.

In Financial parlance, we are talking about behavioral biases and limits to arbitrage

Behavioral Justification

News is incorporated only slowly into prices, which tend to exhibit positive autocorrelations (Barberis, 1998)

Random Walk experiment (Barberis, 1998)

- Simulating a random walk in stock news

- If investors are Bayesian, a success which follows another success raises the likelihood of such an investor thinking that he is "in the good state"

- This dynamic creates those "good states" out of thin air, because the process was initially a random walk (self-fulfilling prophecy)

Behavioral Justification

Investor is overconfident and self-attributes and therefore, "stock prices overreact to private information (overconfidence) signals and underreact to public signals (self-attribution)" (Daniel, 1998)

You can see that a number of biases are at play that may affect the prices of securities, which subsequently indicate that there might be some opportunities in the market.

But what if, as the Efficient Market Hypothesis suggests, those mispricings are arbitraged away by other investors not subject to those biases?

Bridging Behavioral Finance and Limits to Arbitrage

“On the other hand, people are likely to be more prone to bias in valuing securities for which information is sparse. This suggests that misperceptions are strongest in the dusty, idiosyncratic corners of the marketplace.” (Hirshleifer, 2001)

The limits to arbitrage could work in our favor, given that we are capable of finding the right “corners”...

Limits to Arbitrage

Textbook arbitrage does not describe the realistic arbitrage that we see in financial markets. (Shleifer, 1997)

Arbitrageurs are met with additional hurdles:

1. Transaction costs
2. Short sales and instruments constraints
3. Limited risk bandwidth and other restrictions
4. Size related constraints
5. Others

Limits to Arbitrage

Good example from Schleifer (1997):

"When the arbitrageur manages other people's money, however, and these people do not know or understand exactly what he is doing, they will only observe him losing money when futures prices in London and Frankfurt diverge (*specifically pertaining to this example but could be generalized*). They may therefore infer from this loss that the arbitrageur is not as competent as they previously thought, refuse to provide him with more capital, and even withdraw some of the capital -even though the expected return from the trade has increased." (37)

Limits to Arbitrage

Numerous studies examining the impact of limited arbitrage on the power of anomalies (Ali, 2003) (Gromb, 2010) (Lam, 2011) (Chu, 2020) and notably on momentum (Ali, 2006)

Most researchers find that anomalies get stronger when applied to companies who exhibit more information uncertainty:

"This paper shows that the book-to-market (B/M) effect is greater for stocks with higher idiosyncratic return volatility, higher transaction costs, and lower investor sophistication,consistent with the market-mispricing explanation for the anomaly." (Ali, 2004)

Limits to Arbitrage

"Specifically, holding size fixed, the under-performance of stocks with high market-to-book, analyst forecast dispersion, turnover, or volatility is most pronounced among stocks with low institutional ownership" (Nagel, 2005)

"Using this index, we show that the magnitude of momentum returns for the period 1984 to 2001 is positively related to short sales constraints, and loser stocks rather than winner stocks drive this result." (Ali, 2006)

"We find that the anomalies became weaker on portfolios constructed with pilot stocks (relaxed shorting constraints) during the pilot period. The pilot program reduced the combined anomaly long–short portfolio returns by 72 basis points per month, a difference that survives risk adjustment with standard factor models." (Chu, 2020)

Researched Anomalies

We tried to find anomalies that have been documented and the market and that corresponds to those two elements:

1. Announcement Returns
2. Firm Age Momentum

Announcement Returns (Chan, 1995)

"We confirm that drifts in future returns over the next six and twelve months are predictable from a stock's prior return and from prior news about earnings."

In essence, the anomaly consists in merging the Momentum anomaly and the Earnings Momentum anomaly.

Predicts that past winners should react to positive surprise in earnings even more than other stocks, with the reverse being the case for past loser stocks losers should react to positive

Announcement Returns (Chan, 1995)

Effectively composed of two signals:

1. Price Momentum
    > Past returns of X months
    > Can change but probably going to be a year
    > No need to overfit that window
2. Earnings surprise
    > SUE (Change in earnings surprise over std of it)
    > Abnormal Returns (Returns after earnings - normal returns)

Factor Age Momentum (Zhang, 2006)

Paper investigates the role of information uncertainty in price continuation anomalies and cross-sectional variations in stock-returns: "If short-term price continuation is due to investor behavioral biases, we should observe greater price drift when there is greater information uncertainty"

Predicts that past winners with high uncertainty of information (proxied by several things) should react better perform better than low uncertainty counterparts.

Closely linked to the Limits to Arbitrage Theory outlined previously !

Factor Age Momentum (Zhang, 2006)

Also composed of two signals:

1. Price Momentum

    > Past returns of X months -> Ret_t-X

    > Can change but probably going to be a year

    > No need to overfit that window

2. Uncertainty

    > As proxied with multiple variables

Justification

From my research, based on Chen and Zimmerman signals, it is one of the only strategy that stood the test of time!

Both strategies are of the few that have shown positive alpha since Out-of-Sample, In-Sample and In Recent years.

They are also robust to controls like the Fama-French 3,5, with and without Momentum added

See Python Notebook

My Strategy

Simply enough, why not combine those two strategies to have a 3 way portfolio sorts that finds the best of the best?

Optimally configures a strategy based on Behavioral Insights and Limits to Arbitrage theory.

1. Price Momentum

    > Past returns of X months -> Ret_t-X

    > Can change but probably going to be a year

    > No need to overfit that window

2. Uncertainty

    > As proxied for multiple variables

3. Earnings surprise

    > SUE (Change in earnings surprise over std of it)

    > Abnormal Returns (Returns after earnings - normal returns)

Next Steps

1. Creation of the signal
2. Backtesting the signal
3. Implementation with IBKR
4. Test deployment
5. Live trading deployment

Why this exercise ?

Why not

Your input is important

Partnership

Thanks for the listen!