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Value meets Momentum

As numerous academic studies of the equity markets have shown, value stocks have generally outperformed growth stocks in the long-run. As a consequence, a successful investment strategy seems to be simple: Buy at low prices (in other words: invest in cheap companies)! But how does an investor know whether a stock's price has stopped falling? How can one avoid buying a cheap company that is even cheaper next month? Clearly, not every low-cost stock presents an attractive investment opportunity.

Generally, one can classify value stocks into three categories (Fig. 1). "Fast-Winners" are stocks that gain value immediately after an investment. "Late-Winners" are stocks that eventually see price increases, but only after longer periods of sideways movements. "Value-Traps" represent stocks

that continue losing value, and eventually might become worthless. Evidently, investors want to invest in Fast-Winners, delay their investments in Late-Winners, and avoid Value-Traps altogether. Unfortunately, there is no silver bullet that reveals whether a certain stock is a Fast-Winner prior to an investment decision. Nevertheless, our research has shown that investors are able to reduce the probability of investing in Late-Winners or Value-Traps: Buying cheap stocks that have garnered positive price momentum.

At first glance, it seems counterintuitive to combine two seemingly conflictive approaches to investing into one strategy. Yet, perhaps surprisingly, Clifford Asness (1997) – one of the first researchers who combined value- with momentum-strategies – found that investors can benefit from this

The Pitfalls of Value-Investing: Value-Traps and Value-Late-Winners

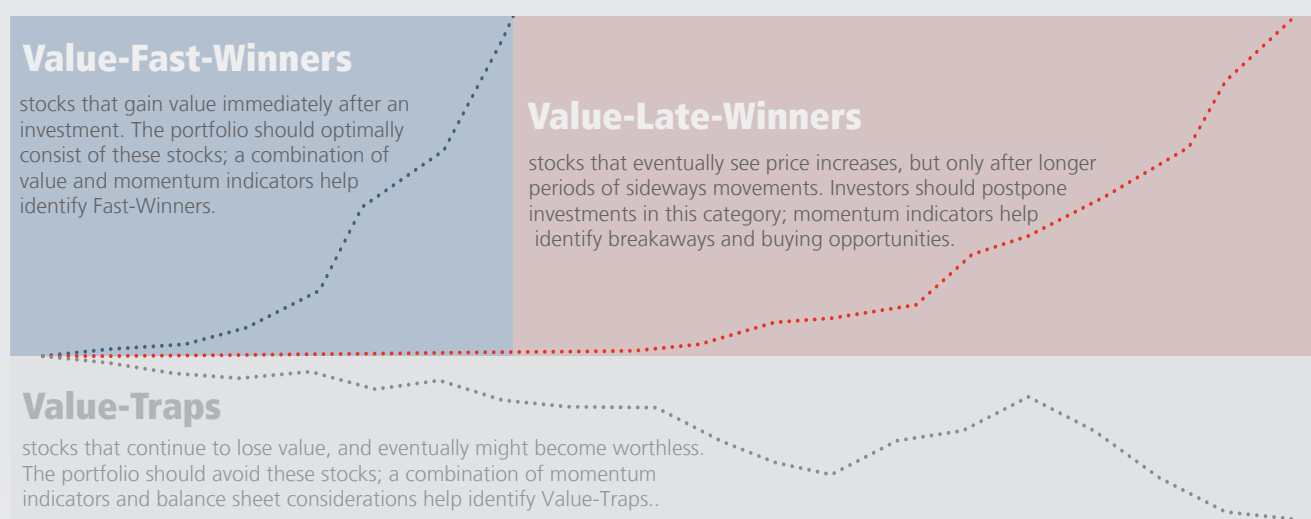


Fig 1: Graphical representation of the classification of value-stocks on the basis of Bird (2007).



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Historical Data shows negative Correlations between Value- and Momentum-Premiums

| | Period | Market | Database | Korrelation |
|--------------------------------------|-------------|----------------------|--|-------------|
| Bird / Whitaker (2004) | 1990 - 2002 | 7 EU Markets | Worldscope, IBES, GMO Woolley | -0,74 |
| de Groot / Pang / Swinkels (2010) | 1997 - 2008 | 24 Frontier Markets | Standard & Poor's | -0,25 |
| Cakici / Tan (2012) | 1991 - 2011 | 41 Markets worldwide | Datastream, MSCI, Kenneth French Data | -0,25 |
| Cakici / Tan (2012) | 1991 - 2011 | 18 Emerging Markets | Datastream, MSCI | -0,26 |
| Asness / Moskowitz / Pedersen (2013) | 1974 - 2011 | USA / Europa / Japan | Compustat, CRSP, Worldscope, Bloomberg | -0,52 |
| StarCapital (2014) | 1927 - 2013 | USA | Kenneth French Data | -0,50 |
| Average Correlation | | | | -0,42 |

Fig 2. Empirical studies investigating the correlation between value- and momentum-stocks. The stated correlation refers to the correlation between excess returns (except for Asness, Moskowitz, Pedersen (2013), who calculate the correlation on the basis of average returns).

combination. A central reason for this observation is that value- and momentum-strategies are not perfectly positively correlated, and have advantages at different points in time. According to basic portfolio theory, the combination of less than perfectly correlated investments reduces a portfolio's overall risk, and can potentially improve a portfolio's risk-return profile.

Correlation between Value and Momentum

Figure 2 displays historical correlations between value- and momentum-strategies according to different researchers. All

investigated studies conclude that value- and momentum-premiums exhibit significant negative correlations. This negative correlation is responsible for a reduced volatility of combination strategies as opposed to single-factor strategies.

Higher Returns and lower Risk?

Figure 3 plots the results for different investment strategies as presented by O'Shaughnessy (2012). As one can see, investors should avoid expensive and low-momentum-stocks, which yielded a combination of low returns and high volatility. Conversely, investors who invested

The combination of Value and Momentum led to the highest Sharpe Ratio between 1965 and 2009

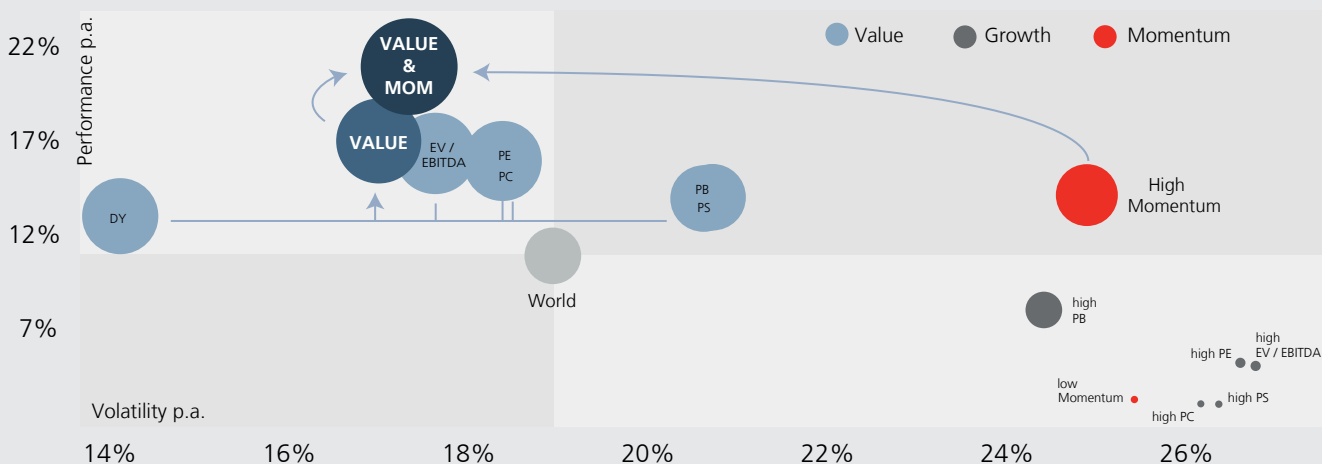


Fig 3. Different investment strategies plotted against yearly standard deviation and return based on data from 1965-2009. The size of the bubbles represents a strategy's Sharpe Ratio. The Value-indicator consists of the PB, PE, EV/EBITDA, PS, EY, and PC ratios. The Momentum-indicator is based on price data of the previous 6 months. The value-momentum-portfolio chooses the 25 to 50 highest momentum-stocks out of the cheapest 10% of value stocks. All returns were risk-adjusted (O'Shaughnessy, 2012).

Historical Returns of different Investment Strategies

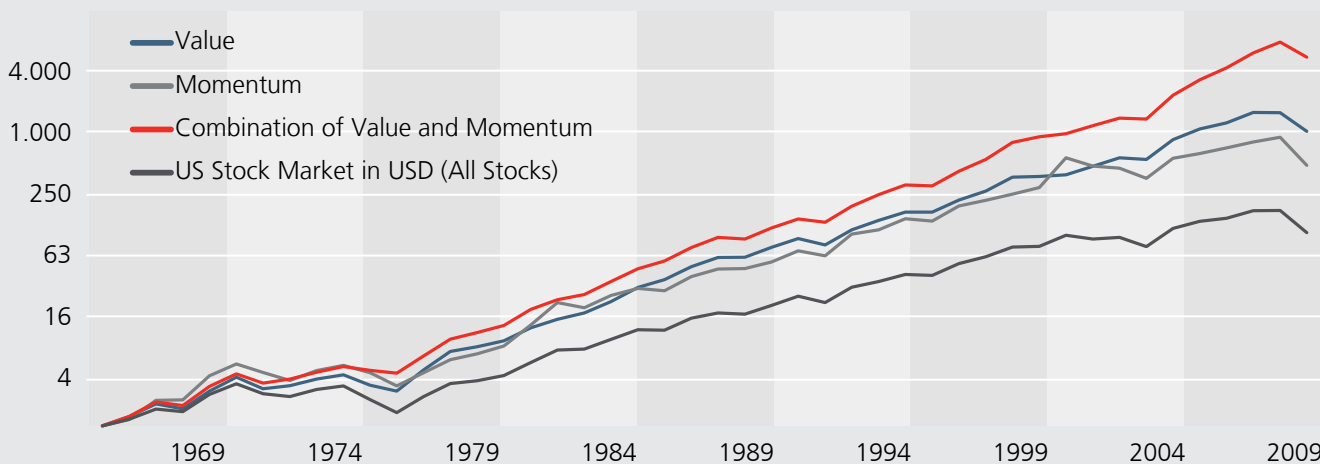


Fig 4. Results based on the US-market between 1964 and 2009. The Value-indicator consists of the PB, PE, EV/EBITDA, PS, EY, and PC ratios. The Momentum-indicator is based on price data of the previous 6 months. The value-momentum-portfolio chooses the 25 to 50 highest momentum-stocks out of the cheapest 10% of value stocks. All returns were risk-adjusted (O'Shaughnessy, 2012).

in cheap and high-momentum-stocks earned higher returns than the market. However, a combination of cheap stocks with high positive price momentum earned the highest return and achieved the highest Sharpe Ratio.

Figure 4 plots the underlying strategy results. The U.S. stock market (all stocks) achieved a yearly return of approximately 11%. As noted above, value stocks outperformed momentum stocks in the long-run (17.1% yearly vs. 14.2% yearly), but the value-momentum-combination showed the highest yearly return of roughly 21%. According to O'Shaughnessy's (2012) results, the combination strategy additionally had a lower volatility than the market and a lower volatility than all investigated strategies.

Clearly, there are reasons why O'Shaughnessy's (2012) results of more than 20% per year seem to be inflated and should thus certainly not be directly extrapolated into the future. First, the past 14 years of sideways movements of many equity indices make a return of more than 11% (achieved in boom periods of the U.S. economy) seem extraordinary, let alone strategy returns of more than 20%. Second, the presented strategies could very well contain a bias, and seem to have been selected ex post as to achieve a high relative outperformance compared to the market. Lastly, it is questionable whether these results could be confirmed in different studies, markets, and time frames, especially in light of the poor performance of many value and momentum strategies in recent years.

However, even though the number of comparable studies is limited, and even though the experiences from reality will most likely differ from past studies, other researchers confirm the general superiority of combination strategies vis-à-vis single-factor-strategies. Bird and Casavecchia (2007, Figure 5) investigate the relationship between price momentum and the PS-ratio in 15 European countries between 1989 and 2004.

Strong Price Momentum enhances Value-Effect

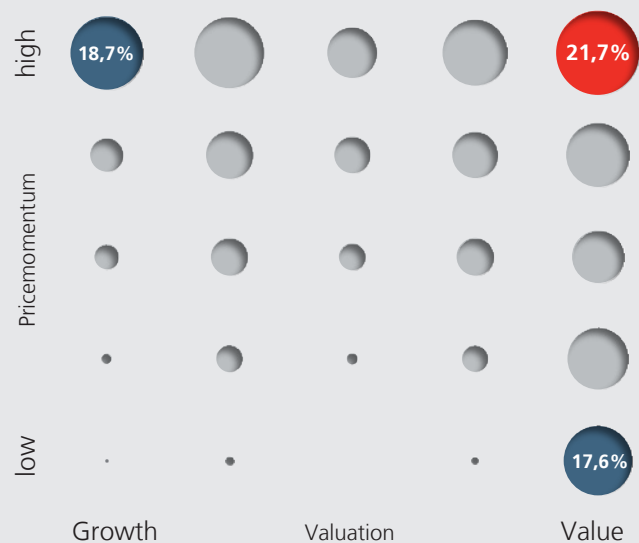


Fig 5. Yearly returns of stocks belonging to different value- and momentum-quintiles in 15 European equity markets from 1989-2004. The sizes of the bubbles represent the achieved returns. The value-criterion is the PS, the momentum-criterion is the monthly average return over the past 6 months. The investment horizon is 6 months. The fifth quintile (from left to right contains value-stocks, the fifth quintile from the bottom to the top contains high-momentum-stocks. Bird and Casavecchia (2007).

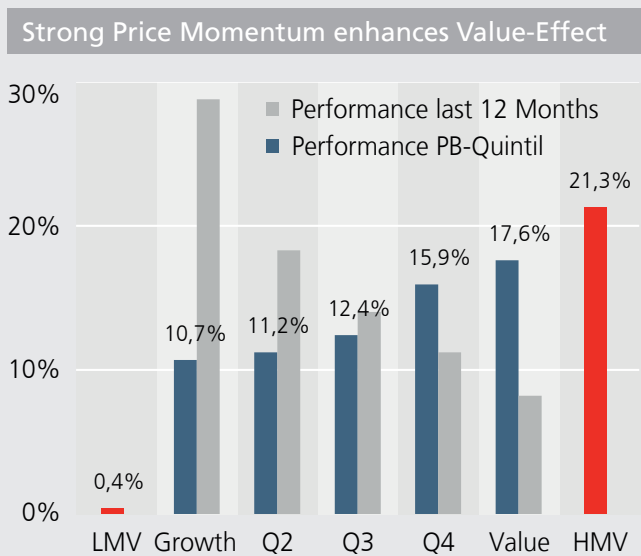


Fig 6. The graph shows the yearly returns of the U.S. market from 1963-1994. The quintiles are formed based on the PS-ratio (blue). The grey bars in the background represent the quintile's price momentum over the previous 12 months. The LMV-bar contains the most expensive stocks with the lowest price momentum; the HMV-bar contains the cheapest stocks with the highest price momentum. Asness (1997).

They make several observations: First, they find that stocks with the highest positive price momentum achieved higher returns than stocks with low momentum. Second, they confirm that cheap stocks (PS) earn higher returns than expensive stocks. Third, they observe that a combination-strategy of value and momentum is superior to both single-factor-strategies. Asness (1997, Figure 6) obtains similar results for the U.S. market between 1963 and 1994. He concludes that value-

stocks offer a significantly higher return if they have a high positive price-momentum than no or negative price momentum.

Own Research

Our own research confirms these results. Our study of 32 equity markets between 1986 and 2008 (see Figure 7) shows that value-investors should include momentum-considerations into their investment decisions. In our study, the benchmark earned a yearly return of 9.3%, which is approximately 10% less than the tested combination strategy, which outperformed both pure value- and momentum-strategies. It is interesting to note here that the results were similar for different value-definitions. Investors following a combination strategy may not only enhance their outperformance, but also increase the number of positive investment decisions: In our study, pure value-investors made advantageous decisions in 52.2% of all cases, whereas investors considering value and momentum made advantageous decisions in 57.6% of the cases. These effects were not only tested on an aggregate basis, but also for each of the 32 countries separately. A combination strategy was preferable in 24 of the 32 countries.

Why does this work?

One possible reason why a momentum-factor enhances a value-strategy is that pure value-investors often invest in

| International Value-Plus-Momentum-Strategies between 1986 and 2008 | | | | | | |
|--|-------|----------|----------|------------|---------------|--------------|
| Value-Indicator | Value | Value+RS | Outperf. | pSig Value | pSig Value+RS | Country pos. |
| Price-Earnings-Ratio | 13,5% | 18,6% | 5,1% | 52,4% | 57,4% | 81,3% |
| Price-Cashflow-Ratio | 14,2% | 19,6% | 5,4% | 52,5% | 56,2% | 75,0% |
| Price-Bookvalue-Ratio | 14,0% | 18,9% | 4,9% | 52,3% | 58,7% | 68,8% |
| Price-Sales-Ratio | 13,6% | 17,2% | 3,6% | 51,2% | 55,0% | 71,9% |
| Dividend Yield | 12,1% | 16,5% | 4,4% | 52,1% | 57,4% | 71,9% |
| Multifactor Value-Strategy | 15,2% | 23,3% | 8,1% | 52,8% | 60,8% | 84,4% |
| Average | 13,8% | 19,0% | 5,3% | 52,2% | 57,6% | 75,6% |

Fig 7. The table shows the results of different single- and multifactor-strategies tested in 32 international equity markets (in EUR, total return indices) between 1986 and 2008. To reduce the impact of look-ahead and survivorship-biases, we include "dead" companies, require a minimum market capitalization of 500 Mio. EUR, and calculate the test statistics with a delay of 3 months. The last row ("Multifactor-Value-Strategy") is a combination of the single value factors in the rows above. The column "Value" shows the mean returns of a strategy that invests monthly (for 12 months) into the cheapest decile of all stocks. The column "Value+RS" shows the mean returns of a strategy that invests monthly (for 12 months) into the cheapest decile of all stocks belonging to the decile with the highest price momentum (over the previous 6 months). The columns "pSig Value" and "pSig Value+RS" indicate how many signals have generated an outperformance relative to the benchmark. The last column shows in how many countries the combination strategy was superior to the value-strategy. The benchmark achieved a yearly return of 9.3%, the first momentum-decile a yearly return of 13.5%. Source: StarCapital, MarketQA, Worldscope, I/B/E/S.

Empirical Studies relating to the Combination of Value and Momentum

| Research Paper | Period | Market | Database | Value | Value+RS | Outperform. |
|---------------------------|-------------|---------------|--------------------|-------|----------|-------------|
| Asness (1997) | 1963 - 1994 | USA | CRSP, Compustat | 17,6% | 21,3% | 3,7% |
| Bird / Whitaker (2004) | 1990 - 2002 | 7 EU Markets | WS, IBES, GMO | 9,4% | 10,2% | 0,8% |
| Bird / Casavecchia (2007) | 1989 - 2004 | 15 EU Markets | WS, GMO, IBES | 16,8% | 21,7% | 4,9% |
| StarCapital (2009) | 1986 - 2008 | 32 Markets | MarketQA, WS, IBES | 13,8% | 19,0% | 5,3% |
| O'Shaughnessy (2012) | 1964 - 2009 | USA | Compustat | 17,1% | 21,1% | 4,0% |
| Average Performance | | | | | | 3,7% |

Fig 8. WS=Worldscope. All returns are yearly. The table only contains studies that investigate value-stocks with a high positive price momentum. Other studies that separate portfolios into a value and a momentum part are not considered here, even though they also report higher performances than single factor portfolios. See Asness, Moskowitz, and Pedersen (2013).

Late-Winners and *Value-Traps*. Momentum-considerations seem to improve timing, and reduce the likelihood of investing in a stock that is experiencing an unbroken downward trend. Additionally, investors who invest in value-stocks with positive price-momentum can benefit from the negative correlation between value- and momentum-premiums. As value- and momentum-strategies develop their strengths in different market stages, a diversified portfolio may help to reduce volatility of returns.

Conclusion

Numerous studies document that value-investors can earn a yearly 3% excess return over the benchmark. Our findings

presented in this study furthermore suggest that this excess return can be enhanced by adding momentum-considerations into the investment decision. Investors choosing value stocks with a high price momentum could earn 1-5% higher yearly returns (depending on market and time frame) than by investing purely into value-stocks. The reason for this observation seems to be that investors considering high positive price-momentum in addition to a stock's valuation improve their timing. In addition, the negative correlation between the value- and momentum-styles increases diversification and reduces portfolio volatility. We use these insights in the portfolio management process of our international equity fund StarCapital Priamos, which invests primarily in value-stocks exhibiting a high positive price momentum.

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Das Ganze sehen, die Chancen nutzen.

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