

Investment Manager Style Analysis

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Abstract

This paper describes investment manager “style” analysis in the UK context. It considers methods for identifying what a manager’s style actually is, whether UK managers typically exhibit strong style differentiation, and whether different styles exhibit persistent under or outperformance over extended periods of time. We conclude that funds are more likely to exhibit a noticeable size style bias than a growth/value style bias and that recent persistence of style performance has led to significant underestimation of risk.

1. Introduction

1.1 What is style analysis?

“Style” analysis is the process of identifying, in some quantitative manner, the characteristics of a fund (or fund manager/fund management house) that differentiates it from its benchmark/competition. It is used mainly in the context of managing equity assets (a context that we shall concentrate on in this paper). It usually refers to a reasonably permanent bias that a portfolio exhibits (typically excluding biases merely towards a particular stock or a particular industry).

Perhaps the most important style classification used in practice is between “growth” managers and “value” managers. Growth managers are ones whose portfolios are typically biased towards “growth” stocks, i.e. ones that are, in some sense, expected to grow more rapidly in size (in terms of earnings, sales, balance sheet, etc.) than the typical market constituent. Value managers in contrast would be biased towards “value” stocks, e.g. ones that exhibit a high book value to price ratio. This paper concentrates on this particular style distinction.

However, there are several other sorts of styles that a manager could exhibit, e.g. a bias towards (or away from) smaller companies or highly leveraged stocks. Some of these sorts of “styles” are also discussed in this paper.

1.2 Why analyse style?

From the perspective of consultants, style analysis provides a way of analysing and describing manager behaviour. It also potentially segments an existing market into several sub-sets, as might be desired by sophisticated investors. It is likely to be most helpful if managers stick to a particular style reasonably consistently.

From the perspective of a manager, style analysis may be helpful if it keeps consultants happy (and wins new business) or if it helps the manager understand better how his/her own portfolio and competing portfolios are positioned. It may also be helpful if different styles can be expected to perform well or badly over particular timescales (in which case the manager should tilt towards the style most likely to outperform over the period in question).

So, in this paper, we will consider:

- (a) What factors underlie the emergence of explicit style orientated funds, drawing particularly on the differences between the UK and US experience (section 2)
- (b) How one might identify style attributes (section 3)
- (c) Whether many managers in the UK appear to exhibit consistent style attributes (section 4)
- (d) Some of the arguments expounded for different sorts of styles (section 5)
- (e) The implications of following a style bias in terms of portfolio risk (section 6).

2. **Differences Between the USA and the UK**

2.1 **The US model of investment management**

The subdivision of managers into “value” and “growth” styles is particularly common in the USA. Indeed, separate universes of stocks (and funds) exist for “value” portfolios and “growth” portfolios. Consultants often pigeonhole different fund managers as being good at different styles. As a consequence, many of the larger US management houses have developed separate teams to manage each style, further entrenching this approach to classifying stocks and managers.

2.2 **The UK model is rather different**

The UK has developed along rather different lines. Some UK managers do exhibit a strong semi-permanent value or growth bias, but others would classify themselves as “rotational”, i.e. willing to move between value and growth depending on which style they believe to be most attractive at any particular point in time. These managers may over time exhibit on average a modest bias towards a particular style (perhaps because of the approach they adopt to stock selection or investment research). However, superimposed on this will be material swings between value and growth from time to time.

2.3 **Will the UK model move towards the US model?**

Whether the UK will move towards the US or vice-versa is not obvious. UK and US fund managers are consolidating quite rapidly. This is likely to drive UK practice towards the US model (the larger player in many consolidations is the US arm, if only because of the greater size of their assets under management). However, it is also likely to reduce the number of major houses, and therefore may reduce the rationale behind subdividing them into lots of different style categories. UK consultants do not yet seem to be as keen as US consultants to pigeonhole managers between value and growth styles. However, the investment consulting industry is also consolidating, and UK players within it may be more willing to adopt US approaches in the future, assuming that these changes are acceptable to the consultants’ clients, i.e. pension fund trustees and plan sponsors.

The sizes of the relevant markets (i.e. the stockmarkets themselves, as well as the corresponding markets for fund management and investment consultancy services) may also influence development. All other things being equal, the smaller the relevant market, the less likely it is to fragment into style sub-groupings.

2.4 **Non-behavioural factors**

One non-behavioural factor that could influence the way in which the UK develops is that the terms “value” and “growth” have in the past been less easy to define in the UK than in the USA. If one carries out fundamental analysis of US stocks, one generally finds that most plausible ways of defining “value” are (when aggregated across the market) approximate inverses of most plausible ways of defining “growth”. Thus stocks can be relatively easily categorised between “value” and “growth”, with few major disagreements between different market participants.

In the UK it has historically been less easy to come up with such clear-cut definitions. For example, according to Schwob[1], “value” stocks in the UK, at least those characterised by stocks with high book to price or high dividend yield, performed poorly in 1991, but “growth” stocks, at least those characterised by high earnings growth or sales growth did not perform particularly well over the same year. Similar categorisation problems also seem to have existed for other European countries. Thus, in the UK at least, “growth” is not simply the inverse of “value”.

Of late, however, it has perhaps become easier to agree a categorisation of high “growth” stocks (usually associated with “new economy” stocks) that is a close inverse to traditional measures of “value” in the UK, Continental Europe and USA. Whether this will remain the case is difficult to predict.

3. Identifying Style Attributes

3.1 The main methods

Where stock level data is relatively easily accessible and where a clear and widely agreed distinction between different stocks is possible, styles may be defined using relatively simple mechanical screens. For example, stocks with above average dividend yields may be classified as “value” stocks and those with below average yields as “growth”. Some phasing is often introduced, i.e. giving stocks some exposure to “value” and “growth” factors simultaneously, to smooth changes over what would otherwise be a discrete switch-over point. Index providers generally prefer simple and unambiguous screens when defining appropriate sub-indices.

However, if the distinctions between stocks are less clear cut, or if “growth” is not merely the inverse of “value” (as seems to be the case, at least in the UK), then other approaches may be used. These include:

- (a) Relying on some third party definition, e.g. the risk characteristics produced using software provided by a company like BARRA or a similar multi-factor risk model provider. These might involve a scoring system, with stocks given a higher score the more closely they fit a particular definition of the relevant style.
- (b) Relying on an internal house definition (but this may not always remain consistent over time, and will certainly not be consistent between houses).
- (c) Identifying using regression techniques whether the returns on the stock/portfolio appear to be strongly correlated with a proxy index (“if it moves like a particular sort of stock, then we will deem it to be such a stock”).

3.2 The differences between the methods

The first two approaches in section 3.1 (and other simpler screening approaches) might be classified as fundamental stock-level methods of defining style attributes. The corresponding style attributes of a portfolio can be calculated (at any point in time) by taking the weighted average of the attributes of the stocks the portfolio contains (at that point in time). They therefore require detailed knowledge of what a portfolio contains.

The last approach mentioned in section 3.1 appears to be quite different in that it concentrates on observed stock or portfolio behaviour, rather than the fundamental attributes of the stock/portfolio. There are two possible variants:

- (a) The regression analysis can be applied to the return of the fund as a whole. No information is then required about the fund’s underlying investments, only how it has performed in aggregate. To produce meaningful results we need to assume that the aggregate characteristics of the portfolio are reasonably stable over time. This makes it rather difficult (although not impossible) to test for style consistency over time.
- (b) The regression analysis can be applied to individual stocks, to identify their characteristics, which are then aggregated in the same way as for more fundamental

stock-level methods of defining style attributes. This still requires individual stock-level data as at the time the analysis is being carried out.

3.3 **How different are fundamental stock-level methods from regression methods?**

A special case of 3.2(b) is to carry out a “principal components analysis” on the returns on different stocks within a universe. This involves postulating the existence of a small number of return streams which influence different stocks differently, and then simultaneously identifying the best fit return streams and the exposures to these streams that each stock exhibits (using, for example, least squares fitting techniques).

It is worth noting that for fundamental stock-level attributes to be “useful” at characterising stock/portfolio behaviour, they must influence the behaviour of a large number of stocks in a consistent fashion. Thus the resulting return streams and factor exposures will often be similar to those arising from a fundamental stock level method, despite the two methods appearing to be quite different. Developers of systems concentrating on fundamental factors will often seek parsimonious ways of identifying these factors, and will often use principal components analysis to test for parsimony and to identify the “best” way to define the style factors on which the system will concentrate.

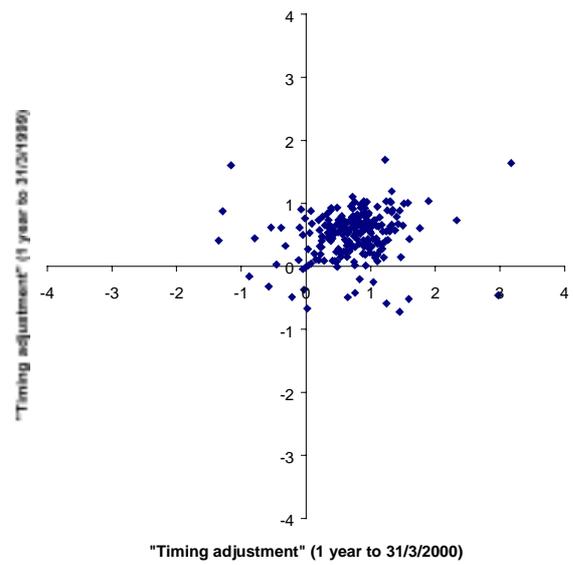
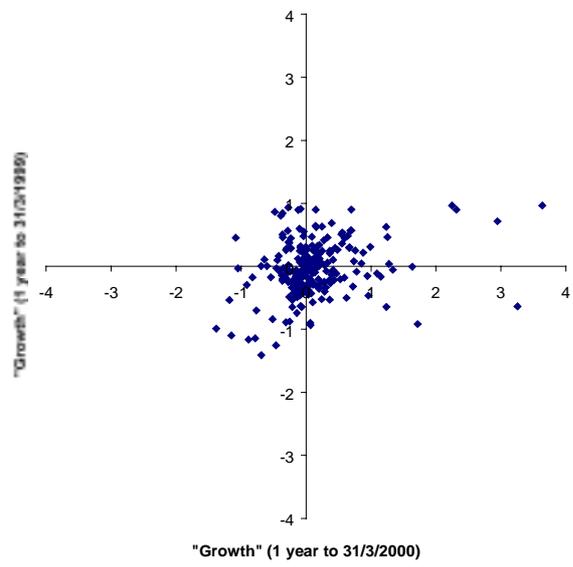
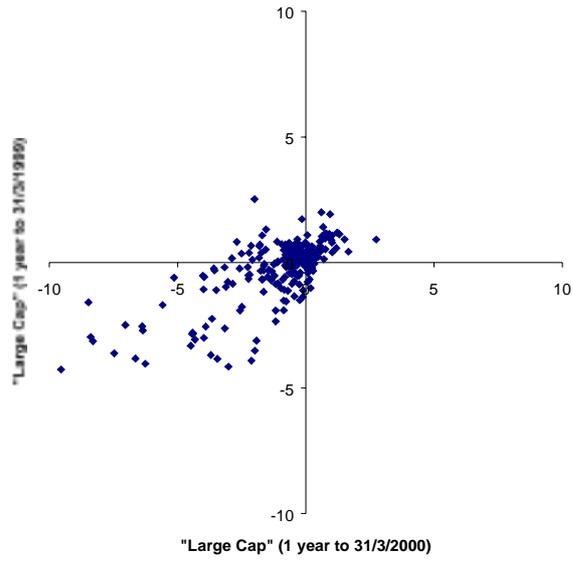
4. **How Stable are the Styles of UK Managers?**

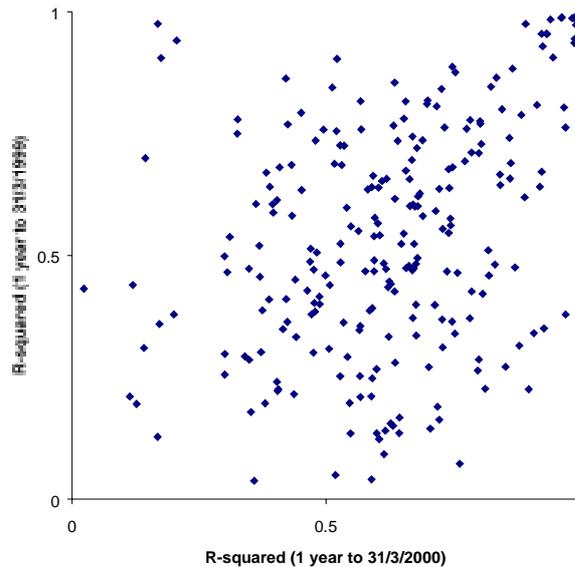
- 4.1 Various different ways of measuring style were described in section 3. These can in principle be applied to a large number of funds simultaneously and for various different time periods, to identify whether managers appear to exhibit consistent style characteristics.
- 4.2 Consider, for example, applying a fund-level regression type analysis to the AUTIF (S&P Micropal) “UK All Companies” retail unit trust/OEIC sector. This sector has nearly 300 funds within it and is the main sector for onshore UK equity orientated funds (other than those which have a specific income generation criterion). It was formed fairly recently from the merger of two predecessor sectors, the “UK Growth” and the “UK Growth and Income” sectors, and so might be expected to contain some funds with noticeable style biases. The Micropal database contains monthly (or even weekly) fund returns, and therefore provides more data points per unit of time than the institutional peer groups to which we had easy access.
- 4.3 We have identified the style attributes of each fund in this peer group by calculating the monthly relative return on the fund versus the index, and then regressing this against the following four variables:
- (a) “Large cap” exposure, i.e. the monthly relative return of the FTSE 100 index versus the FTSE All-Share index.
 - (c) “Growth” exposure, i.e. the monthly relative return of the FTSE 350 Growth index versus the FTSE 350 index as a whole.
 - (c) “Timing adjustment” exposure, i.e. the adjustment required to move the return from a close to close return to a 12 noon to 12 noon return (as the vast majority of the funds in the peer group are valued at other than market close).

We have used normal linear least squares regression but applied it to two non-overlapping periods, i.e. the year to 31 March 2000 and the year to 31 March 1999. We have then plotted the relevant regression coefficients for one year versus the other, for each fund in the peer group for which both sets of data exist. We have also done the same for the regression r-squared, to identify the degree to which the regression seems to be a good fit of the data.

The relative returns on the FTSE 350 Value index are not exact mirrors of the relative returns on the FTSE 350 Growth index (because the proportion by market cap of the FTSE350 deemed growth rather than value is not constant). However it is sufficiently close for us not to include it as a separate variable. We are in each case regressing relatively few data points (12) against several variables, and increasing the number of variables increases the extent to which spurious fits might be identified.

The results are shown below:





- 4.4 If noticeable style attributes occur then we would expect to see some funds which exhibited a correlation between the attributes in consecutive years. Thus we would expect to see funds clumped together around a line going through the origin at 45° to each axis (except for the r-squared graph, which is not measuring a specific characteristic, but rather the explanatory power of the regression).
- 4.5 There appear to be a quite significant number of funds that have a noticeably negative bias to “large cap” in both years. Interestingly, the bias in the year ended 31/3/2000 seems to be more than the bias in the year ended 31/3/1999. This may be due to market movements.
- 4.6 There are a few funds that have a noticeably positive (or negative) “growth” bias in both years and fewer than one quarter of funds appear to be in either the upper left hand or lower right hand quadrant. However the number that obviously have a consistent growth/value style is smaller than the number that have an obviously consistent size bias. For these funds, the bias again seems more in the most recent year than in the year before.
- 4.7 There is a clear clumping around the 45° line for the “timing adjustment” factor. This is what we would expect, since funds very rarely change their valuation timing point. However, it is noticeable the degree to which this clumping is not perfect, which suggests that there is a significant amount of “noise” in the regression analysis. This is borne out by the wide range of r-squareds (and the lack of an obvious correlation between the r-squareds for the two different years) shown in the final chart.
- 4.8 In summary, in this sector some funds do seem to exhibit noticeable growth/value style biases that seem to be reasonably consistent over time. However, the majority appear to exhibit less clear cut biases that do not appear to be stable over time, or any biases that they are adopting are not well captured by the variables considered in this regression analysis. Funds are more likely to exhibit a noticeable size style bias than a growth/value style bias.

5. Arguments For and Against Specific Style Characteristics

5.1 There are several arguments that can be put forward both for and against different approaches to style management.

Semi-permanently concentrating on “Value” stocks

5.2 Value orientated investment managers have typically historically expounded the view that “over the long term value outperforms growth”. Traditionally, in a value investing context, stocks are chosen for inclusion in a portfolio on the grounds that they are “cheap”, generally taken to mean that the Price/Earnings ratio (or Price/Book ratio or some other simple measure of value) is low. Similarly, high P/E (etc) stocks are ignored on the grounds that they are “expensive”. We all know the adage “buy cheap, sell dear”, hence value investing is, apparently, the epitome of good investing.

5.3 There are some potential flaws with this logic:

(a) “Cheap” in the sense of exhibiting “value” from a value investor’s perspective does not necessarily have the same meaning as “cheap” in the above adage, i.e. “likely to become worth more, either in absolute terms or relative to other alternative investments”.

(b) A P/E or P/B ratio does not necessarily provide much explicit guidance as to a company’s future growth prospects, or for that matter whether the company is currently operating profitably, or can operate profitably in the future. A stock will not necessarily perform well simply because it is “cheap” from a value investor’s perspective. Its underlying trading position or environment may deteriorate, or management may be poor (or hampered by regulatory restrictions etc.), and may be unable to unlock the value inherent in the company’s assets.

(c) Given the relatively strong performance of growth stocks over the last few years (including many “new economy” stocks such as telecommunications, media and technology stocks), it is now no longer clear whether value stocks have outperformed growth stocks over long periods of time. Indeed, even if the recent period is ignored, the long-term outperformance of value versus growth seems to be true to a material extent only if one invested in “value” during the inflation years of the 1970’s.

5.4 A refinement to the value investing approach is to apply a double screen, e.g. to focus on companies that are simultaneously “cheap” in some absolute context as per 5.2 and also “cheap” relative to the characteristics that they have exhibited in the recent past. The aim here is to strip out the degree to which the value attribute is merely a function of the sector or industry, although there is an assumption that the business the company is undertaking is remaining relatively static over time.

Semi-permanently concentrating on “Growth” stocks

5.5 A growth orientated manager would typically argue in favour of growth on the grounds that the stocks concerned are the companies of tomorrow, and as long as the economy is

continuing to grow over the longer time, they are the companies that will be rewarded in the longer term.

- 5.6 However, there are also some potential flaws with this logic. Growth stocks will not necessarily outperform value stocks merely because they are currently perceived to be the industries of the future. They may have performed so well in the past that they need unrealistically high levels of growth in the future to sustain their current prices. The business models on which the valuations of some “new economy” stocks are currently based may prove easier to copy by “old economy” stocks than the market is currently expecting, or there may be new companies yet to be created that will take away their best business. They may also be the companies most prone to speculative excess or on which the least amount of data is available.
- 5.7 Once again, there are ways of refining the basic growth approach, e.g. by applying minimum criteria in terms of how much cash flow (or “value”) is actually being purchased, in an attempt to avoid buying too much of the speculative froth.

Rotating between “Value” and “Growth” stocks

- 5.8 Anecdotal evidence, and the results of the regression analysis in section 4 suggests that currently the most common approach to style in the UK is to rotate between value and growth. The main argument that could be put forward in favour of this approach is that there seem to be some economic conditions which favour value stocks and others that favour growth stocks. Richardson[2] and Schwob[1] argue that value is likely to outperform growth when there are large and unexpected spikes in inflation and bond yields, accompanied by global recession and then a strong recovery (e.g. as occurred in the 1970’s and 1980’s). The rises in bond yields drag down the discounted value of future earnings streams and make near term profits/cash flow relatively more valuable than good growth prospects over the longer term. Also value stocks tend to be particularly hard hit during prolonged recessions, and may therefore be potentially most favoured when the economy turns. Extended periods of stable (low) inflation and stable (strong) economic growth, as seen recently in, say, the USA, would on this view be expected to favour growth stocks.
- 5.9 However, there is an element of being correct by hindsight in such logic. If markets are correctly forecasting the impact of future economic conditions, then they should also in some sense “see through” such factors. The key point is the extent to which economic conditions change in an “unexpected” manner, and the extent to which a manager can forecast these unexpected changes before they happen. If a house can forecast all types of unexpected changes then it should do well whatever the factor being forecasted. It is perhaps more realistic to assume that managers are good at forecasting merely some aspects of the investment market behaviour. If this skill does not include calling the turn between value and growth and if there is some long-term bias towards or away from value or growth stocks (for the sorts of reasons highlighted above) then not consistently following a particular style may be ceding away potential upside.

A Historical Overview

- 5.10 Differences of opinion regarding value and growth are not new. Graham and Dodd first introduced “value” investing in their classic 1934 book “Security Analysis”. Their focus was on company share value. Their ambition was to show that there was more to investing in

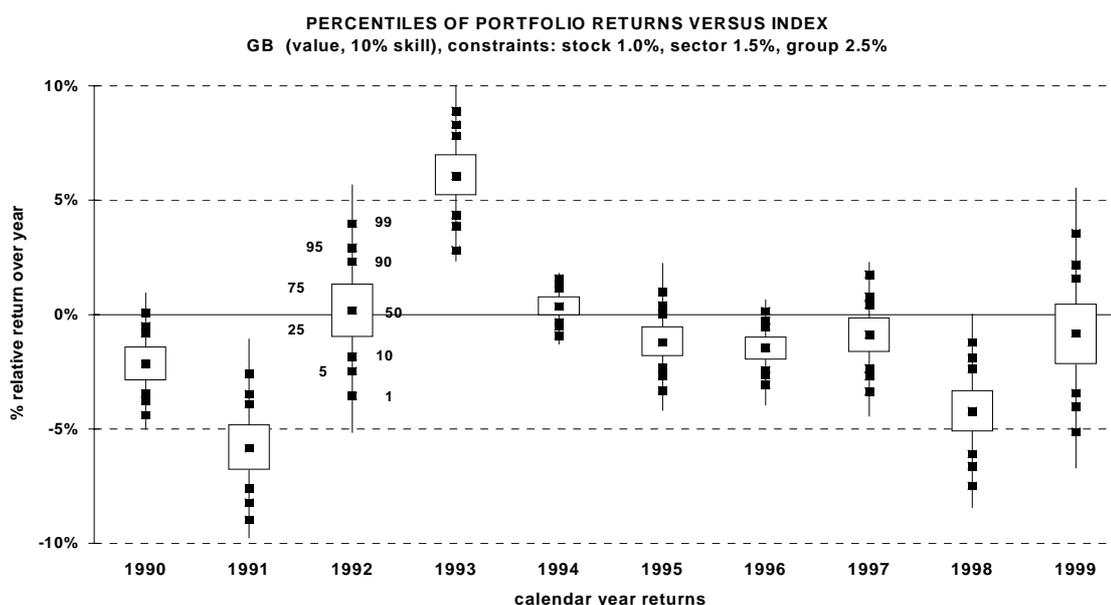
shares than speculation, and to offer an analytical methodology capable of building a sensible foundation following the 1929 Crash and subsequent Depression.

- 5.11 Five years later, however, T. Rowe Price Jr in “Picking Growth Stocks” (Barron’s 1939) focused on “The Fallacy of Investing for High Current Income”. His article caricatured value stocks as “mature” (at maximum earnings) or even “decadent” (i.e. in secular decline in earnings).

6. The Effect of Style on Portfolio Risk

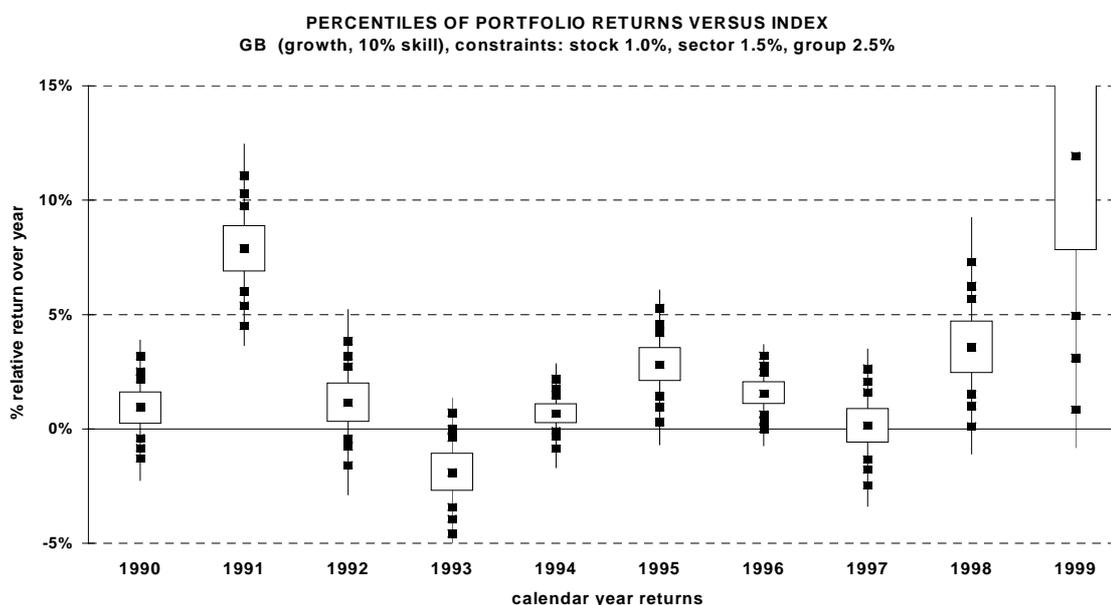
- 6.1 Whatever the precise merits of following a value versus a growth style, it is clear that if the benchmark that the manager is seeking to outperform is a broad market index then a style specific strategy can generate long periods of both good and poor relative performance. There have been sustained periods when value has outperformed (e.g. in the UK 1975-78 and 1986-89) and others when growth has outperformed (e.g. in the UK 1979-82 and 1990-92).
- 6.2 The magnitude of the potential underperformance that might arise by following a specific style can be limited through appropriate controls in portfolio construction. For example this might be achieved through limiting typical positions on individual stocks to 1%, limiting sector positions to 1.5%, and limiting industry group positions to 2.5%. However, even with such constraints, recent market dynamics have led to significant volatility, as is evidenced by the modelling described below.
- 6.3 We have generated random portfolios of stocks from a universe corresponding roughly with the FT World UK index (around 200-250 stocks). We then examined the realised return from each portfolio. These portfolios conform to investment style and portfolio construction constraints and allow for a reasonable level of manager stock-picking skill. Whilst somewhat arbitrary in nature, skill has been taken to be represented by the ability to identify stocks which will outperform the median stock before allowing for style biases. Zero skill means that on average 50% of outperformers will be identified, while 100% skill means 100% of outperformers would be. The scale used is linear between these values, so that the 10% skill illustrated here means that on average 55% will be correctly identified. For the purposes of the modelling, “value” has been taken to mean low price-to-book, although we recognise that in practice it is generally assessed as a more complicated combination of factors.
- 6.4 Chart 1 below shows the percentiles of the distribution of realised returns from 1,000 such portfolios in each calendar year during the 1990s. The central box shows the “inter-quartile range” (the central 50%) of the distribution, with the black squares showing the more extreme points of the distribution (for example the bottom point is the first percentile – 1% of all portfolios produced returns worse than this). This gives a more accurate picture of the likely spread of possible outcomes than the more traditional measurement of “tracking error” (the typical tracking errors of these portfolios ranged from 1% to 3% depending on the year).

Chart 1: Distribution of returns for “value” portfolios



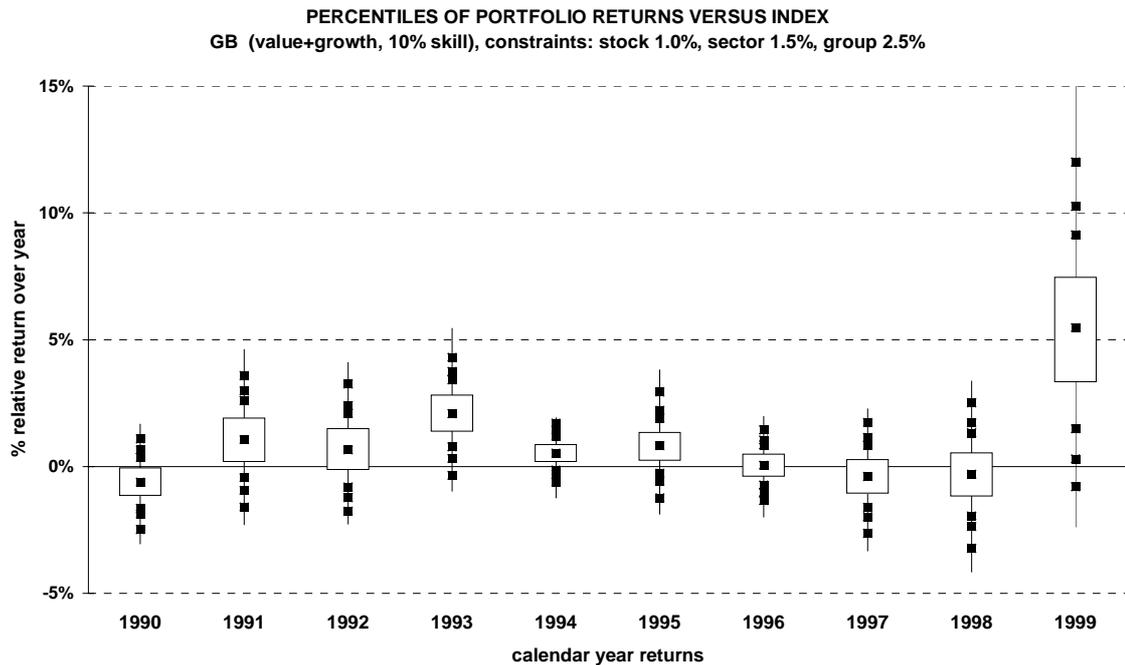
6.5 Chart 2 shows the same picture for portfolios based on a “growth” investment style (modelled as high price-to-book). Over the 10 years analysed, growth has tended to produce better returns than “value”, although it should be recognised that this is not in general true over the longer term. Again there is considerable year-on-year volatility in returns, with 1999 producing particularly unusual results arising from the exceptional performance of some of the smaller growth stocks.

Chart 2: Distribution of returns for “growth” portfolios



Not surprisingly, the growth portfolios tend to produce outperformance in the years when value is underperforming, and vice versa. It is therefore possible to reduce the overall volatility of the fund, whilst still allowing the fund managers’ stock-picking ability to generate outperformance on average, by holding both value and growth based sub-funds. Chart 3 shows the modelled performance of such a fund over the same period.

Chart 3: Distribution of returns for combined “value” and “growth” portfolios



It should be appreciated that following such a strategy does not eliminate the chance of underperforming, even where the fund managers exhibit skill at stock-picking, as here. However, it is clear that the magnitude of year-on-year variation in performance should be substantially reduced. It is also interesting to note that this chart is still not flat – essentially some years are easier than others for active managers in general. Better years tend to coincide with outperformance by small cap stocks so that the median stock outperforms the index, and vice versa.

- 6.6 Another way to look at these results is to consider the probability of underperforming the benchmark by more than a certain amount when following each of the different styles. Charts 4-6 are the equivalent of charts 1-3 using this approach. For example in 1992 there was a 25% chance of underperforming the benchmark by at least 1% following a value style, and approximately a 4% chance using a growth style, with the combined approach exhibiting around a 7% chance. Conversely in 1993, the value style did not underperform by 1% in any of the 1,000 modelled portfolios, while the growth style did in more than 75% of cases – here the combined approach still had no portfolios underperforming by 1%.

Chart 4: Probability of underperforming for “value” portfolios

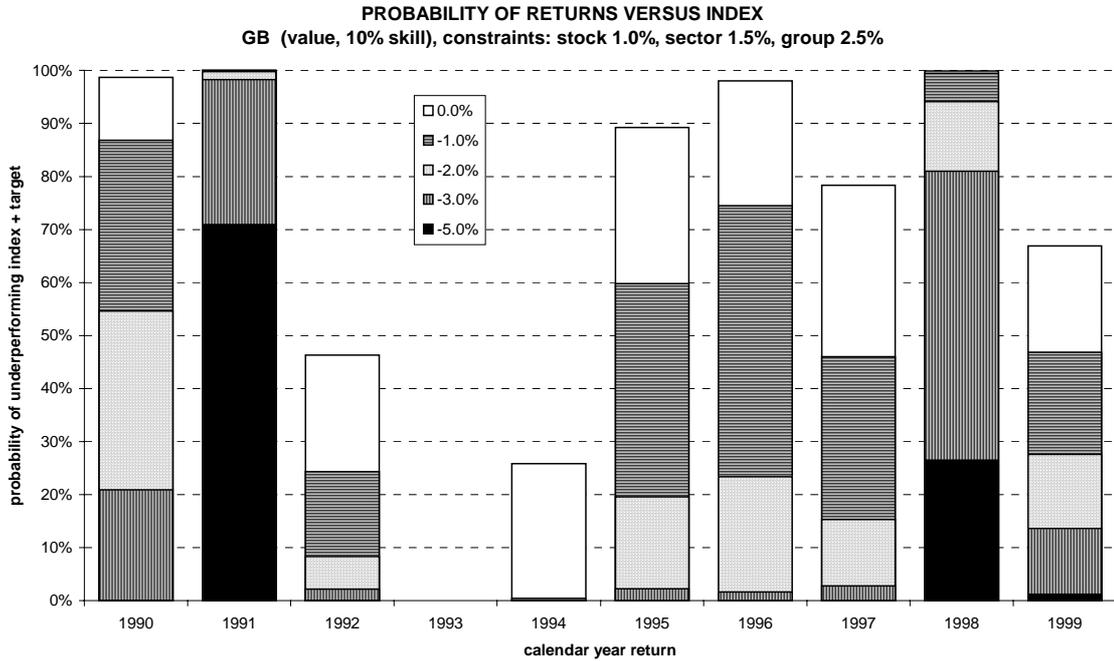


Chart 5: Probability of underperforming for “growth” portfolios

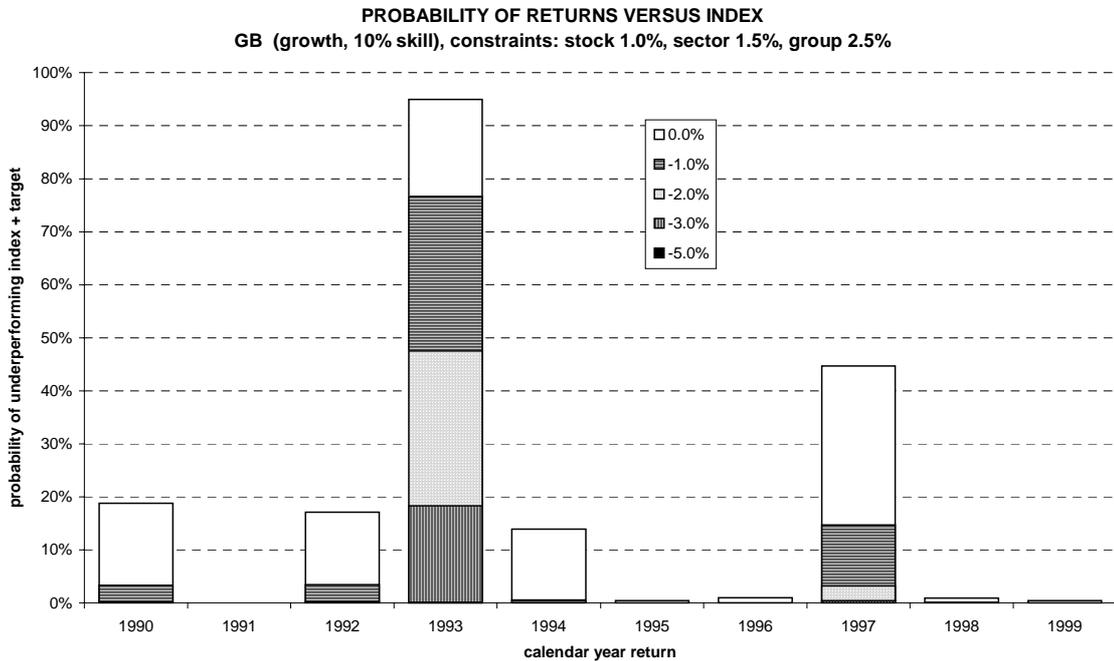
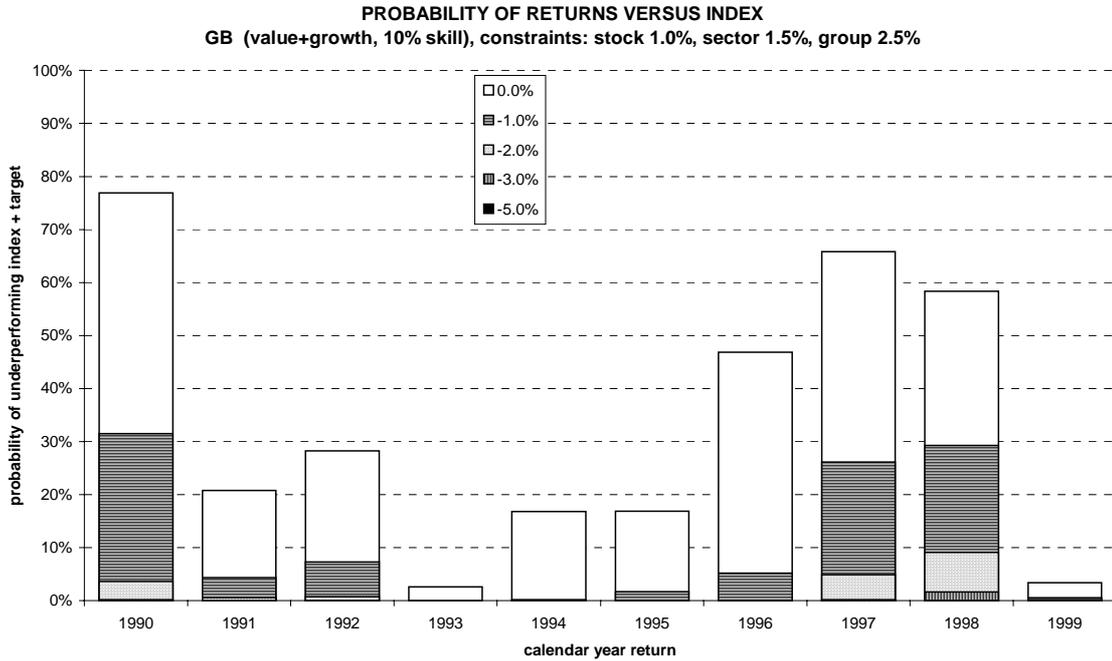


Chart 6: Probability of underperforming for combined “value” and “growth” portfolios



- 6.7 The persistency of out or underperformance for a given style over often several years has some important implications for risk management even for managers that claim not to exhibit an explicit style. Usually multi-factor risk models assume that factor returns are independent from period to period, but this assumption is violated by persistent style effects. This means that tracking errors estimated by such models can be understated, particularly if the factors driving persistency of a given style also affect the volatility of individual stocks, see e.g. Fishwick[3].
- 6.8 This persistency also suggests that it might be profitable to try to identify when there is likely to be a switch in regime. Traditional fund managers would probably try to do this by taking views on likely future economic conditions (see section 5). Others have attempted to identify quantitative signals that might help to predict such changes, see e.g. Levis and Liodakis[4]. They show that it is important not only to be able to exhibit skill in choosing between different styles, but it is also important to have good timing skills as well, as large relative movements can happen very quickly (a factor that should also be borne in mind when considering the reliability of tracking error calculations). They suggest that the development of quantitative timing approaches for switches between value and growth is rather difficult, at least to a level required to overcome transaction costs. They hold out more hope of being able to identify quantitative timing approaches that would be successful at timing moves between large and small cap stocks.

7. **Conclusions**

- 7.1 Fund managers in the UK exhibit a variety of approaches to the growth/value style.
- 7.2 The majority of UK fund managers currently appear to adopt a rotational approach, in which they focus on growth orientated stocks some of the time and on value orientated stocks at other times. Alternatively, perhaps they have no specific approach at all to growth/value styles, with these characteristics arising “by accident” due to other factors used to define portfolio construction. The degree to which a rotational approach will add value will depend crucially on the how good a fund manager is at predicting when growth or value styles will switch in and out of favour (and, it seems, on timing these calls quite accurately).
- 7.3 There are a variety of ways both of defining and of measuring style characteristics. Indeed, growth/value is only one sort of style characteristic (albeit one that has a particularly long pedigree). In the UK funds appear more likely to have a large/small cap style bias than they do to have a growth/value style bias, at least within the mainstream retail UK equity fund universe.
- 7.4 Styles can exhibit persistent under or outperformance. So, portfolios that operate to an explicit style bias can expect to exhibit significant portfolio risk relative to more generalist peer groups. An increase in the adoption in the UK of explicit style biases is most likely to happen if different universes/peer groups are created focusing on different styles, as has happened in the USA.

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