Style investing

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Chapter 3

The value premium and changing expectations: on the growth of value stocks and the value of growth stocks*

3.1 Introduction

The value premium has been subject of an extensive debate in the literature. Repeated empirical research shows that the value premium, which is the difference between the return of value and growth stocks, is positive[3]. The debate is on the nature of this premium. Fama and French (1992) consider the value premium as a reward for systematic risk in the context of a linear multifactor model. In their opinion, the value premium is related to firm

*This chapter is a working paper of T. Wouters and A. Plantinga (2005).

leverage, measured by the market-to-book ratio, which can be considered as a proxy for financial distress. Another model in the rational school (see chapter 2, section 2.2) is that of Berk *et al.* (1999), who perform a simulation study based on a dynamic model of the firm. This model provides a rational justification for the book-to-market ratio as the relevant determinant, since it is rooted in (rational) option pricing theory, and is able to replicate many of the results found in the empirical literature, such as the findings of Fama and French. On the other hand, behaviorists (see chapter 2, section 2.3) relate the value premium to the inability of investors to process and evaluate information correctly. Lakonishok *et al.* (1994) suggest that the superior return of value stocks is due to expectational errors made by investors, who tend to extrapolate past growth rates too far into the future. When earnings are realized and financial results are made public, investors are faced with surprises. For value stocks, which have low implicit future growth rates, earnings realizations are systematically above expectations (investors exhibit pessimism) and result in positive stock returns. For growth stocks, the opposite happens, and earnings realizations tend to lead to negative return surprises (investors suffer from optimism). This assumed tendency to extrapolate past information too far into the future is referred to as the expectational error hypothesis (also called the extrapolation hypothesis).

La Porta (1996) tests the expectational error hypothesis using financial analysts' earnings forecasts as proxies for the expectations of investors. He defines value stocks as those having low expected earnings growth rates and growth stocks as having high-expected earnings growth

[3] See for example, Fama and French (1992, 1993, 1996). Other authors use the label glamour stock as an alternative name for growth stocks.

rates. He sorts stocks based on their forecasted 5-year growth rates, and finds that the realized earnings yields in the period after the initial sort is higher for value stocks than for growth stocks. La Porta *et al.* (1997) study the returns in the days surrounding an earnings announcement. They find that value stocks show a significant positive excess annual return of approximately 4% on the three days surrounding an earnings announcement. Growth stocks show negative returns of approximately –0.4%. The positive announcement return for value stocks is seen as evidence supporting the extrapolation hypothesis. Using analyst earnings forecasts 8 months prior to the fiscal year end, Doukas *et al.* (2002) reject the expectational error hypothesis, since they find that value stocks tend to have higher forecast errors and larger downward forecast revisions than growth stocks. Initial forecasts for both value and growth stocks are too optimistic, and the optimism for value stocks exceeds the optimism for growth stocks[4]. Furthermore, they find that analysts revise forecasts downward for both value and growth stocks as time progresses towards the forecasting horizon.

Based on this discussion, it seems fair to reject investor pessimism as the cause of the value premium and focus on the role of excess optimism in the longer-term forecasts as an alternative explanation for the value premium. Klein (1990), Ali *et al.* (1992), and Dowen (1996) provide evidence supporting the notion that investors become overly optimistic for stocks that show some good news after a period of mediocre performance. They find that analysts issue more optimistic forecasts for firms reporting recent losses than for firms reporting recent profits. Sedor (2002) suggests that this difference in optimism is related to unintentional optimism caused by the scenarios used by management to present forecasts. Scenario

[4] In contrast, Chan, Karceski, and Lakonishok (2003) find that the 5-years forecasts in I/B/E/S are excessively optimistic relative to the realized rates, in particular for firms with high growth rates.

thinking inflates the probability beliefs regarding the forecasted outcome. Although most value stocks do not suffer losses, investor's expectations may suffer from the same unintentional optimism initiated after some good news regarding the performance of a value stock with a previously mediocre earnings growth. Rather than extrapolating past (low) earnings growth, investors are overly pleased with good news on future earnings.

In this chapter we investigate the role of investors' optimism in explaining the value premium. In order to attain this goal, we use forecasts of financial analysts and compare these with the final earnings realization. This allows us to draw conclusions on the level of optimism present in analysts' forecasts. The studies of La Porta *et al.* (1997) and Doukas *et al.* (2002) focus on the bias in earnings prior to the announcement date. We 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. As a consequence, investor optimism/pessimism can be measured by analyst forecast precision, i.e. investors are considered to be optimistic when analysts' earnings forecasts are higher than actual earnings realization and pessimistic when analysts' earnings forecasts are lower than actual earnings realization. In order to relate investor optimism to the value premium, we first analyze the stocks that are responsible for realizing the value premium. The value premium is generated by a relative small group of value stocks that get reclassified as 'medium' or growth stock, creating large returns for the value portfolio. Similarly, growth stocks perform badly due to a small group of growth stocks that looses its classification, and creates a large negative return. Therefore, we make a distinction between switching-style stocks and fixed style stocks. For example, switching-value stocks are classified as value stock in year *t* but loose their status as a value

stock in year *t* +1. Fixed-value stocks are able to prolong their status as value stocks for two or more years. Likewise, switching-growth stocks are stocks that are reclassified after one year, and fixed-growth stocks remain in their class for two or more years. As we will show in this chapter, analyst forecasts of value stocks losing their initial classification are associated with increasing optimism, predicting an earnings yield of 14.6% whereas 10.3% is realized eventually.

This chapter is organized as follows. In section 3.2 we provide a description of the data. In section 3.3 we describe differences in performance and announcement returns for switching- and fixed style stocks. In section 3.4 we study the level of optimism and pessimism present in analysts' earnings forecasts. Section 3.5 provides a summary and a conclusion.

3.2 Sample selection

We use return data from the CRSP database, accounting data from COMPUSTAT, and earnings forecasts from I/B/E/S. The sample period covered in this study is from the beginning of January 1976 to the end of December 2003. Each stock is classified into one of three portfolios based on book-to-market value of equity (*BE/ME*) at the end of each year. The year after formation (*t*), book-to-market portfolios include all NYSE, AMEX and NASDAQ stocks for which we have market equity data and book value of equity in December of year *t*-1. We include stocks in our analysis with at least twenty-four months of return data and stocks with negative book-to-market values are omitted. We exclude real estate investment trusts (REITs), American Depository Receipts (ADRs), closed end mutual funds, foreign stocks, unit investment trusts and Americus

trusts[5]. Companies should also have at least two years of data on earnings (before extraordinary items). We collect announcements returns over a three-day period (τ^{6}-1, τ+1) surrounding each publication date in the Wall Street Journal.

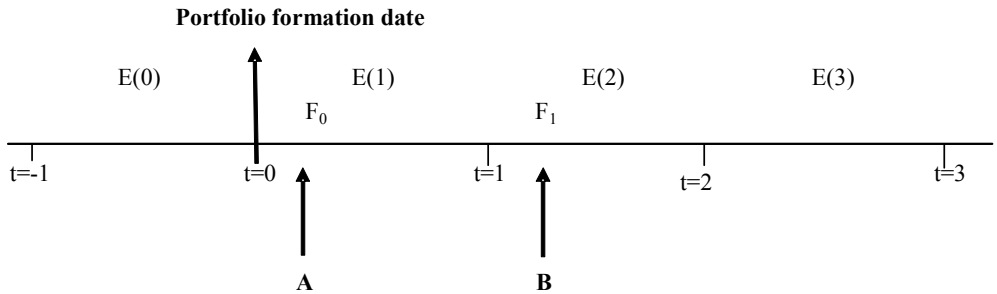
Returns are calculated from July at year t until June of year t+5. To ensure that the accounting variables are known before portfolio formation, we follow the same procedure as Fama and French (1992) by matching the accounting data of December t-1 with the returns of July in year t. The gap of six months between the fiscal data (December t-1) and the returns (June t) is conservative, because earlier work (e.g., Basu (1983)) reveals that most accounting data are available within three months of fiscal year ends. We collect the median annual consensus earnings forecasts from the I/B/E/S database starting from 1977. We select forecasts with a horizon of 1 and 2 years, as well as the long-term growth forecasts, which reflect the earnings growth rate for the next 5 years. Forecasts are made eight months before fiscal year-end, so that analysts have the annual reports and know the current earnings numbers before they make their forecasts. Forecast errors are defined as the earnings realization minus the consensus forecast as derived from I/B/E/S. Forecast errors are calculated at $t = 0$ and $t = 1$, by matching the forecast F_0 and F_1 with the relevant realized earnings number published in I/B/E/S. In order to facilitate aggregation of forecasted earnings and forecast errors, we scale both observations at $t = 0$ and $t = 1$ by the price at $t = 0$. We also retrieve the prices from I/B/E/S in order to be consistent with adjustments of stock dividends and stock splits. The timescale of our sample data is illustrated in figure 3.1. Where $E(t)$ is earnings of year t. If financial analysts are too optimistic for stocks that are

[5] Americus trusts are defined as sponsors of a technique to separate certain common stocks into a five-year warrant and a five-year covered call warrant writer's position at relatively low cost.

[6] Where τ refers to days, whereas t refers to years.

previously classified as value stocks, we expected on average significant positive forecast errors in the forecasts posterior to the year of switching. This implies that we investigate investors' optimism or pessimism in the forecasts (F_0 and F_1) of *future* earnings at $t = 0$ and $t = 1$, indicated by A and B in figure 3.1 for switching and fixed-style stocks.

Figure 3.1: Time scale of forecasts



Next, we divide the stocks into three different categories based on their book-to-market ratio. Following Fama and French (1992), each stock is classified in three book-to-market groups based on the breakpoints of the NYSE stocks, which are available on Kenneth French's website[7]. We label stocks below the 30th percent book-to-market equity (BE/ME) percentile as growth stocks and stocks above the 70th percentile as value stocks. Stocks with book-to-market values between these two classes are labeled "Medium".

Table 3.1 presents the annual buy-and-hold returns and the earnings announcement returns for value versus growth stocks from 1977 to 2003. These results correspond with the results of La Porta *et al.* (1997) and are consistent with Lakonishok *et al.* (1994). Panel A contains the annual buy-and hold returns over the 5 years after portfolio formation. The average difference in buy-and-hold returns between value and growth stocks is

[7] see http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/index.html

10.5% in the first year after formation, 10.0% in year +2 and 8.5% in year +3. The differences in returns are significant for all five post-formation years.

Table 3.1: Annual buy-and-hold returns and 12-day announcement returns from July 1977 to June 2003 for growth and value portfolios of NYSE, AMEX, NASDAQ stocks

Portfolios are sorted at the end of each December (between 1976 and 1997) of year *t* based on the book-to-market ratio. The top 30% represents the portfolio of value stocks and the bottom 30% represents the portfolio of growth stocks. The annual returns are calculated over the period July of year *t* until June of the year *t*+5. Returns are reported for 1 to 5 years after portfolio formation. Earnings announcement returns are the average returns in the three days surrounding the earnings announcement date. To obtain aggregated annual intervals, we sum up the four quarterly earnings announcement returns for each post-formation year. The significance levels are presented with stars, where ** is 1% and * is 5% significance level.

	Number of observations	Year after portfolio formation + 1	+ 2	+ 3	+ 4	+ 5
			A: Annual returns			
Value	5934	0.156	0.169	0.146	0.104	0.101
Growth	10774	0.051	0.069	0.062	0.034	0.049
Difference Value–Growth		0.105**	0.100**	0.085**	0.070**	0.053**
t-statistic on difference		4.129	4.524	4.247	4.462	3.067
			B: Earnings announcement returns			
Value		0.025	0.024	0.022	0.020	0.020
Growth		0.006	0.009	0.010	0.011	0.013
Difference Value–Growth		0.019**	0.016**	0.012**	0.009**	0.007**
t-statistic on difference		7.007	6.194	5.235	4.636	3.599

Panel B reports the earnings announcement returns over the 5 years after portfolio formation. The 20-quarterly earnings announcement returns are equally weighted 3-day (τ-1, τ+1) buy-and-hold returns calculated for each stock for which data is available in that quarter. For each post formation

year, we annualize the announcement returns by summing up the four quarterly event returns. For example, table 3.1 shows the announcement returns for the first year after portfolio formation, +1, which represents the average of the 22 formation years, i.e. each of the years 1976 through 1997, in which portfolio formation has been dated in December. The difference in earnings announcement returns is 1.9% in the year after formation, 1.6% in the second year and 1.2% in the third year. These differences are 18.1%, 16.0% and 14.1% of the annual buy-and-hold return differences.

In table 3.2, we show summary statistics for earnings forecasts and forecast errors. The top panel of table 3.2 presents the earnings forecasts for value stocks and growth stocks at the time of portfolio formation scaled by their corresponding stock prices at the beginning of the year. We present the average 1-year and 2-years earnings forecasts and long-term (5 year) growth rate forecasts. We scale forecasted earnings by the stock price, because differences in the number of stocks may result in large differences in earnings per share for firms that are equal in terms of size and profitability. As expected, the forecasted earnings level is much lower for growth stocks than for value stocks, and the forecasted growth in earnings is much higher for growth stocks. The average differences in 1-year and 2-year forecasted earnings between value and growth stocks is 4.7% and 5.7%, respectively. These differences in forecasted earnings are statistically significant at a 1% level. More surprising is the remarkable growth from the 1-year forecasted earnings yield to the 2-year forecasted earnings yield for value stocks. Next year's earnings is expected to be 9.3% of the current stock price, as compared to 12.1% for the earnings two years ahead. This increase is remarkable, since strong growth in earnings is usually associated with growth stocks. The bottom panel displays the forecast errors. Forecast errors are measures as realized earnings minus forecasted earnings. Therefore, a negative forecast error indicates analysts' optimism. As can be

seen, the forecasts for value stocks are on average more optimistic than for growth stocks.

Table 3.2: Average earnings forecasts and forecast errors for value and growth portfolios from 1977 to 2003

This table presents the average scaled earnings forecasts for value and growth stocks, and the expected long-term growth rate. This is the earnings growth rate for the next 5 years. The same classification criteria are used as in table 3.1. Earnings forecasts are reported at the moment of portfolio formation for the earnings in the first and second year after portfolio formation. Earnings forecast are reported with a 1 and a 2-year horizon. Earnings forecasts are scaled by the price at the time of portfolio formation. Long-term growth is not price-scaled and expressed in percentages. The *t*-statistic corresponds to the difference in means between value and growth stocks. The significance levels are presented with stars, where ** is 1% and * is 5% significance level. Values in brackets refer to medians.

	Number of observations	Forecast horizon		
		1 year	2 year	Average long-term growth rate (%)
		A: Average earnings forecast		
Value	5934	0.093	0.121	11.689
		(0.094)	(0.114)	(10.000)
Growth	10774	0.051	0.067	16.819
		(0.057)	(0.070)	(15.000)
Difference Value–Growth		0.047**	0.057**	-5.130**
		(0.039)	(0.045)	(-5.000)
t-statistic on difference		-18.777	-19.584	35.208
		B: Average forecast error (scaled)		
Value	5934	-0.035	-0.058	
		(-0.007)	(-0.018)	
Growth	10774	-0.016	-0.029	
		(-0.002)	(-0.012)	
Difference Value–Growth		-0.019**	-0.029**	
		(-0.006)	(-0.006)	
t-statistic on difference		-19.233	-15.753	

The average differences in 1-year and 2-year forecast errors between value and growth stocks is 1.9% and 2.9%, respectively. These differences are

statistically significant at a 1% level. Furthermore, the degree of optimism for the 2-year ahead forecast is larger than for the 1-year forecast.

3.3 Switching- and fixed-style stocks

Our analysis in the previous section is based on distinguishing two style investing categories among stocks, notably growth and value (with an intermediate category labelled 'medium'). Since stock prices and book values are variables that change over time, stocks can move from one style class to another. In order to get an impression of the probability that stocks switch from category, we report in table 3.3 the relative frequency of moving from category *i* at the start of year *t* to category *j* at the start of year *t* +1.

Table 3.3: Relative stock transitions between style categories

Panel A: Relative frequency

The relative frequency of stocks with portfolio classification *i* in year *t* moving to classification *j* in year *t*+1 for the period 1977 to 2003.

	Category *j* in year *t*+1		
Category *i* in year *t*	Growth	Medium	Value
Growth	0.754	0.225	0.021
Medium	0.157	0.651	0.192
Value	0.032	0.247	0.721

Panel B: Returns

The average returns in the period 1977 to 2003 from July of year *t* to June of year *t*+1 for stocks moving from category *i* in year *t* to category *j* in year *t*+1.

	Category *j* in year *t*+1		
Category *i* in year 1	Growth	Medium	Value
Growth	0.097	-0.120	-0.387
Medium	0.300	0.113	-0.084
Value	0.467	0.263	0.086

As can be seen, there are considerable year-to-year changes in the composition of value and growth portfolios. After a year, approximately 28% of the value stocks disappear from that category and 25% of the growth stocks do. These probabilities have interesting implications for the success of style investing. The most obvious implication is that maintaining a value or a growth strategy means active rebalancing. Panel B of table 3.3 shows the accompanying returns. Value stocks that migrate to the growth category earn a return of 46.7% and growth stocks that migrate to the value category earn a return of -38.7%.

Given the previous observations, we make the following distinction between switching-style and fixed-style stocks. Switching stocks are stocks that lose their status in the year after initial classification. Fixed-style stocks retain their status for two or more consecutive years. Switching-value stocks are classified as value stock at the start of year *t* and loose their status as a value stock at the start of year *t* +1. Fixed-value stocks have their status as value stocks for at least two consecutive years. Likewise, switching-growth stocks are stocks that are reclassified after one year, and fixed-growth stocks remain in their class for at least two years. If we assume that the book value of equity per share is constant within a two year period (see further analysis at table 3.6), the price change should be responsible for the style-switch that stocks make. Thus, we expect that switching-value stocks have higher returns than fixed-style stocks, since the price of the switching-value stocks must have risen in the year after portfolio formation. Furthermore, we expect that switching-growth stocks experience negative returns, since their switching is caused by a fall in stock market price. In panel A of table 3.5, we present the returns for switching and fixed-style stocks. As expected, the results indicate that the returns of switching-value stocks are substantially higher than those of switching-growth stocks in the first year after portfolio formation.

Table 3.5: Analysis of annual buy-and-hold returns of growth and value stocks from 1977 to 2003

Using the initial style classification, we calculate returns (panel A) and size-adjusted returns (panel B) for switching- and fixed-style stocks. The portfolio is formed at the beginning of a new sequence. The returns presented are the averages of the (size-adjusted) returns *n* years after the start of a sequence. See table 3.1 for explanation of the period of the annual returns.

Style	Value		Growth		Difference (V-G)	
	Switching	Fixed	Switching	Fixed	Switching	Fixed
Years after formation	**Panel A: Annual returns**					
1	0.285	0.086	-0.156	0.097	0.440	-0.011
2	0.092	0.124	0.062	0.029	0.030	0.095
3	0.083	0.113	0.032	0.026	0.052	0.087
4	0.060	0.102	0.029	0.001	0.032	0.101
5	0.042	0.066	-0.013	-0.019	0.056	0.084
Panel B: Size-adjusted annual returns						
1	0.116	-0.084	-0.304	-0.055	0.420	-0.028
2	-0.066	-0.042	-0.094	-0.112	0.028	0.070
3	-0.082	-0.051	-0.118	-0.120	0.036	0.069
4	-0.096	-0.065	-0.128	-0.136	0.032	0.071
5	-0.111	-0.088	-0.153	-0.148	0.042	0.060

Switching value stocks report a return of 28.5% in the year after portfolio formation, indicating a large change in stock prices and, therefore, a large change in the expectations of investors. For fixed-value stocks we report a return of 8.6% in the first year, which is much lower than the return for switching value stocks. Since the high returns reflect the switching event, returns for switching value stocks in the second and later years after formation are lower compared to the first year after formation, as stocks can retain their new status or can switch back to their old status at the expense of low or negative returns. On the other hand, switching-growth stocks report a return of –15.6% in the first year, whereas fixed-style growth stocks report a positive return of 9.7%. The negative return in the first year

reflects the switching event. Therefore, returns for switching growth stocks in the second and later years after formation are higher compared to the first year after formation. These results suggest that the differences between the returns of fixed-style value and growth stocks are moderate, whereas the differences in the returns of the switching style stocks of the categories are much bigger. Apparently, switching stocks experience large changes in investors' expectations regarding their future profitability. Notice that the switching- and fixed-style portfolios are based on hindsight information on the length of the classification sequence. Therefore, given our present results, it is not very likely that an investor can devise a strategy that enables him to invest only in switching-value and fixed-growth stocks.

While the value premium persists even after adjusting for size (Lakonishok *et al.*, 1994), we test whether the style-switching behavior is entirely driven by small stocks. In order to correct for potential size effects, we calculate size-adjusted annual buy-and-hold returns based on size benchmarks in the same way as La Porta *et al.* (1997) (see panel B of table 3.5). For each year, we divide stocks based on their market capitalization (determined at the last trading day of each year in June) in ten different size categories. The classification is based on the NYSE breakpoints[8], which are determined by the market capitalization in June of each year based on all NYSE stocks on CRSP. Because deciles may contain a disproportional part of value or growth stocks, we use for the calculation of the size-benchmark returns only stocks from the intermediate category ('medium'), which are neither value nor growth stocks based on their book-to-market ratio. The return of the resulting size benchmarks is calculated as an equally weighted average. Annual size-adjusted returns are calculated for each stock by subtracting the return of its corresponding size benchmark portfolio. The

[8] The NYSE-breakpoints can be found at the website of Kenneth French (http://web.mit.edu/kfrench/www/data_library.html). The size breakpoint for year *t* is

results for size-adjusted returns are consistent and even stronger than the unadjusted returns, as can be seen from comparing the right-hand columns of panels A and B of table 3.5.

In our explanation of the underlying cause of style-switching, so far, we have assumed that book values are constant with a two-year period. Since we attribute style switches to changes in earnings growth expectations (that underlie the changes in stock prices), it is important to check the behavior of book value. Changes in market-to-book ratios could also occur due to changes in book value, indicating *realized* growth, i.e. increased asset values. Furthermore, switching might be caused by a large depreciation (appreciation) or another accounting change unrelated to investors' expectations. In order to check whether changes in book value have contributed to the switching behavior, we calculated the mean and median book value for different years after their initial classification as a switching- or fixed-style stock. The results are reported in table 3.6. From panel B of the table we observe that the average first-year growth rate in the book value of switching-value stocks is 0.4%. Given the relevant return figure from table 3.5, this indicates that the switching behavior is mainly caused by price changes. Both groups (fixed and switching) of value stocks report a low realized first-year growth in book value, thereby confirming the image of value stocks as having poor growth rates. For switching-growth stocks, we observe an average growth of equity book value of 13.7% in the first year after formation. Therefore, together with the fall in stock price the increase in book value contributes to the reclassification of switching growth stocks.

Consequently, we conclude that the high returns for switching value stocks and the low returns for switching growth stocks are largely driven by

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the median NYSE market equity at the end of June of year *t*. See p. 5 for an explanation of the BE/ME breakpoints.

changes in stock prices and, therefore, by changes in investors' expectations.

Table 3.6: The analysis of book value of equity for switching versus fixed-style stocks for the period 1977 to 2003

The top panel of this table presents the average and median book value of equity. The bottom panel presents the implied growth rates of book values. Median values are given between brackets.

	Value stocks		**Growth stocks**	
	Switching	Fixed	Switching	Fixed
Year after initial stock classification:	**Panel A: Average book value of equity**			
0	388.878	442.16	214.474	370.92
	(32.697)	(37.881)	(29.758)	(32.779)
+1	368.425	459.127	258.184	431.862
	(30.669)	(37.766)	(35.092)	(42.552)
+2	392.759	461.969	284.798	513.354
	(34.078)	(37.116)	(35.673)	(52.669)
+3	434.087	466.504	296.871	599.419
	(37.136)	(37.494)	(36.992)	(60.766)
+4	458.243	475.499	301.979	672.775
	(40.111)	(37.978)	(39.263)	(68.416)
+5	481.474	481.963	323.897	750.426
	(42.861)	(38.551)	(39.355)	(74.746)
	Panel B: Growth rates in book value of equity			
+1	0.40%	2.20%	13.70%	38.50%
	(5.90%)	(3.30%)	(12.70%)	(19.50%)
+2	13.60%	1.50%	1.80%	30.10%
	(10.50%)	(3.50%)	(6.30%)	(17.10%)
+3	13.90%	3.40%	5.10%	19.70%
	(8.90%)	(4.10%)	(6.70%)	(13.40%)
+4	3.10%	5.10%	3.90%	0.60%
	(7.40%)	(4.30%)	(6.00%)	(11.10%)
+5	4.60%	4.20%	5.10%	1.70%
	(6.70%)	(4.40%)	(5.90%)	(9.50%)

Although the book value of equity of switching-growth stocks increases with 13.7%, the book value of equity of fixed-growth stocks increases with 38.5%. Therefore, we cannot simply conclude that the style-switch is caused by an increase in the book value of equity. Given that the return on fixed-style growth stocks exceeds the return on fixed-style value stocks, the value premium is largely driven by switching stocks. Value stocks perform so well because on average 30% of them loose their status as value stocks after one year and generate generous returns. This result in itself provides evidence against the expectational error hypothesis, since reassigning value stocks to a category with a higher market-value ratio (i.e. a lower book-to-market ratio) is hard to reconcile with investors extrapolating low levels of past growth into the future. Because at the moment of portfolio formation it is not known which stocks will be switching, it is difficult to build a strategy on switching- and fixed-style stocks. Therefore, the generous returns of switching style value stocks do not provide evidence against rational asset pricing or market efficiency.

Our distinction between switching and fixed-style stocks may have an interesting implication for active portfolio management. Given the transition probabilities presented in table 3.3, the probability that a growth stock is a fixed growth stock is much higher than the probability that a value stock is a switching value stock. Consequently, it may be easier for an active manager to pursue successfully an active strategy of growth stock investing than active value strategy. This may explain the result by Daniel, Grinblatt, Titman, and Wermers (1997), who found evidence of positive forecasting ability for aggressive growth fund managers.

3.4 Investor optimism and pessimism before and after style switching

In this section we investigate the role of analysts' optimism in explaining the value premium. The core of the optimism hypothesis is that analysts become too optimistic about the switching-value stocks and less optimistic about the switching-growth stocks. In order to test the optimism hypothesis, we use analysts' earnings forecasts and compare these with the final earnings realization. If analysts are too optimistic for stocks that previously classified as value stocks, we expect on average significant positive forecast errors in the forecasts posterior to the year of switching.

If prices reflect rational expectations, style switches should be caused by changes in unbiased expected growth rates, whereas the extrapolation hypothesis (error-in- expectation hypothesis) predicts that forecasted growth rates are systematically too low. In order to further analyze this aspect of the problem, we take a closer look at earnings growth rates with each style category. Table 3.7 presents the earnings growth rates (EG) for the switching- and fixed-style stocks. We show average and median growth rates (after having applied a filter on earning growth rates above 500%, to avoid the impact of firms with extreme growth rates. Examples of such firms are start-up firms, which have very small earnings in the beginning). We observe that the actual earnings growth rates for growth stocks are considerably larger than the growth rates for value stocks. Fixed-style value stocks show a persistent negative earnings growth, indicative of their perceived poor performance. Switching value stocks show a growth rate considerably less negative than fixed-style value stocks. More interestingly, the difference in earnings growth rates between time t=0 and t=1 for switching-value stocks is 10.3% and for switching growth stocks is -33.6%. This suggests that there is some substantial positive (negative) news on switching-value (switching-growth) stocks,

which may provide the ignition of the type of excessive optimism (pessimism) documented by Klein (1990), Ali *et al.* (1992), and Dowen (1996). For switching growth stocks, the growth rate becomes negative in the year of the switch, whereas the fixed growth stocks still show a positive growth in the first year.

Table 3.7: Realized earnings growth rates for switching- and fixed-style stocks, period 1977 to 2003

EG_0 indicates the earnings growth rate in the year prior to portfolio formation, EG_1 refers to the year after portfolio formation (median growth rates are presented between brackets). We applied a filter for earning growth rates above 500%. The subscripts *sg* and *fg* denote switching- and fixed-growth stocks, respectively, and the subscripts *sv* and *fv* denote switching- and fixed-value stocks, respectively. The significance levels are presented with stars, where ** is 1% and * is 5% significance level.

	Value stocks			**Growth stocks**		
	$EG_{0,sv}$	$EG_{1,sv}$	$EG_{1,sv}-EG_{0,sv}$	$EG_{0,sg}$	$EG_{1,sg}$	$EG_{1,sg}-EG_{0,sg}$
Switching-style stocks	-0.223 (0.014)	-0.119 (0.074)	0.103 (0.060)	0.236 (0.223)	-0.099 (0.009)	-0.336** (-0.214**)
	$EG_{0,fv}$	$EG_{1,fv}$	$EG_{1,fv}-EG_{0,fv}$	$EG_{0,fg}$	$EG_{1,fg}$	$EG_{1,fg}-EG_{0,fg}$
Fixed-style stocks	-0.149 (-0.009)	-0.253 (-0.019)	-0.104** (-0.010)	0.195 (0.191)	0.114 (0.163)	-0.080** (-0.027**)

The next step in our analysis is to test the hypothesis that the style-switching behavior of stocks is driven by an overreaction of investors to new information. To implement this we start with focusing on F_0, the forecasted earnings at the portfolio formation date and F_1, the earnings forecast 1 year after the portfolio formation date. If analysts are too optimistic (pessimistic) for stocks that previously classified as value (growth) stocks, we expect on average significant positive (negative) difference between the earnings forecasts at $t = 0$ and $t = 1$. We use forecast data on the earnings in the first and second year after formation, as well as on the long-term earnings growth (see also table 3.2). Table 3.8 contains

this forecast information in a derived format, limited to style-switching growth and value stocks. We test the hypothesis that analysts have raised the forecasts of next year's earnings of switching-value stocks, as well as the forecasts of year 2 and long term growth (5-year growth rates), relative to last year's forecast. We also test the hypothesis that analysts have lowered the earnings forecasts of switching-growth stocks.

Table 3.8: Changes in earnings forecasts

This table shows the mean and median (between brackets) of the earnings forecasts scaled by the price at portfolio formation date ($t = 0$). We deleted stocks with prices lower than 3 dollars at the beginning of the fiscal year, and stocks with forecast errors larger than 100% of the price. $F_{1,sv}$ indicates the earnings forecast at time $t = 1$ for switching value stocks (sv). The subscripts sg denotes switching growth stocks. Long-term growth is expressed as a percentage. Tests on median (mean) differences between F_0 and F_1 are performed with the Kruskal-Wallis test[9] (t-test). The significance levels are presented with stars, where ** is 1% and * is 5% significance level.

	Switching value stocks			**Switching growth stocks**		
Forecasts	$F_{0,sv}$	$F_{1,sv}$	$F_{1,sv}$–$F_{0,sv}$	$F_{0,sg}$	$F_{1,sg}$	$F_{1,sg}$–$F_{0,sg}$
1-yr forecast	0.088	0.115	0.027**	0.058	0.048	-0.009**
	(0.095)	(0.113)	(0.010**)	(0.061)	(0.054)	(-0.008)
2-yr forecast	0.116	0.146	0.030**	0.075	0.065	-0.010**
	(0.114)	(0.135)	(0.021**)	(0.075)	(0.067)	(-0.008)
Long-term	11.603	11.915	0.312	21.387	18.611	-2.777**
growth (%)	(10.000)	(10.000)	(0.000)	(19.000)	(15.500)	(-4.500**)

Table 3.8 shows that both 1-year and 2-year forecasts of switching value stocks increased with 2.7% and 3.0% at a statistical significant level of 1%. Furthermore, 1-year and 2-year forecasts for switching growth stocks have been lowered significantly. The 1-year and 2-year forecasts decreased with -0.9% and -1.0% at a 1% significance level.

In order to test whether these changes in expectations are too excessive, we calculate the forecast errors scaled by stock price. If the average scaled forecast errors are negative, financial analysts are too

[9] We show median values because mean values can be influenced by extreme observations (outliers).

optimistic, and financial analysts are too pessimistic if the forecast errors are positive. We expect that forecast errors for firms with poor actual earnings growth are smaller than those for firms that previously experienced high earnings growth. Therefore, we test whether the average forecast error for switching-value stocks is smaller than for switching-growth stocks. If optimism by financial analysts for switching stocks is representative for the expectations of all investors, then we can conclude that the stock market may have overreacted to the good news for switching stocks, and returns may actually be "too high". In that case, the value premium is partly driven by excessive optimism by investors. Since the errors in long-term growth forecasts are more difficult to evaluate, we omit these from the present analysis.

In table 3.9, we calculate the average forecasting error at portfolio formation date ($t=0$) and one year after ($t=1$), in order to test whether the degree of optimism has increased after the style switch. The table shows that optimism is present in the forecasts for all relevant stocks. Two-year forecasts are more optimistic than 1-year forecasts (except for sv at t=0). Initially, financial analysts were less optimistic for switching value stocks. However, after the stock switched the level of optimism by analysts has increased significantly by 2.9%. In other words, in addition to high returns, the earnings forecasts of switching value stocks also experience increasing optimism. We consider this as evidence that the value premium is associated with increasing optimism of investors rather than persistent pessimism as suggested by the expectational errors hypothesis. In order to show that our outcomes are not depended on the period we chose, we show in appendix 3A in table 3A.1 the forecast errors over the period 1977 to 1989 and over the period 1990 to 2003. These results are similar to the findings of table 3.9. Switching value stocks show an increase in optimism during the year of the style switch.

Table 3.9: Changes in earnings forecast errors, indicating changes in optimism and pessimism

This table shows the mean and median (between brackets) of the scaled forecast errors based on the same selection criteria used in table 3.8. To control for price-effects, forecast errors are scaled by the price at t=0. FE_0 and FE_1 indicates the error in earnings forecast at time t=0 and t=1, respectively. The subscripts *sv, sg, fv, and fg* denote respectively switching value, switching growth, fixed value and fixed growth stocks. Tests on medians are performed with the Kruskal-Wallis test. The significance levels are presented with stars, where ** is 1% and * is 5% significance level.

	Value stocks			**Growth stocks**		
Switching-style stocks	$FE_{0,sv}$	$FE_{1,sv}$	$FE_{1,sv}$–$FE_{0,sv}$	$FE_{0,sg}$	$FE_{1,sg}$	$FE_{1,sg}$–$FE_{0,sg}$
1-yr forecast	-0.016	-0.014	0.003	-0.021	-0.020	0.001
	(0.001)	(0.000)	(0.001)	(-0.010)	(-0.008)	(0.003)
2-yr forecast	-0.014	-0.043	-0.029**	-0.050	-0.040	0.012**
	(0.001)	(-0.010)	(-0.010**)	(-0.031)	(-0.018)	(0.013)
Fixed-style stocks	$FE_{0,fv}$	$FE_{1,fv}$	$FE_{1,fv}$–$FE_{0,fv}$	$FE_{0,fg}$	$FE_{1,fg}$	$FE_{1,fg}$–$FE_{0,fg}$
1-yr forecast	-0.031	-0.034	-0.003	-0.005	-0.009	-0.005**
	(-0.009)	(-0.006)	(0.003**)	(-0.000)	(-0.002)	(-0.002**)
2-yr forecast	-0.057	-0.054	0.003	-0.015	-0.026	-0.011**
	(-0.020)	(-0.015)	(0.005**)	(-0.006)	(-0.011)	(-0.005**)

Finally, we directly relate our analysis to the expectational error hypothesis. Since the initial evidence on expectational error hypothesis was based on earnings announcement returns, we present in table 3.10 earnings announcement returns for fixed- and switching style stocks. The annualized (size-adjusted) earnings announcement returns are calculated similar to the (size-adjusted) raw returns in table 3.4. The benchmark portfolios for the earnings announcement returns include all stocks that are neither value nor growth stocks and where earnings announcement return data is available. The size benchmark returns are the equally weighted earnings announcement returns. The size-adjusted earnings announcement returns for each firm are calculated by subtracting its corresponding size-decile earnings announcement benchmark.

Table 3.10 shows a positive announcement return for switching value and fixed style stocks. The positive result of 3.3% for switching-value stocks after 1 year is only slightly higher than the 2.2% announcement return for fixed-style value stocks.

Table 3.10: Annual Cumulative Earnings Announcement returns from, 1977 to 2003

The quarterly earnings announcement returns are equally-weighted 3-day (τ - 1, τ + 1) buy-and-hold returns calculated for each stock for which data is available. For each post formation year we annualize the announcement returns by summing up the relevant four quarterly event returns. For example, +1 presents the cumulative quarterly event returns of the first year after portfolio formation. The significance levels are presented with stars, where ** is 1% and * is 5% significance level.

	Value			Growth		
Years after formation	Switching style	Fixed style	Difference[a]	Switching style	Fixed style	Difference[a]
Announcement returns						
+1	0.033	0.022	0.011**	-0.004	0.012	-0.016**
+2	0.016	0.027	-0.011**	0.013	0.006	0.007**
Size-adjusted announcement returns						
+1	0.023	0.007	0.016**	-0.018	-0.001	-0.017**
+2	0.006	0.013	-0.007**	0.003	-0.005	0.008**

[a] t-statistic is calculated on difference between switching- and fixed-style portfolios

Some part of this may actually be explained by the fact that the average return of switching value stocks exceeds that of fixed-style value stocks. However, the positive announcement returns for fixed-style value stocks require some discussion. Given the evidence of Doukas *et al.* (2002) and our evidence on the optimism in earnings forecasts, it is difficult to interpret this return as evidence in favor of pessimism in investor's expectations. Perhaps the interpretation of Cohen *et al.* (2004) is more appropriate: at the earnings announcement date, the uncertainty regarding the exact number of last year's earnings is going to be resolved, and the positive return is the risk premium for this uncertainty.

In summary, we can conclude from section 3.4 that optimism in earnings forecasts increases significantly in the year that value stocks switch from style. Switching-growth stocks show a decrease in optimism in earnings forecasts in the year that stocks switch from the growth classification to the medium or value classification. Therefore, our results support the optimism hypothesis instead of the expectational error hypothesis. Although the announcement returns show an increase the first year after portfolio formation for switching-value stocks, this result is difficult to interpret in terms of pessimism given the increase in analysts' optimism.

3.5 Summary and conclusion

There has been an ongoing discussion in the literature on the nature of the value premium. In this chapter we investigated the role of expectational errors in the value premium. Previous studies by La Porta (1996) and La Porta *et al.* (1997) suggest that investors extrapolate past growth trends too far into the future. Since value stocks are by definition stocks with mediocre or poor past growth rates, naïve extrapolation implies that realizations are consistently above forecasts.

In a similar way it can be argued that naive extrapolation will result in earnings realizations of growth stocks being below their forecasts. Consequently, investors are repeatedly surprised about the performance of value stocks and disappointed about the performance of growth stocks, which results in positive returns for value stocks. However, there is an abundant literature on optimism in earnings forecasts, suggesting that in general earnings forecasts are too optimistic (De Bondt and Thaler, 1990). More specifically, Doukas *et al*. (2002) show that earnings forecasts for value stocks are even more optimistic than for growth stocks. It remains an open question to what extent analysts' earnings forecasts are representative

for investor expectations in general. However, we assume this to be the case.

In this chapter, we contribute to the discussion by focusing on changes in the style classifications of individual stocks. Changes in style classifications, such as the move from value stocks to medium or growth stocks, are associated with changes in expectations. We illustrate this by showing the differences in returns and earnings growth rates of switching stocks and fixed-style stocks. For our sample period, switching-value stocks experienced an average return of 28.5% and their forecasted earnings yield increased from 8.8% prior to switching to 11.5% after the switch. Likewise, switching growth stocks generate low returns and forecasted earnings yield decreased from 5.8% to 4.8%. Therefore, we conclude that the value premium is generated by the switching of value and growth stocks from their initial classification.

Without having looked at analyst forecast errors, the returns for switching stocks may still be consistent with investors having rational expectations. However, studying the forecast errors generates our most important finding: optimism in earnings forecasts increases significantly in the year that stocks switch from the value classification to the medium or growth classification. This increase is significant on both a statistical level as well as an economic level. Analysts' optimism, implied by the error in 2-year forecasts scaled by the price, increased from -1.4% to -4.3%. If analyst expectations are representative for investor expectations, then this implies that at least part of the value premium is the result of excessive optimism on behalf of investors. This conclusion is at odds with the expectational error hypothesis which suggests that investors tend to be pessimistic when extrapolating earnings yields of value stocks.

Appendix 3A

Table 3A.1: Changes in forecast errors

This table shows the mean and median (between the brackets) of the scaled forecast errors based on the same selection criteria used in table 3.8. To control for price-effects, forecast errors are scaled by the price at t=0. $FE_{1,sv}$ indicates the error in earnings forecast of one year after portfolio formation (t = 1) for switching value stocks (sv). The subscripts *sg, fv, and fg* denote respectively switching growth, fixed value and fixed growth stocks. Tests on medians are performed with the Kruskal-Wallis test. The significance levels are presented with stars, where ** is 1% and * is 5% significance level.

A) Period 1977-1989

	Value stocks			Growth stocks		
Switching-style stocks	$FE_{0,sv}$	$FE_{1,sv}$	$FE_{1,sv}$–$FE_{0,sv}$	$FE_{0,sg}$	$FE_{1,sg}$	$FE_{1,sg}$–$FE_{0,sg}$
1-yr forecast	-0.036	-0.023	0.013	-0.040	-0.036	0.004
	(-0.003)	(-0.002)	(-0.001)	(-0.019)	(-0.017)	(0.001)
2-yr forecast	-0.024	-0.052	-0.028**	-0.068	-0.056	0.012
	(-0.002)	(-0.013)	(-0.015*)	(-0.046)	(-0.036)	(0.011**)
Fixed-style stocks	$FE_{0,fv}$	$FE_{1,fv}$	$FE_{1,fv}$–$FE_{0,fv}$	$FE_{0,fg}$	$FE_{1,fg}$	$FE_{1,fg}$–$FE_{0,fg}$
1-yr forecast	-0.040	-0.048	-0.008	-0.008	-0.012	-0.004*
	(-0.013)	(-0.013)	(0.000)	(-0.001)	(-0.003)	(-0.002**)
2-yr forecast	-0.076	-0.077	-0.001	-0.018	-0.030	-0.012**
	(-0.032)	(-0.026)	(0.006)	(-0.008)	(-0.015)	(-0.007**)

[Table 3A.1 continued]

B) Period 1990-2003

	Value stocks			Growth stocks		
Switching-style stocks	$FE_{0,sv}$	$FE_{1,sv}$	$FE_{1,sv}–FE_{0,sv}$	$FE_{0,sg}$	$FE_{1,sg}$	$FE_{1,sg}–FE_{0,sg}$
1-yr forecast	-0.009	-0.010	-0.001	-0.017	-0.017	0.000
	(0.002)	(0.002)	(0.001*)	(-0.009)	(-0.006)	(0.003**)
2-yr forecast	-0.010	-0.039	-0.029**	-0.043	-0.032	0.012**
	(0.001)	(-0.007)	(-0.008**)	(-0.029)	(-0.015)	(0.013**)
Fixed-style stocks	$FE_{0,fv}$	$FE_{1,fv}$	$FE_{1,fv}–FE_{0,fv}$	$FE_{0,fg}$	$FE_{1,fg}$	$FE_{1,fg}–FE_{0,fg}$
1-yr forecast	-0.028	-0.029	-0.001	-0.004	-0.009	-0.005**
	(-0.007)	(-0.004)	(0.003**)	(-0.000)	(-0.002)	(-0.002**)
2-yr forecast	-0.050	-0.046	0.004	-0.015	-0.025	-0.010**
	(-0.016)	(-0.012)	(0.004**)	(-0.005)	(-0.010)	(-0.005**)