

University of Groningen

Style investing

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Document Version

Publisher's PDF, also known as Version of record

Publication date:

2006

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Wouters, T. (2006). *Style investing: behavioral explanations of stock market anomalies*. [Thesis fully internal (DIV), University of Groningen]. s.n.

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Chapter 6

Conclusions

6.1 Overview

For the last two decades, empirical evidence has shown that patterns in stock return data exist that cannot be explained with classical finance models like the CAPM. Several behavioral and rational models have been developed to explain the patterns in stock returns. As has been mentioned in chapter 1, the main purpose of this thesis is to identify, analyze and further develop the behavioral reasoning underlying empirical observations of return patterns. In this thesis we have presented four chapters in which different aspects of behavioral models and the impact of the underlying assumptions on stock returns are analyzed. In chapter 2 an overview of the relevant literature has been presented. We can categorize the other three chapters according to two issues:

1. Value premium

With respect to the value premium we investigate the expectational error hypothesis and the drivers behind investors' uncertainty. So far, both issues have been explored in different kinds of ways to explain the value premium. All of these empirical studies use the same method for the classification of value and growth stocks. We develop an alternative method to show better insights in the dynamical process of the life of value and growth stocks.

2. Style investing

With respect to the style investing hypothesis of Barberis and Shleifer (2003), we investigate to what extent stock popularity can be attributed to style investing. The model by Barberis and Shleifer has been tested by several researches using in- and outflows of mutual funds and portfolios of individual investors. So far, social effects such as collective preferences of investors have been neglected in these studies. We use different variables that reflect the collective preferences of investors and investors' sentiment over time to test the popularity issue.

The part that is dedicated to the value premium consists of chapter 3 and 4. Chapter 5 is dedicated to style investing and stock popularity. The purpose of the present chapter is to summarize our main findings, point to unanswered questions and offer some suggestions for further research.

6.2 Main findings

In this thesis we analyze empirically several underlying assumptions of behavioral finance models. The general hypothesis is that behavioral finance has explanatory power with respect to the patterns found in stock

returns. In this section, we summarize our main results and highlight the most important conclusions that we derive from these results.

In chapter 2 we give a review of models, rational versus behavioral, that explain stock returns. We show that some anomalies have not been fully explained and that there is room for further analyses. With respect to the value premium two possibilities seem worth to investigate: first, the error-in-expectation hypothesis, second, the drivers behind investors' uncertainty. So far, both issues have been explored in different kinds of ways to explain the value premium. Another issue that deserves a closer look is the style investing hypothesis of Barberis and Shleifer (2003). Based on our review of the literature we have decided to investigate to what extent the stock popularity can be attributed to style investing.

In chapter 3 and 4 we analyze an alternative classification method to show better insights in the dynamical process underlying value stocks and the value premium. We make a distinction between switching versus fixed-style stocks. Within each style (i.e. value versus growth stock investing) we distinguish between stocks that stay for one period within a particular style and stocks that stay for two or more periods within a particular style. We analyze how stocks behave when they switch from style and what variables or factors are important to explain the style-switching behavior. We find that only a small fraction of the 'value group' is responsible for the value premium, notably the switching-style stocks.

In chapter 3, using our newly obtained classification method, we investigate the role of investors' optimism/pessimism in explaining the value premium. In order to attain this goal, we use forecasts of financial analysts and focus on the bias in earnings in the next two years after portfolio formation. We assume that investors' expectations can be proxied by analysts' earnings forecasts.

To test the optimism hypothesis, we compare analysts' forecast with the final earnings realization, i.e. investors are optimistic when analysts' earnings forecasts are higher than actual earnings realization and pessimistic when analysts' earnings forecasts are lower than actual earnings realization. It turns out that the value premium is not determined by pessimism of investors who extrapolate the poor performance of value stocks too far into the future. Instead, our results show that analysts' earnings forecasts of value stocks losing their initial classification (i.e. style-switching value stocks) are associated with increasing optimism. This result contradicts the main conclusion of La Porta (1996) and La Porta *et al.* (1997). We believe that our results are more robust, since we focus only at a small group of value stocks that generate the value premium. By analyzing only that fraction of stocks that is responsible for the value premium, we show better insights in which variables or factors are important in the dynamical process underlying value stocks and the value premium.

In chapter 4, we focus on uncertainty of expected earnings. As a proxy of investors' uncertainty we use dispersion in analysts' earnings forecasts. We investigate whether uncertainty is related to past information and to the speed of information diffusion. Firstly, we look for evidence that uncertainty is increasing when less information about a stock is revealed. Secondly, we examine whether uncertainty is increasing because investors extrapolate past information into the future. This information can be in the form of stock returns but also in the form of forecast errors. If investors' earnings forecasts have been wrong a couple of times, investors may feel deceived and investors' uncertainty about future earnings will increase.

We conclude that the less information is revealed about a company, the more likely it is that too optimistic expectations and bad past performance lead to higher uncertainty. In addition, we have investigated whether switching style stocks should be associated with high uncertainty in earnings prospects than fixed-style stocks. Our findings show evidence that

analysts are more uncertain about the earnings prospects of switching style stocks than they are about the earnings prospects of fixed-style stocks.

Combined with the evidence from chapter 3, we conclude that the value premium is the result of uncertainty accompanied by changing expectations of future earnings in the year after formation. This means that investors are initially uncertain about the prospects of switching-style stocks. During the post formation year in which the style-switch takes place, investors are surprised and change their expectations drastically in the opposite direction. This results in an increase (decrease) in optimism for switching-value (-growth) stocks.

Whereas chapters 3 and 4 focus on explanations for the value premium, chapter 5 investigates to what extent the popularity of a stock can be attributed to style investing. We gather proxies for stock popularity that can be used as time series variables to construct a novel composite popularity index based on principal component analysis. We then apply a regression analysis between this popularity index and the proxy for dispersion (dispersion being our measure of heterogeneity of stock behavior within a style category). We use the cross standard deviation of the turnover ratio as a proxy for dispersion to test whether stock popularity can be attributed to style investing. The evidence that we present challenges the view that popularity is on a style level rather than on an individual stock level. From our findings we can conclude that the popularity of a stock cannot be attributed to style investing. This suggests that the popularity of stocks is stock specific and not dependent on the investment style that it belongs to. Next, we investigate whether our results are influenced by size-effects. We find size-effects for styles that are not popular and no size-effects for the popular styles. Moreover, when styles are less popular, the quintile with largest stocks has lower dispersion than the quintile with the smallest stocks. This suggests that if the on average less popular styles become

popular, investors will prefer large-cap stocks over small-cap stocks. In addition, we investigate the impact of past performance in returns on style popularity. It turns out that style popularity is determined by past performance in returns. This result confirms the findings by Pomorski (2004), Kumar (2002), Froot and Teo (2004).

We have identified and analyzed the behavioral reasoning underlying empirical observations of return patterns. The analyses in chapters 3 and 4 with a newly obtained classification method show better insights in the dynamic behavior of value and growth stocks. The analysis of uncertainty in chapter 4 shows that uncertainty is increasing if firms have low analysts' coverage, have too optimistic earnings forecasts and have low past performance. With respect to style investing, the evidence in chapter 5 suggests that stock popularity cannot be attributed to style investing. This is more pronounced for small stocks than large stocks. Summarized, our findings suggest that the behavioral reasoning in the literature underlying empirical observations of return patterns has to be reconsidered.

6.3 Discussion

The question whether anomalies can be explained with rational or behavioral explanations remains a vividly debated one. Based on our findings we have to conclude that investors are subject to biases. In other words, we advocate behavioral explanations. Compared to the existing literature on the value premium, we use an alternative method of classification. We find that our approach of classification leads to different outcomes, and may therefore be an important step in improving our understanding of the existence of the value premium. For example, contrarian to the literature, we find that the value premium is caused by

investors' optimism instead of investor's pessimism.

In a dominant strand of the literature the value premium has been explained by the expectational error hypothesis. The superior return of value stocks is due to expectational errors made by investors, who tend to extrapolate past earnings growth rates too far into the future. Our results tell a different story. Apart from the fact that analysts are more optimistic about the future earnings of value stocks than growth stocks, we also find that the value premium is caused by an increase in analysts' optimism for a small fraction of the value stocks that is responsible for the value premium. This result puts the discussion about the explanation of the value premium in a different perspective.

A second explanation for the value premium is from Doukas, Kim and Pantzalis (2003), who suggest that the value premium is the result of investors' uncertainty. They use analysts' uncertainty as a proxy for risk²² and show that the superior returns of value stocks are due to higher uncertainty about future earnings. Our alternative classification leads to different outcomes. Apart from the fact that uncertainty is not positively related to stock returns, we also find a nonlinear relation between the book-to-market ratio and uncertainty. The switching-style stocks show higher uncertainty than the fixed-style stocks for both value and growth portfolios. In line with this, we find that the chance for a stock to migrate from one style category to another in the next year is higher when uncertainty is higher. This result also puts the discussion about the explanation of the value premium in a different perspective.

This thesis is based on empirical studies, which depend on the availability of data. Therefore, a number of interesting topics has not been analyzed, but

²² Doukas, Kim and Pantzalis (2003) use dispersion in analysts' earnings forecasts as an uncertainty-metric, which is positively related to uncertainty of future growth in earnings and, therefore, to the riskiness of equity investment.

should be mentioned here. First, we use analysts' earnings forecasts and dispersion in analysts' earnings forecasts from the I/B/E/S database as a proxy for investors' expectations and uncertainty about future earnings. The analysts' earnings forecasts reflect the analysts' expectations of future earnings, and the dispersion in analysts' forecasts manifests the analysts' divergence of opinion in predicting future earnings. As a consequence, we have only dealt with the expectations and uncertainty of future earnings of financial analysts instead of the expectations and uncertainty of investors.

In addition, the measurement of financial analysts' expectations as a measurement of investors' expectations may have a pitfall as well. The expectations of investors might be less optimistic in nature than the expectations of financial analysts²³. Financial analysts may have a self-interest in recommending stocks to generate commissions and other investment banking activities, such as equity issues and IPO's. The role and measurement of investors' expectations and uncertainty remains unclear and must be further analyzed.

Second, we use a number of proxies that reflect the degree of collective preferences of investors in order to measure popularity. Popularity will often be related to fashion and, therefore, to fashion cycles. With data on social interaction, an analysis of stock markets in terms of fashion might have been performed. Investigating the effect of social interaction in the decision making process of investors seems worthwhile to investigate further. For example, it would be interesting to investigate to what extent the preferences of an individual investor are influenced by the preferences of friends, families and relatives. To describe the investment process in terms of fashion and fashion cycles, social interactions may be an important aspect to be analyzed further.

²³ Although, La Porta (1996) and Elton, Gruber and Gultekin (1981) show that analysts' forecasts represent a relatively good proxy for market's earnings expectations of future earnings.

Finally, the last area that deserves more attention is the impact of risk on stock returns. The ‘rational school’ believes that the value premium should be explained in terms of non-diversifiable risk. We have not investigated whether the switch that stocks make from one style to other styles is the result of non-diversifiable risk. Although we have shown that uncertainty is higher for switching-style stocks compared to fixed-style stocks, we have also shown that there is a negative relation between uncertainty and future returns. The negative relation between uncertainty and future returns is difficult to reconcile within a risk-based framework. Barron *et al.* (1998) and Doukas *et al.* (2006) argue that uncertainty captured by the dispersion in analysts’ earnings forecasts is likely to be a poor proxy for risk, since it is contaminated by the idiosyncratic elements of uncertainty in analyst information. They believe that the differences of opinion as a proxy for uncertainty should stem from the volatility of a firm’s underlying fundamentals rather than poor or limited information. This issue still remains open and further research is needed.

