Style and Style Analysis in Global Equity Markets

Style Research

Robert Schwob

Style Research is an independent provider of global equity research and portfolio analysis software. We are headquartered in London and have district offices and service centres in Boston, Tokyo, Sydney. Our clients include investment management companies, pension funds, investment consultants, fund of fund advisors, hedge fund managers and independent financial advisors. And our services provide a wide range of Style, risk and performance analysis facilities for the review, research, management and representation of international equity markets, securities portfolios and investment funds.

Order of the Presentation

◆ Is Style Analysis Honest?
  – What is Style? Is Style analysis relevant in all markets?
◆ Working within the Style Environment
  – Can Style returns be forecast and used in active management?
  – Managing within Styles
    » Do different Styles require different managers?
  – Identifying manager Style
    » The 4 faces of Style
    » Holding-based vs. Returns-based Style Analysis?
  – Style and Portfolio Risk
    » Are Style-based portfolios more risky?
  – Has Style management worked?
◆ What is the likely future for Style?

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This is the order of the presentation.

It is quite an ambitious program and during the presentation I will have to cover a number of technical issues (relating to verifying the relevance of Style) but I hope to be able to focus on the practical importance of Style and the many attractive features it offers as well.

First I will have to show that Style is an appropriate methodology for analyzing markets and portfolios in world markets. For this we need a definition; and this is not as easy as it looks.

Then I will become more practical, exploring how Style returns might be forecast, how Style managers might be selected for their particular skills, and how managers might be identified and monitored. In this I will also introduce important aspects of how Style characteristics affect portfolio risk. And I will also show how it is easy to determine whether Style management has worked.

I will end by briefly describing the likely future for Style. But that will not be the end. There is also a full appendix following the main part of the presentation. This appendix provides extra material on Style's position in financial theory, longer term assessments of managing within Styles in various markets, the use of Style techniques by investment consultants, and some further academic background on Style returns and portfolio analysis techniques.

Defining Style
The Evolution of Style – Early Issues

◆ Graham & Dodd refine Value Investing
   (Securities Analysis 1934)
   – Written following the "Crash" and aspiring to offer
     fundamentals to re-instil confidence in equity markets
   – Intrinsic Value Factors (Earnings, Dividends, Assets,
     Capital Structure, Other Value Factors)
   – Future Value Factors (Management, Competition,
     Changes in Volumes, Prices, Costs)

◆ T Rowe Price on the virtues of Growth
   ("Picking Growth Stocks"; Barron's 1939)
   – The Fallacy of Investing for High Current Income
   – Cyclical and Stable Growth stocks
   – Matured and Decadent Value stocks

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Benjamin Graham and David Dodd first introduced "Value" investing in their groundbreaking book "Security Analysis" in 1934. They identified 3 basic criteria: Intrinsic Value; Future Value; and, Market Factors in their general enquiry. Their intention was to show that there is more to shares than only speculation. Their focus was on company share value; and their ambition was to offer an analytical methodology capable of building a sensible foundation for investments and investment analysis following the disruption of the Crash and the Depression.

On looking back we can see that their analysis included a healthy measure of respect for "Growth" criteria. But as we can generally expect, that did not stop their contributions from being over simplified, caricatured, and vehemently debated by a posturing opposition.

In 1939, five years later, T. Rowe Price Jnr, in "Picking Growth Stocks" (Barron's 1939) focused on "The Fallacy of Investing for High Current Income". The article caricatured Value stocks as mature (at maximum earnings) or even decadent (secular decline in earnings). They pay out earnings because they have to; and the best developments may be already behind them. The market prices Value stocks to the discount price required to make earnings comparisons attractive.

According to T. Rowe Price, Growth stocks offer "favourable underlying long-term growth in earnings" and so can provide the only realistic prospects of outrunning the erosion of inflation.

And so the debate began; and it is still not decided. But the debate itself has opened up several fields of security analysis and pushed the whole of the securities industry forward.

Defining Style
The Evolution of Style – Current Structure

Evolution

Large Value	Large Growth
Mid Value	Mid Growth
Small Value	Small Growth

For Securities

For Philosophies

For Managers

For Funds

Institutional Investor (March 1996)

"…identifiable segments of the market with distinguishable patterns of returns."

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At the core of all Style work, is a process for the partitioning of securities into the main Style categories. The usual construction on the left outlines the standard way of looking at Value, Growth, Large and Small; and over the past 60+ years investors have classified securities, investment philosophies, investment managers and funds according to the basic Style configurations.

Value is usually comprised of securities (and portfolios, etc.) with high Book to Price and high Dividend Yield, but other measures of Value are sometimes also used. Growth has often been taken as simply low Value (Why else would you hold a low Value stock other than expecting Growth … that's what the simple Dividend Discount Model says.) We don't subscribe to that view and consider also a number of other Growth criteria. We also look at size (and risk), momentum, and many other criteria as well.

The AIMR, however, in a moment of foreign cultural sensitivity, thought more abstractly and has defined Style in more general, theoretical, terms. Their definition make no reference to the customary Style categories but offers a framework for considering the Style quality of a number of security criteria.

I believe that this was a mistake. There is something very basic about the distinction between Value and Growth. It has to do with the basic differences between "fear" and "greed" and also between the practices of "contrarian investing" vs. "trend following". While we should applaud the AIMR for not wanting to lay down the US example as the only template for other markets, its theoretical definition (and perhaps ours to come) suffers from being too general and so not capturing the important common features of investment analysis and investor motivation that lurk behind the simple definition of Style.

But to appreciate the relevance of Style, it is important to begin by looking at the history of Style returns across a wide range of markets and regions.
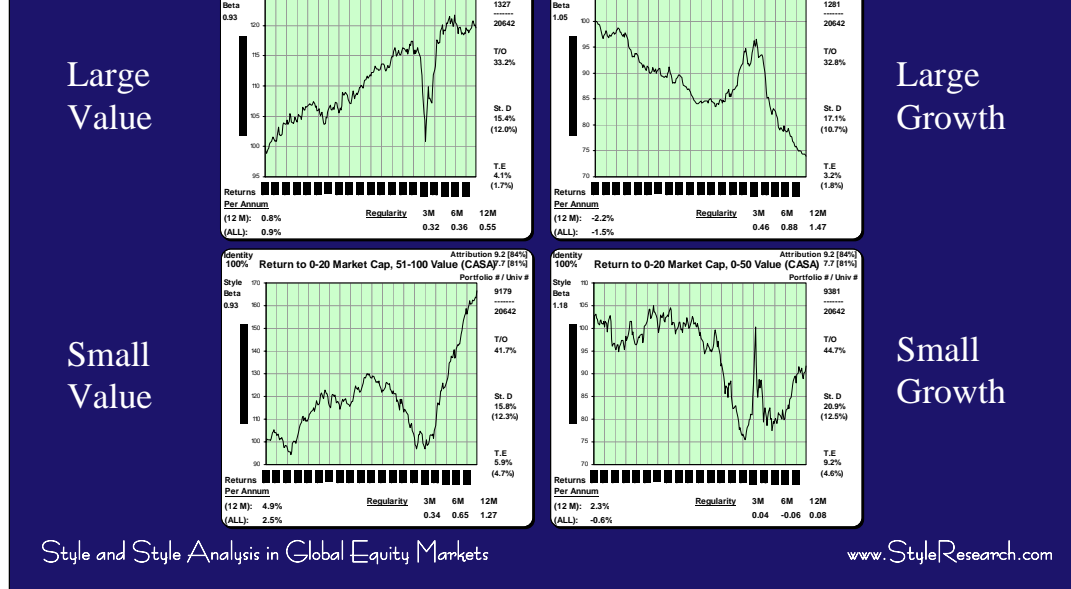
The following 8 pages are included simply to be able to identify that, almost universally:

1   Large Value had outperformed during the early history of the past 20 years.

2   Growth, mostly Large Growth, had outperformed during the late 90s.

3   Small Value has outperformed dramatically over the past 4 years.

These have been global themes have been experienced across most major markets and regions.

Note that the portfolios are selected defining Large as the top 80% of the market by market cap, and sorted by market cap. Within both the Large and the Small segments of each market, Value is defined as the top 50%, by market cap of securities sorted by a composite Value statistic comprised of 60% normalized Book Value to Price and 40% normalized Dividend Yield. The portfolios are rebalanced and reconstructed every 6 months.

Note that the sorts have been conducted on a sector by sector basis (and on a country and sector by country and sector basis for regions), so the patterns of returns are not simply due to sector imbalances in Style portfolios. Otherwise Value would be about 40 – 60 overweight in Financials! This would distort returns dramatically.

20 Years of Style Returns
The Euro Zone

Large Value · Large Growth · Small Value · Small Growth

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20 Years of Style Returns
Asia Pacific ex Japan

Large Value

Large Growth
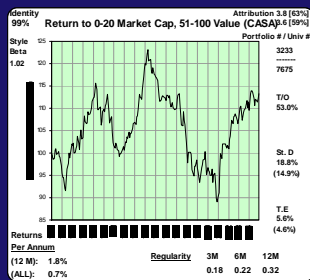
Small Value

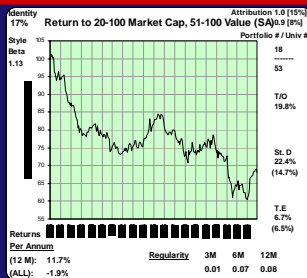Small Growth

20 Years of Style Returns
The United States

20 Years of Style Returns
Japan

Large Value

Large Growth

Small Value

Small Growth

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20 Years of Style Returns
Australia

Large Value

Large Growth

Small Value

Small Growth

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20 Years of Style Returns
Ireland

Large
Value

Large
Growth

Small
Value

Small
Growth

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This chart, included for a presentation to the Ireland Society of Investment Analysts, shows no long term historic outperformance of Value. But, as we shall soon see, Styles are very poorly defined in Ireland.

Defining Style
Appearances can be Deceiving

◆ Maybe there is nothing special in the pattern of returns

◆ Maybe there are no similarities of returns within a Style group

◆ Maybe the returns patterns are not useable

◆ Maybe the apparent Style characteristics are due to something else

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But observing these themes from the previous pages tells us nothing about their significance as investment factors. While the similarities of the trends across the major markets and regions suggest that there must be some underlying causality, it is still not certain that these patterns mean anything and that they can be used in an investment environment.

After all, it is possible also to divide securities according to entirely artificial criteria (such as the colour of the carpets in the first floor meeting area) and even though there might be a difference in returns of blueish versus reddish stocks, that would have no investment interest. We need to test to make sure that there is some investment interest in the way we are dividing stocks.

First we need to know that the performance is distinctive, i.e. that it could not be attributed to only random portfolio construction.

Then we need to know that stocks with similar attributes perform similarly.

And that the performance patterns might be usable within an analytical investment environment.

Also that the patterns are not due to something else.

We can formalize this in a definition of Style.

Defining Style
A Definition

Styles exist within markets when there are:

"…simply identifiable segments of the market with distinguishable patterns of returns,

where the factors used to identify the various market segments reveal significant elements of security returns,

where the patterns of returns are likely to be persistent or systematic and forecastable over a usable investment term,

and where these characteristics are not due to the influence of other identifiable characteristics (such as industrial sector influences)."

Identity

Attribution

Regularity

Sector Independence

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This definition first published in our article in the Journal of Asset Management in 2000 (available from our web site), incorporates the earlier AIMR definition and introduces the more recent concerns.

Identity says the return characteristics can not be attributed to simple random portfolio construction.

Attribution tests that securities with similar characteristics will have similar returns, i.e. clustering of performance of securities in the same Style.

Regularity tests that there is usable information in the Style return series.

And Sector Independence reveals whether the Style-like performance might be simply due the sector imbalances within the different Styles.

The following pages detail the tests used.

Defining Style
Testing for Style

Identity

The *Identity* statistic measures the likelihood that the performance of a particular *Returns to* Factor return series can not be explained simply by chance. This measure addresses the concern that an investment Style could very easily be defined according to nonsense criteria such as, say, the colour of the finance director's nephew's car. A true investment Style must be distinguishable from such nonsense criteria.

The *Identity* statistic offers a measure to determine the distinctiveness of each *Returns to* Factor return series and, consequently, to assess an individual Factor's or set of Factors' relevance as investment Style criteria.

The statistic is defined from a Monte Carlo simulation as follows:

- We calculate the tracking error comparing the absolute (not market-relative!) three month total returns of the portfolio of market capitalization weighted securities defined according the Factor criteria under review and the portfolio of all securities in the market,
- We calculate the tracking errors comparing the absolute (not market-relative!) total returns of randomly selected (from the market) portfolios of market capitalization weighted securities, with total market capitalization equal to that of the portfolio defined above, and the portfolio of all securities in the market,
- We repeat the random portfolio construction process 100 times for each market and, for each Factor-based portfolio, determine the proportion of calculated tracking errors (from the randomization process) which are less than the tracking error relating to the Factor-based portfolio's return history.

A number of "100%" would indicate that all of the randomly selected portfolios resulted in tracking errors below that relating to the portfolio constructed with reference to the Factor criteria under review. This would indicate that the systematic performance characteristics of the portfolio constructed with reference to these Factors can be regarded as distinct and very significant.

Nonsense criteria, on the other hand, score low on this measure and can quickly be recognized as irrelevant as investment Styles.

This statistic was developed by Style Research in accordance with research previously published by Carlo Capaul, Ian Rowley and Bill Sharpe (International Value and Growth Stock Returns, Financial Analysts Journal, Jan-Feb 1993), who used the same technique to establish the relevance of Style factors in international equity markets.

This is a description of the formal test statistic.

Defining Style
Testing for Style

Attribution

The average of the absolute values of the t-Statistics of the estimate of the β in the cross-sectional regressions:

Security Three Month Return = $\alpha + \beta$ * Security Factor Exposure + Random Error

The statistics quoted are the averages, over 20 years, of the absolute values of the t-Statistics from the quarterly (non-overlapping) regressions. A figure over 2 is very significant, and figures between 1.5 and 2 are also very worthy of serious consideration.

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This is a description of the formal test statistic. The statistic measures the tightness of the fit of the regression line to the data and the degree to which this line is different from the horizontal. It measures the clustering of the returns according to the Style and also measures whether the month by month returns are different from the market returns.

Technical note: Since t statistics are unbounded, the average of the t statistics may be distorted by individual large values. Consequently we look also at the percentage of the time that these t statistics are larger than 2 or less than -2.

Defining Style
Testing for Style

Regularity

The *regularity* statistics measure the regularity, or smoothness, of the deviations of each particular return series from their longer-term trends.

•The statistics measure the likelihood that deviations from the long-term trend can persist over the short term (three months) or over the medium term (six months and twelve months).

•Positive figures indicate a positive likelihood that short or medium-term trends can deviate from the longer-term trend. The larger the number the more likely it is that such deviations might occur and persist with some regularity.

•Negative figures indicate that trends can only deviate from the long term trend for short periods. The more negative the number, the more likely it is that any deviation will quickly be corrected and that the series will soon return to its regular long-term trend.

Following Campbell, Low and MacKinlay (The Econometrics of Financial Markets, 1997), it can be shown that this statistic is a linear combination of autocorrelation statistics and that confidence ranges can be calculated as:

	1 SD	2 SD
Reg(3)	0.183	0.365
Reg(6)	0.289	0.577
Reg(12)	0.428	0.856

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This is a description of the formal test statistic.

Style Relevance Criteria

	Identity	Attribution (Size / Value-Growth) (Avge|T| : %|T|>2)	Regularity		Identity	Attribution (Size / Value-Growth) (Avge|T| : %|T|>2)	Regularity
Developed Markets				**Eurozone**			
Large Value	100		0.55	Large Value	100		-0.12
Large Growth	100	9.2 : 84%	1.47	Large Growth	100	3.4 : 70%	0.27
Small Value	100	7.7 : 81%	1.27	Small Value	100	2.9 : 44%	0.43
Small Growth	100		0.08	Small Growth	100		-0.21
Asia Pacific ex Japan				**United States**			
Large Value	92		0.35	Large Value	100		0.25
Large Growth	100	3.8 : 63%	0.31	Large Growth	100	4.9 : 73%	1.14
Small Value	99	3.6 : 59%	0.32	Small Value	100	5.2 : 70%	0.81
Small Growth	78		0.10	Small Growth	100		-0.05
Japan				**United Kingdom**			
Large Value	100		0.19	Large Value	94		-0.11
Large Growth	100	2.1 : 43%	0.09	Large Growth	100	1.6 : 30%	0.40
Small Value	100	5.2 : 80%	0.50	Small Value	100	3.3 : 54%	0.89
Small Growth	100		0.14	Small Growth	100		-0.18
Australia				**Ireland**			
Large Value	78		0.19	Large Value	17		0.08
Large Growth	70	1.8 : 35%	0.07	Large Growth	66	1.0 : 15%	0.02
Small Value	82	1.8 : 41%	0.53	Small Value	90	0.9 : 8%	0.20
Small Growth	86		0.33	Small Growth	81		0.45

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Using the 3 test statistics on Sector Adjusted (and Country and Sector Adjusted) Style based portfolio return analysis we find that:

Most Styles are well Identified in the major markets (that is, they are more distinctive than would be the case if they were just random selection). (Note that the Large Value and Large Growth are only loosely defined in Ireland – i.e., they are not relevant Styles.)

Clustering of performance is also strongly observable in most markets. (Note, however, that Ireland is again disappointing.)

But, Regularity of returns is only normally found in Small Value or Large Growth stocks; and the results are note uniform across all markets and regions. This means that forecasting Styles can be fraught with disappointments. This is so because if, as we have shown, the pattern of returns contains no information, or is closely random over the 20 year horizon, it is impossible then to model these returns against other time series that may be characterizable and are not random. Note that while low regularity numbers indicate that it will be impossible to forecast a Style return, high numbers only suggest that it is not impossible to forecast a Style return. Low numbers do not in themselves, however, offer any guidance in constructing a forecasting process.

Based on the information in this table we are justified in applying Style techniques across the major markets and regions. But we should be careful as we try to model and forecast Style returns.
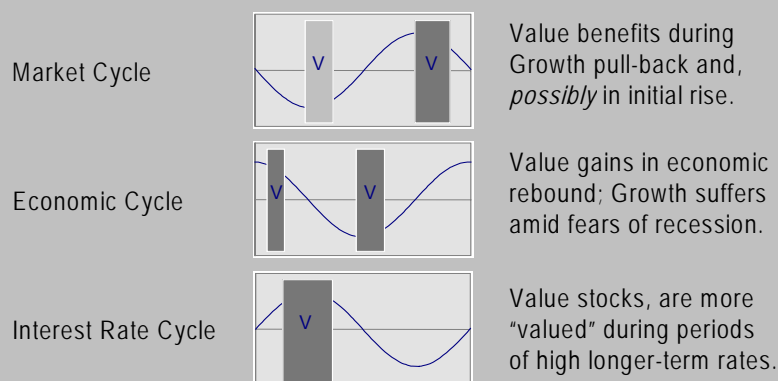
Working within the Style Environment

◆ Forecasting Style returns

◆ Do different Styles require different managers?

◆ Identifying and monitoring manager Style

◆ Style and Portfolio Risk

◆ Has Style management worked?

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Having shown that Style are worth identifying, we now look at how to work within the Style environment.

This "model" describes how we attempt to forecast Style returns in terms of three related cycles: the equity market cycle, the economic cycle and the long bond yield cycle. For demonstration I am showing the market cycle leading the economic cycle which in turn leads the long bond cycle. But in reality this need not occur; the cycles can slip and slide and stretch and compress. But this is not a bad way to represent things (some might argue even more strongly that this lead structure is more justified).

High long **bond yields** generally occur against a background of high and threatening inflation. This shortens investors' assessment horizons and focuses them on the more immediate returns from Value stocks. Also, it is more difficult to manage a Growth company during high inflation since investments are more difficult to budget in the uncertain future.

At the up-turn of the **economic cycle** profitability is abundant and so Growth opportunities are no longer the scarce resource; also smaller, often more risky, Value companies benefit most from the upward reversal in sentiment. Also at the unnerving top of the rollercoaster, where you can't yet see the bottom, worried investors huddle in Value.

And, at the top of the **equity cycle**, as shares collapse, over-promoted Growth stocks fall fastest. Also, right at the bottom, defined benefit pensions funds pile into high yielding Value stocks when they re-enter the market.

The Growth Style is a bit different. Growth can strengthen during periods when Value is not favoured. But Growth generally requires a "gestation period" of economic calm to encourage investors and entrepreneurs to explore longer term payoff opportunities.

But, even though this forecasting methodology can explain recent Style return patterns, it is really replacing a single question "Value or Growth" with many more vexing questions relating to complex cycles. That might be harder, but at least it introduces the possibility of an informed debate.

Using Style-Based Managers

◆ Should we allocate among different Style-based manager philosophies?

◆ Are the same investment skills applicable within Value and Growth universes?

◆ Can Value managers double as Growth managers?
– Is it simply a matter of looking at different investment criteria?
– Or are there distinguishable differentiating behavioural differences?

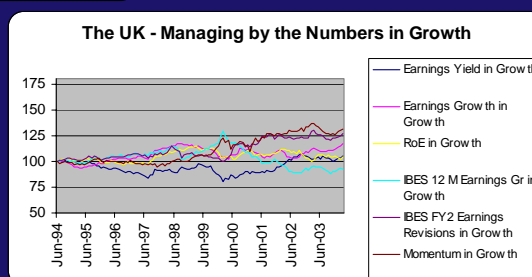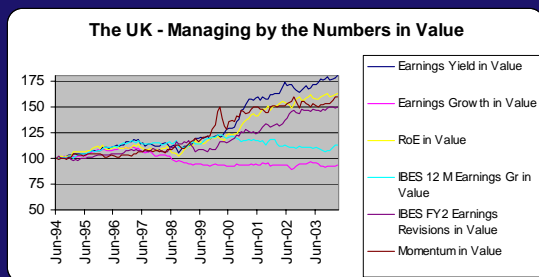Style and Style Analysis in Global Equity Markets   www.StyleResearch.com

One of the first questions that needs answering after having demonstrated that Styles are appropriate and that they can be worked with is "How should I manage Styles?"; and this is a more difficult question than it first appears.

Although it seems natural to distinguish Value managers from Growth managers and appoint separate Value and Growth teams, nothing we have seen so far really supports this. Even though we have shown that Value stocks and Growth stocks are separable and perform differently, nothing we have shown yet demonstrates that we require different teams or managers to manage Value portfolios separately from Growth portfolios. Even in quantitative management, it might simply be a matter of recalibrating the forecasting model and cleaning out the optimizer, and the same team can manage Value in the morning and Growth in the afternoon. But is that sensible?

It goes against our intuition that Value managers are more evaluative and methodical, holding large diversified portfolios and have a cautious approach to investment and risk while Growth managers tend to hold smaller, "punchier" portfolios and frequently seem to invite risk. Surely they must be different types of people. But we haven't yet demonstrated this.

We need to show that there are different behavioural characteristics that define and distinguish successful Value and Growth managers.

In this and the following slides we analyze the returns of simple investment strategies, based on basic Value and Growth criteria applied within the Value and Growth universes, respectively, in major markets and regions.
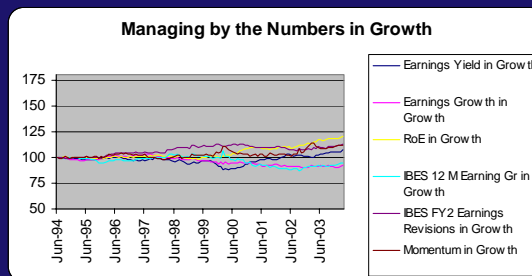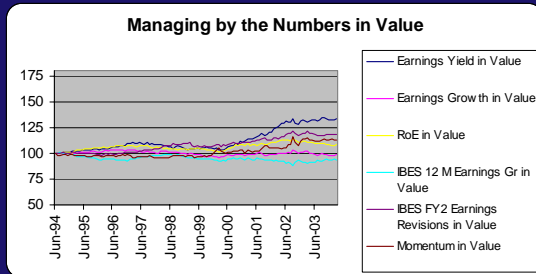
We define the top 50% by market capitalization of each sector (or market and sector, for regions) sorted by Book to Price as the Value universe; its complement is defined as the Growth universe. And within each we plot the returns (relative to the Value and Growth universe) of simple strategies that select the top 20% (by market capitalization) of shares sorted by: Earnings Yield – a Value criterion; Earnings Growth – a Growth criterion; Return on Equity – Growth; IBES Earnings Forecasts and Forecast Revisions – both Growth; and, Total Return Momentum.

In the UK we find that portfolios constructed based on Earnings Yield, Return on Equity, Earning Forecast Revisions and Momentum have systematically outperformed within Value while nothing has worked within Growth.

This leads to the impression that systematic investment practices can enable Value managers to outperform their benchmarks while similar practices do not appear to help Growth managers. Carrying this further, Value managers can succeed by being "evaluative and contemplative" while Growth managers need something else. Perhaps specialist knowledge of the stock-specific features of each holding.

And this starts to talk about differences in approach that would require different skills to operate successfully within each distinct area.

## Managing within the Basic Styles
The Euro Zone

Managing by the Numbers in Value

- Earnings Yield in Value
- Earnings Grow th in Value
- RoE in Value
- IBES 12 M Earnings Gr in Value
- IBES FY2 Earnings Revisions in Value
- Momentum in Value

Managing by the Numbers in Growth

- Earnings Yield in Grow th
- Earnings Grow th in Grow th
- RoE in Grow th
- IBES 12 M Earning Gr in Grow th
- IBES FY2 Earnings Revisions in Grow th
- Momentum in Grow th

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The results are not dissimilar in the Eurozone. But notice that the positive patterns of returns to Earnings Yield and Earnings Forecast Revisions appear to have become stronger since the formation of the Eurozone.

Information in the Appendix reviews the 20 year history. On this longer term analysis it also appears that Return on Equity and Earnings Forecast Revisions can been successful within Growth. Perhaps, as we shall see in Japan, systematic practices can be successfully applied in both Value and Growth universes. But it is also likely that the longer term results depend on the analysis of a market structure that no longer exists. European markets are very different following the creation of the Eurozone and the changing structure could easily render the longer term analysis invalid.
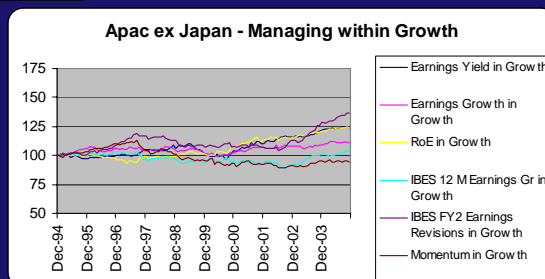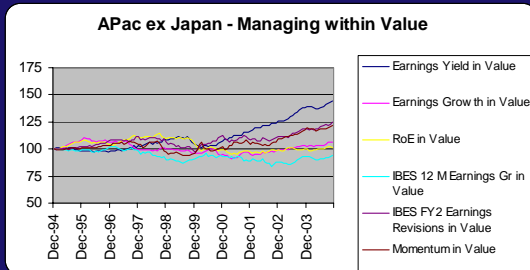
In Asia Pacific the rewards to Earning Yield (a Value factor) and Earnings Forecast Revisions within the Value universe are convincing.

While Earnings Forecast Revisions and Return on Equity appear to have offered some outperformance within Growth over the recent past, longer term data (Appendix) highlight the erratic nature of patterns within Growth

Perhaps systematic investing is a practical option throughout the region, but it appears to be more fraught with risk within the Growth universe that within Value. And, as before, in view of the changing nature of markets over the past 20 years, it is probably best focusing on the shorter term analysis.
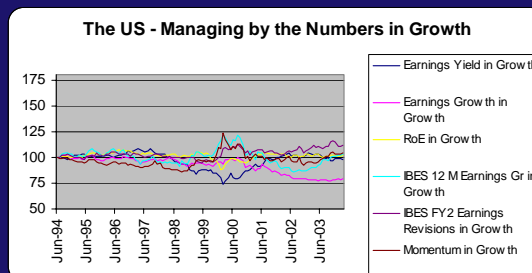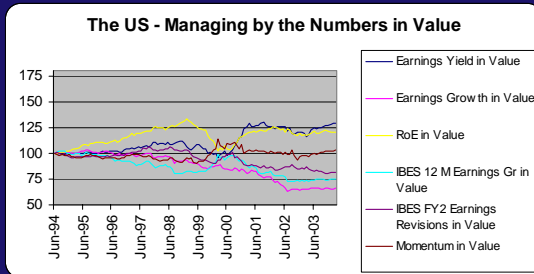
Not surprisingly the efficiency of the US market has ensured that little appears to work within either the Value or Growth universes.

Paradoxically the longest trend appears to be against Earnings Growth within Value; can Value managers really succeed by simply choosing the Value companies with the worst growth in Earnings per Share.

The data in the Appendix show that within both Value and Growth universes Forecast Earnings Revisions provided a sound investment criterion until the early 90s. Then, in both Value and Growth it stopped working. A classical example of new uses of information being arbitraged away.

Managing within the Basic Styles
Japan

Japan - Managing by the Numbers in Value

Earnings Yield in Value

Earnings Grow th in Value

RoE in Value

IBES 12 M Earnings Gr in Value

IBES FY2 Earnings Revisions in Value

Momentum in Value

Japan - Managing by the Numbers in Growth

Earnings Yield in Grow th

Earnings Grow th in Grow th

RoE in Grow th

IBES 12 M Earnings Gr in Grow th

IBES FY2 Earnings Revisions in Grow th

Momentum in Grow th
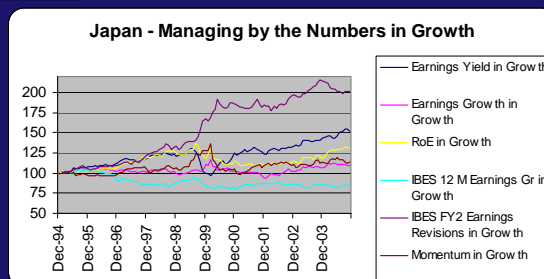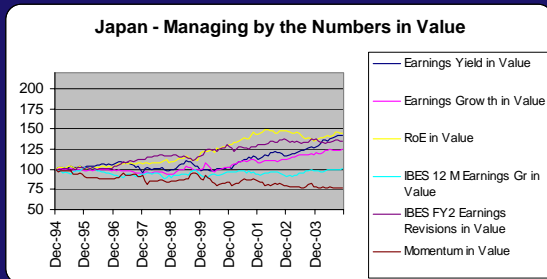
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Although the results are erratic, it appears that systematic investment practices can give outperformance in both Value and Growth universes in Japan. The key factors appear to be Earnings Forecast Revisions and Earnings Yield. But there are occasional reversals that could be painful.

Note that this does not mean that the same manager can successfully be appointed for both Value or Growth mandates. There still might be important differences between them that require separation and specialization; but in Japan the selection or preference will have to be based on other criteria. Systematic philosophies need not be the distinguishing features of Value managers; Growth managers can also succeed by applying systematic investment practices.

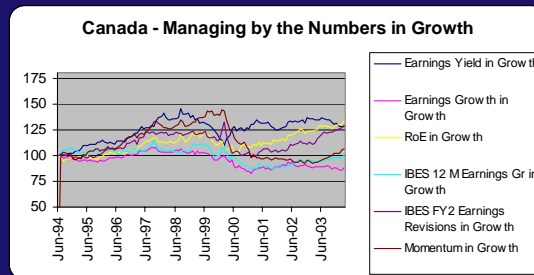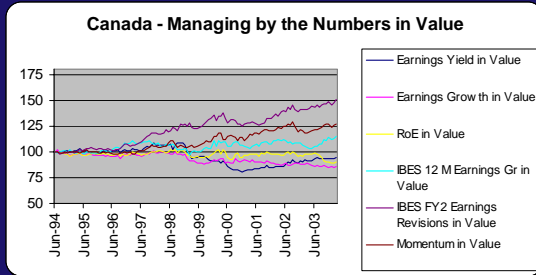## Managing within the Basic Styles
Australia

Australia - Managing by the Numbers in Value

Legend:
- Earnings Yield in Value
- Earnings Growth in Value
- RoE in Value
- IBES 12 M Earnings Gr in Value
- IBES FY2 Earnings Revisions in Value
- Momentum in Value

Australia - Managing by the Numbers in Growth

Legend:
- Earnings Yield in Growth
- Earnings Growth in Growth
- RoE in Growth
- IBES 12 M Earnings Gr in Growth
- IBES FY2 Earnings Revisions in Growth
- Momentum in Growth
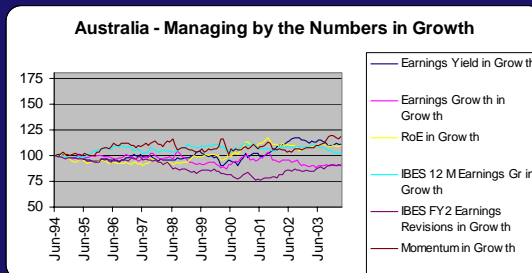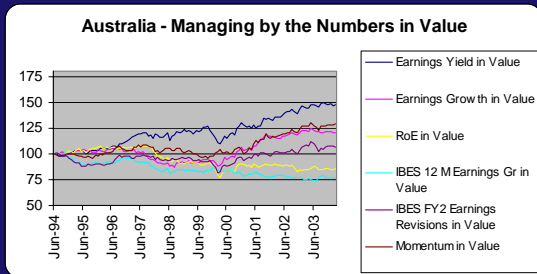
Style and Style Analysis in Global Equity Markets   www.StyleResearch.com

In both Australia and Canada systematic investment appears to work more strongly within Value than within Growth. While there are periods when managing by the numbers does appear to work within Growth, the risks appear larger and the periods of outperformance appear shorter. Systematic investment, therefore, appears a more successful strategy with Value than within Growth.

Managing within the Basic Styles Canada

Canada - Managing by the Numbers in Value

Legend:
- Earnings Yield in Value
- Earnings Growth in Value
- RoE in Value
- IBES 12 M Earnings Gr in Value
- IBES FY2 Earnings Revisions in Value
- Momentum in Value

Canada - Managing by the Numbers in Growth

Legend:
- Earnings Yield in Growth
- Earnings Growth in Growth
- RoE in Growth
- IBES 12 M Earnings Gr in Growth
- IBES FY2 Earnings Revisions in Growth
- Momentum in Growth

Selecting Style-Based Managers
Value Skills vs Growth Skills

◆ Good Value managers will very likely exhibit fundamentally different behavioural characteristics from good Growth managers.

Although there are still curiosities within many regions, the data from the UK, Australia, Canada, the Eurozone and within Asia Pacific point tentatively to the conclusion that it does take different skills to manage Value and Growth portfolios. This intuitively obvious result supports the practice of appointing different managers to manage these different types of portfolios.

And, it is therefore not inconsistent that we tend to find that most Value managers hold larger (by number of holdings) portfolios, structured to reduce tracking error at the same time as exposing their portfolios to systematic investment themes, while Growth managers focus on a narrow number of securities and pick stocks more according to their own individual stock specific characteristics.

As a caricature, Value managers need to be the mathematicians while Growth managers, who need the specialist information of the individual companies they include in their portfolios, need to be familiar with the peculiar features of the companies whose shares they hold.

This is explained in greater detail in an article previously published in Investment and Pensions Europe and now available from our website. The key points are that there are now four important ways to review portfolios and determine their Style characteristics.

Returns-Based analysis characterizes portfolios based only on their performance. This analysis is error-prone and many well known misclassifications have occurred. The selection of the Style paradigms is critical and it is also important to regularly test for validity of the estimation (the R-Squared). It is, however, fast and immediately accessible; it is what made Style popular in the US mutual fund market. But it does not provide much more than superficial information.

Style Skylines and Style Distributions are calculated from knowledge of a portfolio's individual holdings. They provide much more detailed information of a single point in time (and they can be run as trails to show changes as well), but they are data hungry. Because of the potential for nuances in interpretation and the ability to dig deeper into the analysis, this is most popular with professional investors and consultants.

Risk-Based analysis also depends on knowing the individual holdings. This provides detailed information about where managers are taking their risk. Presumably a Value manager would take most of his risk in structuring his Value holdings (because that is where he is supposed to be a specialist). This technique has recently become very important in identifying Growth managers who are delivering a Value-like product simply by exercising their skill within the Growth universe.
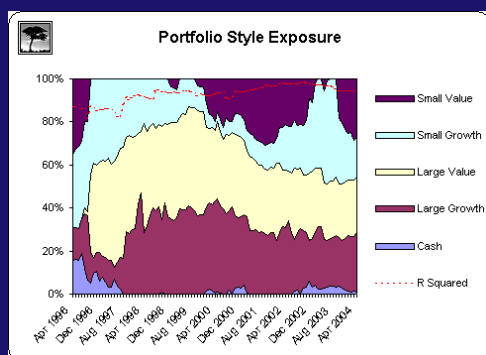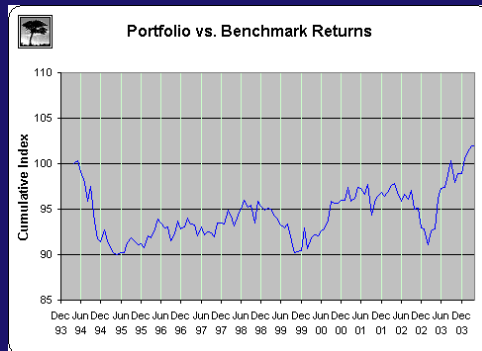
This is a typical example of a Returns-Based analysis.

Because of the techniques employed, basically constrained regression or optimization, it is possible to fit virtually anything according the basic independent Style returns series used. That is why the R-Squared statistics (and others, such as the t-statistics for the estimates of each Style factor coefficient) are so important. In this case the high R-Squared supports Bill Sharpe's contention that a very high proportion of fund returns can be explained by the basic Styles. But this is not always the case.

The choice of Style return paradigms is also very important. It is necessary to recognize whether the Style return series are generated by Style portfolios that are sector neutral (and country neutral, for multi-currency portfolios) or whether, like the series that apply in the United States, they carry very large sector imbalances within their construction, which can dominate the pattern of their returns. If one is not careful the use of the wrong series can result in a serious misclassification of the Style of a fund.
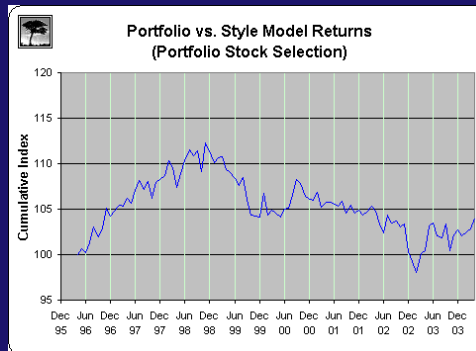
For example, during the late 1990s, UBS in London was a recognized Value manager. However, because of a decision by its investment committee, they were neutral or underweight the Financials sector. Consequently, routine Style analysis based on US style Style indices (that had Financials at least 45% overweight in the Value paradigm) would identify UBS wrongly as a Growth manager (since their month to month pattern of returns strongly reflected the fact that they were underweight in the strongly performing Financials sector). An analysis of UBS returns using sector adjusted Style paradigms correctly characterized them as Value managers.

Returns-based Style analysis must be used with care.

Using Returns-based analysis it is possible to go a little bit deeper, but not very far.

This slide and the next show how Returns based Style analysis can give some useful information.

The chart titled Portfolio Style vs. Benchmark shows how the performance of the Style allocation compares against the performance of the Benchmark. It is calculated by computing how neutral investments in the Style paradigms (as shown in the Style Strata chart) would perform relative to the benchmark. This gives some indication regarding the success of the manager's investment strategy.

The difference between the Portfolio return relative to the Benchmark and Style return relative to the Benchmark measures the success of the manager's stock selection process.

But in all these applications of Returns-based analysis we are balancing a lot of information on a very narrow base and the specification of the appropriate model and its statistical verification are critically important.

Identifying Manager Style
Top-Down Returns-Based Style Analysis III

Portfolio Style vs. Benchmark Returns
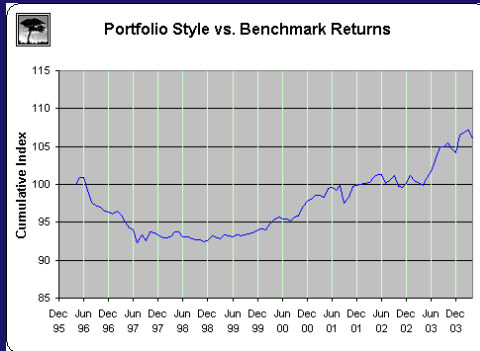
Nonetheless, through the Style shifting, the fund has shown consistent outperformance in its Style Strategy. A Successful Style Timer.

**Portfolio Beta / Alpha
Rolling 24 months**
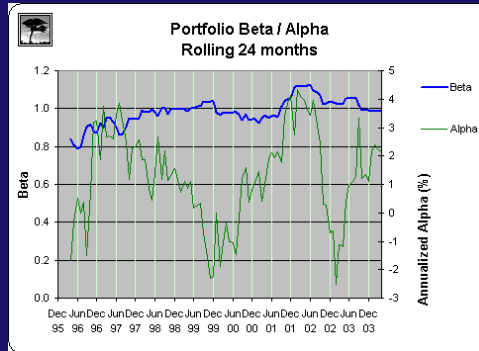
As the fund increased its exposure to Small Value, Beta increased. However, the increase was moderate and has now fallen back with the shift in the allocation towards Small Growth.

Style and Style Analysis in Global Equity Markets

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See the commentary in the previous slide.
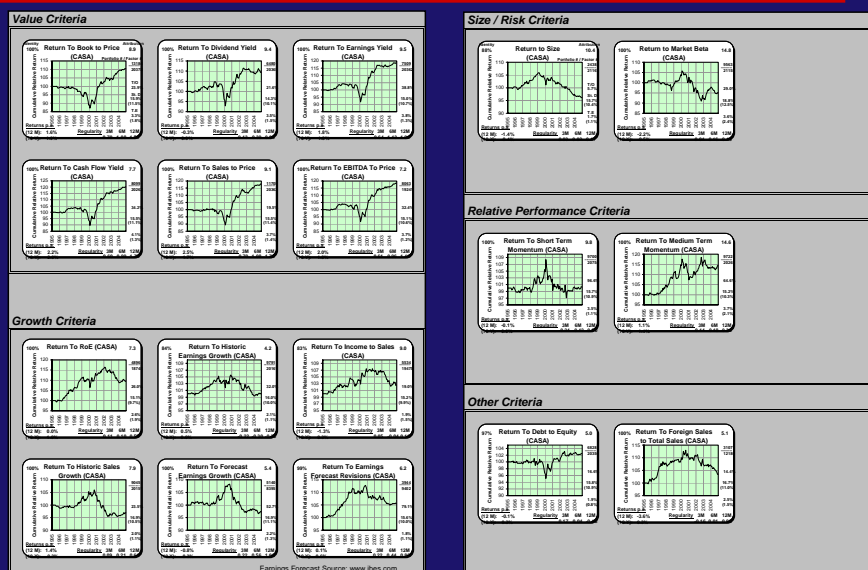
But there is much more to Style than simply Large Value, Large Growth, Small Value and Small Growth.

This page from our Global Style Advisor service shows the diversity of returns from a number of the basic Styles (Value, Growth, Size, Beta, Momentum, Gearing, and Foreign Exposure).

Note particularly how the key Growth criteria started to diverge in performance just after the markets peaked in early 2000 and started their protracted decline. While Value strongly outperformed, forward-looking Growth measures (companies with high forward-looking Growth estimates) fell back, but companies maintaining high Return on Equity and holding relatively high Profit Margins (Income to Sales) kept going well into the first 2 years of the market downturn. Consequently any portfolio analysis based simply on Value factors or the wrong set of Growth factors would seriously misinterpret the strategies and potential of Growth managers who had moved with the changing times.

For professional investors, who need to look beyond the simple sales process and marketing, Returns-based analysis is clearly not enough; and even detailed Holdings-based analysis needs to be done carefully with a broad regard to a number of key Style criteria.

Identifying Manager Style
Bottom-Up Holdings-Based Style Analysis I
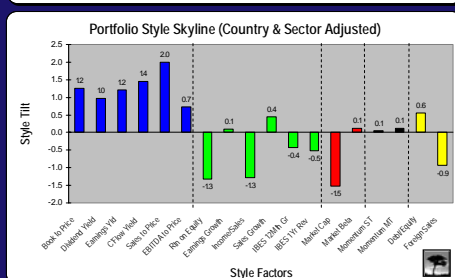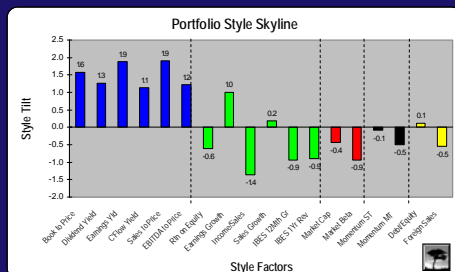
In this Value portfolio:

1   Value tilts are also evident within individual markets and sectors;

2   Within markets and sectors the portfolio is tilted against current Growth measures, there is not much "give up" of future Growth potential;

3   There is a small cap tilt within markets and sectors that is not clear at the total portfolio level.

The Style Research Skyline (and I understand also the analysis of some of our competitors – but they no longer show me their material) analyzes equity portfolios according to a wide number of key Value and Growth factors (and other factors as well).

The Value factors begin with Book to Price, the key stock measure of Value, and continue with Dividend Yield, Earnings Yield, Cashflow Yield, Sales to Price, and EBITDA to Price, sequentially reducing the possibility of distortion from accounting extraordinary, exceptional, and other non-repeating items.

The Growth factors assemble Return on Equity and Profit Margin as sensors of current warranted or sustainable Growth potential, Historic Earnings and Sales Growth as measures of demonstrated ability to sustain growth, and Two factors focusing on future earnings growth and changes in these estimates, to assess companies' future growth potential.

As previously described, it is important to recognize whether Style tilts are due to sector imbalances and/or country imbalances or if they are due to deliberate tilts systematically applied within the structure of the stock selection of the portfolio.

Sector Adjustment and Country Adjustment do this. And these techniques also make it possible to analyze portfolios invested across markets with strongly divergent ratings and differing accounting practices.

Identifying Manager Style
Bottom-Up Holdings-Based Style Analysis II

Portfolio Style Skyline (Country & Sector Adjusted)
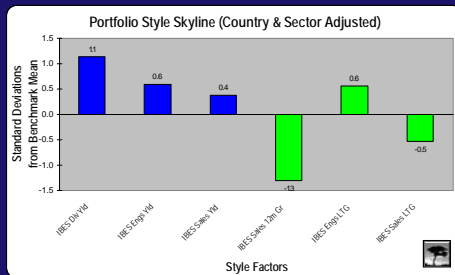
Longer horizon factor analysis confirms the Value tilt and recognizes that while the portfolio is negatively tilted toward near term Growth expectations, there is not too much give-up over the longer term.

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And there are also a number of additional factors that can be used to enhance the analysis.

Style Research provides over 30 factors including additional Value and Growth measures (including longer term assessments) and a full range of Quality factors (that have recently become particularly interesting).

These extra factor scores, highlighting longer term Growth expectations and characteristics of Quality, become particularly important when, for example, the standard Skylines indicate that portfolios are invested in higher priced securities and that the traditional measures of Growth are weak or negative.

Identifying Manager Style
Bottom-Up Holdings-Based Style Analysis III
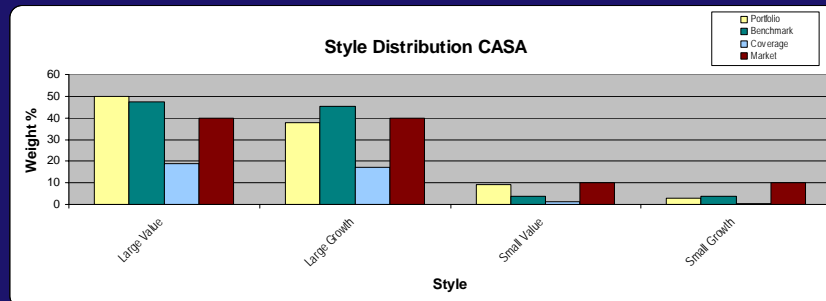
Simple Style Distribution Analysis demonstrates that the portfolio is virtually neutral in Large Cap Value but most positioned within the Large Cap Growth (underweight) and Small Cap Value (overweight) segments of the market (on average within each market and sector).

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Style Distributions (also know as the Style "Cookie Cutter") identify where the assets of the portfolio are invested.

While the Style Skylines do reveal a great deal of the detail and nuance of the portfolio's investments (and these Skylines can also be used to good effect within industrial sectors to identify Style consistency), distortions can arise because of outliers or peculiar factor distributions. Consequently it is frequently useful to look simply at how the distribution of the portfolio across basic Styles compares with the distributions of the Benchmark and the Market as a whole across these Styles.

The analysis can look simply at Large Value, Large Growth, Small Value, Small Growth or it can be made much more complex using more segments and/or using different factors to determine these segments.

This type of analysis can also be used to explore portfolio construction details of a non-Style variety as well.

A number of managers and consultants will use Momentum and Forecast Earnings Revisions as the two factors in this process to try to determine whether portfolio managers are trend followers or whether they attempt to take advantage of revisions of broker sentiment in the construction of their portfolios.

Identifying Manager Style
Bottom-Up Holdings-Based Style Analysis IV
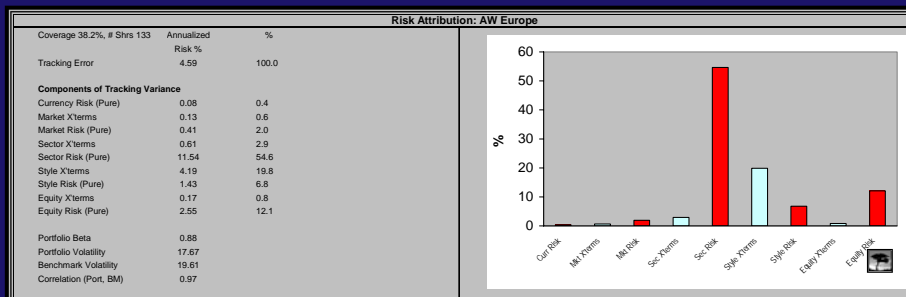
Within the total risk measure (Tracking Error or Tracking Variance), Style, by itself, does not contribute much risk. But in association with the sector positions, there is a significant weight. Further detailed analysis identifies where this risk comes from. (Services, Financial and IT, where the Style positions within these sectors extend the sector bets, compounding the risk impact.)

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In order to do a Style-based risk analysis, or a risk-based Style analysis, we have to start with the construction of a full portfolio risk analysis and decomposition.

In our systems, returns and risk are assessed in terms of the contributions from Currency, Market, Sector, Style, and Stock selection. The analysis highlights the risks coming from each level of decision; and it goes on to identify those risks that come from the interaction of adjacent sources of risk, as well.

This analysis makes it possible to see how, for example, managers are managing the Style decision that is implicit within the Sector selection decision. In this case, the manager is taking similar bets at both the Sector level and the Style level. This is like being overweight in the Information Technology sector and then, within that sector, being overweight in Growth stocks, i.e., compounding the bet owing to the correlated returns across these two decisions.

Typically Growth managers choose Growth stocks within sectors that are themselves Growth orientated, so the blue bar is often positive for them. Value managers, however, occasionally underweight Value sectors (because of historic ratings, for example) but still choose Value stocks within these sectors. This will give rise to negative blue bars.

Identifying Manager Style
Bottom-Up Holdings-Based Style Analysis V

Contribution to Tracking Variance by Style

Style	Total Risk	Curr Risk	Market X'Terms	Market Risk	Sector X'Terms	Sector Risk	Style X'Terms	Style Risk	Equity X'Terms	Equity Risk
No Style Specified	0.03	0.00	0.00	0.00	0.02	0.01	0.00	0.00	0.00	0.00
Large Value	9.21	0.07	0.01	0.12	0.63	5.10	1.28	0.58	0.07	1.35
Small Value	0.53	0.05	-0.15	-0.31	-1.98	0.99	1.11	0.54	0.07	0.22
Large Growth	10.97	-0.05	0.24	0.55	1.81	5.39	1.77	0.32	0.04	0.90
Small Growth	0.37	0.00	0.03	0.06	0.14	0.04	0.03	0.00	0.00	0.08
Cash holdings	-0.01	0.01	0.00	0.00	-0.02	0.00	0.00	0.00	0.00	0.00
Total	21.11	0.08	0.13	0.41	0.61	11.54	4.19	1.43	0.17	2.55

From the decomposition of Tracking Variance, it looks like most of the risk is being taken in Large Growth stocks. But looking further along, it is clear that most of the risk taken via Large Growth stocks is aggregated to Market and Sector (and cross term) risk. At the stock specific level, this manager is taking most risk within the Large Value sector. This must be where he considers his greatest stock selection skills lie.

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Using an extension of the previous analysis, it is possible to decompose the risk assessment, in this case the Tracking Variance (the square of the tracking error), according to how much of it is coming from Large Value, Large Growth, Small Value and Small Growth stocks, and whether the contribution to risk is coming from stock selection risk or whether something more upstream. (For example the Sector risk imbalances could be due to the risks introduced from stocks of one particular Style more than the others.)

Of these risk decompositions, the one relating to Stock Specific, or Equity risk is, I think the most important. This tells us where the manager of the portfolio must feel he has the greatest stock specific knowledge – and so it is another way of determining the true specialism of the manager.

This has recently become particularly important. During the market collapse during 2000 to 2003 most managers we looked at appeared to be Value oriented according to the traditional returns-based Style analysis, according to the *Style Skylines*, and according to the *Cookie-Cutter Style* distributions. Yet many of these managers we knew, from previous experience, to be Growth stock specialists. How could this be? Had they become genuine Value managers overnight?

Our further analysis revealed that these managers had, in fact, taken few risks within the Value side of the market but had been using their skills as Growth managers to identify the real lemons in the Growth universe and were taking strong negative bets in these stocks. Consequently they were overweight Value, giving Value oriented Skylines and distributions, and their performance records were also like Value investors, but they were really managing Growth stocks.

This risk-based Style analysis identified that the managers were taking most of their risk in Growth and correctly recognized that they were delivering a Value-like service by exploiting their knowledge and management skills within the Growth universe of stocks. This has turned out to be important and very usable information.

Style and Portfolio Risk I

Recall (the Definition):   Style patterns of returns are likely to be persistent
or systematic over a usable investment term

Observe (recent Performance):
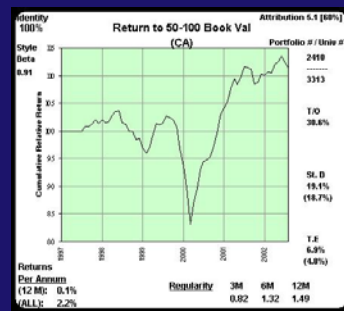
Tracking Error Seriously Underestimated Risk

Another connection between Style and risk identifies that Style-based portfolios often have" ex post" risks that are noticeably higher than the "ex ante" estimates.

This is frequently the case since Styles are often selected or emphasized in portfolio construction because of the supposed trending nature of their returns. (Remember the "Regularity" number that tells of the trending tendency of Styles.) If portfolios are invested in stocks that have a tendency to trend relative to the market or benchmark, then the traditional method of calculating portfolio Tracking Error risk will be seriously flawed. It implicitly assumes that month to month risk can be extrapolated to estimate annual risk without taking into account the risk compounding that this trending will introduce.

Style and Portfolio Risk II

Identifying and Measuring Persistence

Anticipating Persistence Risk through Style exposures and the Variance Ratio Test

$$VR(q) \equiv \frac{Var[r_t(q)]}{qVar[r_t]} = 1 + 2\sum_{k=1}^{q-1}\left(1 - \frac{k}{q}\right)\rho(k)$$

Measuring and Reporting Persistence Risk through the Analysis of Simulated Ex Post Tracking Error.

	Annualized Tracking Error		
	5 years To End Jul 2001	5 years To End Jul 2002	Over 3 years
Returns			
1 Month	4.8%	4.9%	4.9%
3 Month	5.3%	5.4%	5.5%
6 Month	6.2%	6.3%	7.1%
12 Month	8.2%	7.5%	-

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The formula simply gives a way to estimate the degree to which a portfolio's market-relative returns may trend systematically. It is interesting but not critical for the portfolio manager or the portfolio analyst to memorize this.

But the estimate of the impact on the measurement of Tracking Error is critical.

Simply put, it is possible to assess the vulnerability of ex ante tracking error estimates by looking at the different measurements of ex post Tracking Error (actually the root mean square of the performance differences) coming from assessments across different short term time windows. If the annualized 3 month, 6 month and 12 month measurements are significantly larger than the annualized 1 month measurement, then it is very likely that the initial estimate derived from the month to month calculations alone will be too low.

We, and others, have defined a "Persistence Ratio" that helps managers adjust their traditional calculations to take into account the trending potential "baked into" their portfolios.

Note that while it is more often the case that the Persistence Ratio is greater than 1 (indicating that the traditional estimate is too low), the ratio can also fall below 1 (indicating that the traditional estimate is too high). While this is quite rare, its occurrence is much more prevalent among Value managers than among Growth managers. It is interesting to try to puzzle out why.

Has Style Management Worked?

Funds Research Online

from

www.StyleResearch.com

A free service to the funds analysis industry.

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Just as a simple introduction to the use of the most basic techniques of Style analysis, our website gives free and anonymous access to the returns-based Style analysis of approximately 4,400 mutual funds.

This offers a straightforward way to test the significance of Style in the characterization of a wide variety of internationally investing equity funds.

The analysis reviews the degree to which Style can be used to represent the performance of popular (and some not-so-popular) mutual funds.

It shows how returns can be attributed to decisions of Style allocation or stock selection, and shows also how risk "behaves" through a changing investment process.

It can enable investors to spy on their neighbours or to see themselves as others see them.
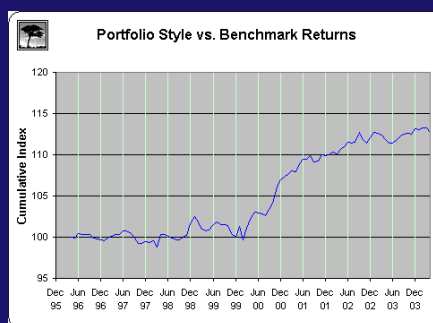
A few examples.

Has Style Management Worked?

AXA General UK Equity Fund
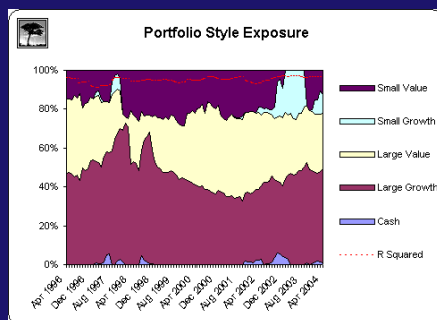
And Style allocation has outperformed!

It looks so easy.

In these three typical examples we show first whether the Style models (the Style Strata or Landfill graphs) are good characterizations of the performance of the funds under review. In all cases the Style models explain 90% or more of the returns of the funds.

We also show the success that each manager has recorded by managing the Style allocations in the way that he has. Note that the website shows more detail about the performance, indicating how stock selection has done as well and also reviewing the basic measures of risk and management efficiency (the return achieved for the risk taken), but for here this is sufficient.

It is interesting that the first manager appears to do very little in terms of changing the fundamental Style allocation. And this has seemed to work.
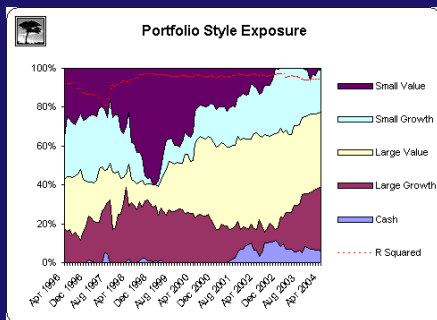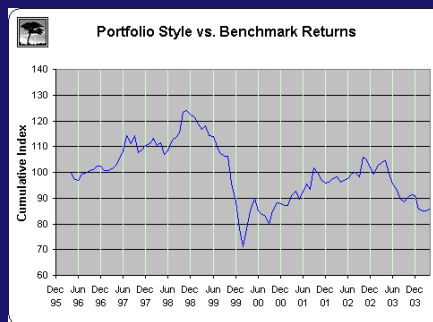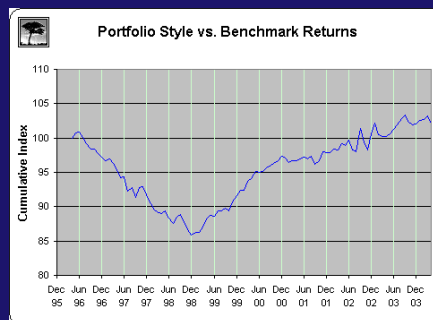
The second manager has rotated his Style allocation considerably over the 10 year period under review. But, although the Style model does faithfully represent the performance of the fund, the Style performance itself is very erratic. (It is a good thing his stock selection is better.)
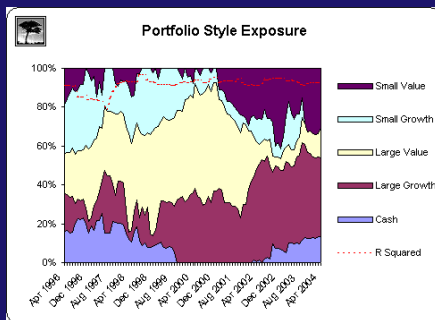
But we shouldn't think that Style rotation is futile. In this example, where again the Style model accounts for 90% or more of the fund's return, active Style management appears to have turned performance around, and the positive contribution from active Style management has persisted through a number of recent Style shifts. (And Henderson do describe themselves as a Style rotator!)

Has Style Management Worked?

Nikko Global Management – Japan Value

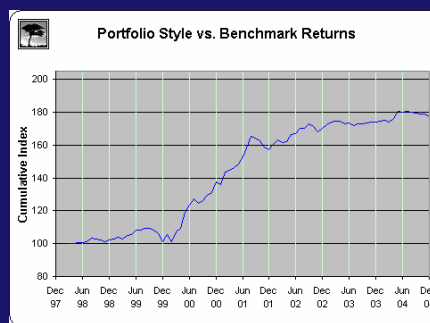Style accounts for more than 90% of returns; and Style rotation can be successful.
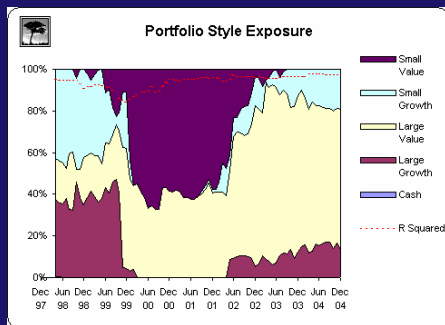
Active Style management is not just a Western phenomenon.

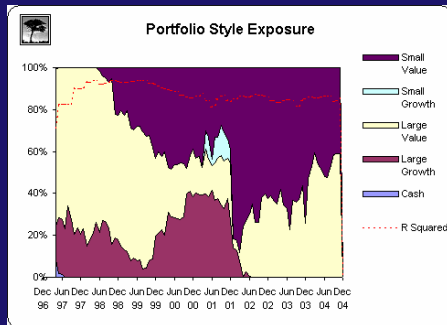Style and Style Analysis in Global Equity Markets

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In this example, taken from a Japanese manager investing in Japan, Style also accounts for more than 90% of the returns and it is clear that Style rotation has been active throughout the period. And the manager has been able to secure positive benchmark-relative returns from this activity as well.

Has Style Management Worked?

Pictet F-Asian Equity (ex Japan)

But it wasn't impossible to secure relative gains by rotating Style allocations.

The market gyrated considerably and rotators had to be nimble.

Style and Style Analysis in Global Equity Markets
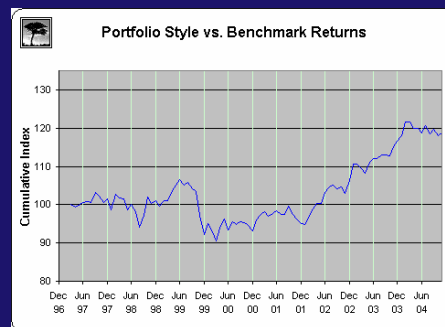
www.StyleResearch.com

Looking back at the pattern of basic Style returns in Asia Pacific ex Japan over the past few years, it is clear that Style rewards were both dramatic and very changeable. Nonetheless, this example shows how a considered, but active, Style strategy has been able to provide a relatively stable and encouraging contribution to total returns.

Style and Style Analysis

◆ Some Closing Thoughts
- Does Style have a future?
- How is Style likely to mature?

Investment Styles have been around for more than 60 years, or longer, and, as methods of analysis have evolved, modern Style-based market and portfolio analysis techniques have been developing rapidly over the past 10-15 years all across the globe.

And, furthermore, there are number of factors that are now combining to ensure that Style will continue to gain in popularity in most world markets.

1 The increasing importance of self-managed investments and the decline in company/union/government sponsored and administered defined benefit pensions programs is bringing investment concepts to the people. Where Style analysis is relevant, it represents an honest and economical way for fund managers and intermediaries to describe investments and to market to the retail sector.

2 The increasing globalization of markets is compelling managers to understand and invest in foreign markets. Style represents a quick-start introduction into the patterns of investment in markets where managers may not yet have deep familiarity and insights.

3 Investment managers and intermediaries can, using Style-based principals, always be sure that they have something good to talk about and to market. For example, while the Large Growth fund may be undeperforming, the Small Value, Small Growth and Large Value fund are likely to be doing OK and one should be doing brilliantly!

But we have to be careful. Since Style can be so attractive for the providers and sellers of funds, we must guard ourselves against the inappropriate use of the Style concept simply as a way for marketers to sound good and increase sales or for managers and consultants to diversify their product line and stabilize their firms' revenues through the investment cycle.

This then is the responsibility of the conscientious Style analyst. We must guard against Style being applied in markets where it has no relevance other than to generate fees for opportunists. And we must provide that where Style is relevant, we use the most comprehensive tools available to ensure that our clients receive faithful accounts of their portfolios' Style exposures, risks and opportunities.

A Perspective on Style Practices
- A Variety of Users and Uses

Managers
- ◆To forecast security returns within markets
- ◆To identify and distinguish themselves
- ◆To offer clients greater choice
- ◆To report to clients

Consultants
- ◆To demonstrate local and international expertise
- ◆To identify and assess managers
- ◆To report to clients

Sponsors
- ◆To contribute to manager/market selection
- ◆To interpret managers and consultants

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It is useful to examine the uses of Style methods by each of the key players in the investment business. Style brings a number of clearly defined benefits to each.

These are the positive contributions.

But!

A Perspective on Style Practices
- Abusers and Abuses - The Dark Side

Managers	◆ To provide a management tool
	◆ To be able to outperform somewhere
	◆ To be represented in the maximum number of appointable categories
	◆ To appear knowledgeable and impress clients
Consultants	◆ To generate more mandates
	◆ Another tool to beat up managers
	◆ To appear knowledgeable and impress clients
Sponsors	◆ To make their jobs intelligible and more interesting
	◆ To assault managers and consultants
	◆ To appear knowledgeable and impress clients

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There is always The Dark Side.

All successful innovations flourish as much for their abuses as for their uses.

These are a few. I'm sure the industry will discover others.

It is up to us to guard against the inappropriate application of Style methods in markets where Style is not a relevant investment technique; and we must also be careful to ensure that Style does not overstep its limitations.

I hope this presentation will have gone some way in showing how to determine the relevance of Styles in global equity markets, and that it has also shown how, using a variety of well-defined Style analysis services, investment professionals can use Style concepts in an appropriate and intelligent manner.

Appendix

- Style's Position in Financial Theory
- Some Recent Academic Literature:
        Value outperforms Growth because …
- A 20 Year History of Managing "By The Numbers" within Value and Growth
- The Complexity of Style Returns:
        Eurozone and Asia Pacific ex Japan
- Examples of Style Research in a Consulting Environment
- Comparing Returns-Based and Holdings-Based Portfolio Style Analysis Techniques

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This appendix expands on some of the issues introduced in the presentation. And there are also some completely new and important topics as well.

1 The basic foundation of Style differs significantly from the now-common multi-factor techniques for the analysis of equity markets. This appendix identifies the differences and establishes the position Style occupies in financial theory. Basically, while multi-factor techniques define weighted combinations of factors that characterize risk and return patterns over a set period of history, Style reviews the relevance of each factor independently before applying them to market analysis or portfolio analysis. Practically, Style involves a 2 stage process that is more involving of investment experience and principles, while multi-factor analysis does everything through the mathematics of principal components analysis (or similar) and can be criticized as over fitting the past and obscuring the investment issues behind opaque mathematical techniques.

2 Academic literature suggests that over the medium term Value will outperform Growth. Is this because the market is efficient and Value stocks, being more risky, vulnerable and less well known, offer a higher return; or is it because the market is inefficient and, as overshooting occurs, Value gains at the turning points; or is most academic thinking wrong? We provide a useful list of historic articles on the subject.

3 We extend the history of systematic investing within Value and Growth universes. Markets have changed so much over the past 20 years that the long term data may be misleading. But it is still instructive to review the historic trends.

4 In the presentation we looked at the diversity of the return patterns of key Style factors across the Developed Markets as a whole. This appendix provides similar information for some other major regions and markets. The same conclusions clearly apply.

5 Style Research has strong relationships with many firms of international investment consultants. This appendix shows how one such firm, Mercer, uses some of the output of our analysis in their investment consulting business.

6 Holdings-based or Returns-based portfolio Style analysis, which is best. Aside from Holdings-based being more data dependent and Returns-based being easier to produce, and Holdings-based enabling more detailed analysis than Returns-based systems which are superficial but great for marketing, there are some interesting theoretical issues involved. The articles mentioned go some way to describe the basis for making a decision; but the results seem to depend very much on the specification of the test and the models selected. More must be done.

Style's Position in Financial Theory

Modelling Security Returns (the General Idea)

$$r_i(t) = b_1(t)s_{i,1} + \cdots + b_n(t)s_{i,n} + \varepsilon_i(t)$$

Where:

$r_i(t)$ is the return of stock i at time t

$s_{i,j}$ is the jth factor load of stock i

$b_j(t)$ is the reward to factor j at time t

$\varepsilon_i(t)$ is the error term at time t

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Style's Position in Financial Theory

Modelling Security Risks (the General Idea)

Then the characterizable risk (variance of historic returns) of stock *i* is

$$Risk\ s_i = \mathbf{s_i}^{\mathbf{T}} \mathbf{B}\ \mathbf{s_i}$$

Where: $\mathbf{s_i}$ is the column vector of factor tilts of security *i*

                 $\mathbf{B}$ is the covariance matrix of the factor reward histories

$$\mathbf{Cov}(b_j, b_k)$$

Then conduct elementary row and column operations to diagonalize **B,** transforming the basis of measurement and establishing linear combinations of the factor tilts as the principal risk components.
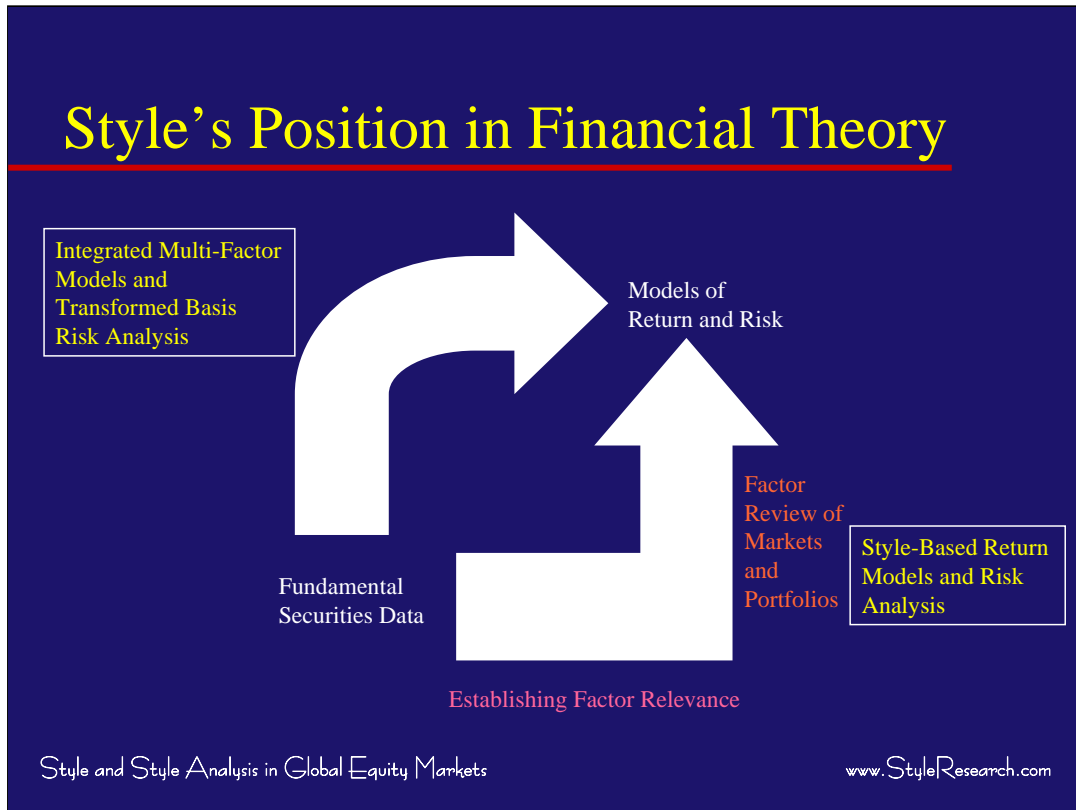
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Style's Position in Financial Theory

The Mid 1950s to the Mid 1990s

Orthogonalized Mean-Variance Risk Analysis Processes

Simple, Unambiguous Risk Decomposition
Integrated Relevance Measures
Sophisticated and Authoritative Methodology

But

Period-Specific and Unstable
Minimal Lasting Investment Importance
Difficult to Explain (internally and to clients!)
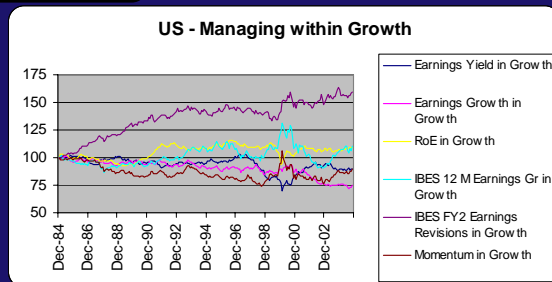Difficult to Extend (e.g. autoregressive patterns)

Style's Position in Financial Theory

Integrated Multi-Factor Models and Transformed Basis Risk Analysis

Models of Return and Risk

Factor Review of Markets and Portfolios

Style-Based Return Models and Risk Analysis

Fundamental Securities Data
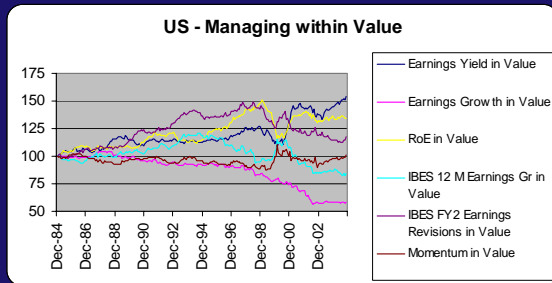
Establishing Factor Relevance
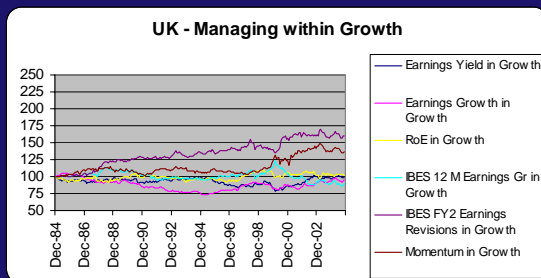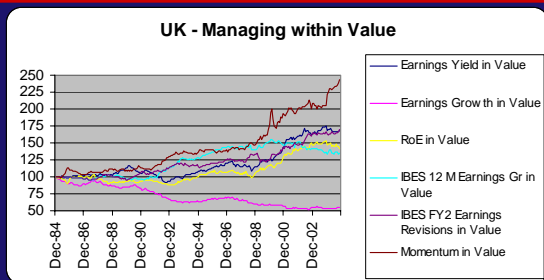
Some Recent Academic Literature

Value Outperforms Growth because:

- **Inferior Tax Status:**   C Capaul, I Rowley, W Sharpe; FAJ 1993
  Compensation for higher taxation on dividend favours Value.
- **Inferior Comfort Level:**   C Capaul, I Rowley, W Sharpe; FAJ 1993
  Household names are preferred to "fallen Angels" and so don't have to offer the best returns.
- **Compensation for Risk:**   E Fama, K French; JoF 1992
  Low rated, good Value stocks have poor expected economic performance, this is compensated in higher share price returns.
- **Extrapolation Error:**   J Lakonishok, A Schleifer, R Vishney; JoF 1994
  Investors tend to place too high regard on recent high growth rates and are consequently prone to subsequent underperformance.
- **Cognitive Error:**   J Lakonishok, A Schleifer, R Vishney; JoF 1994
  Well run companies with steady earnings and growth tend to attract excessive levels of interest and subsequently disappoint.
- **Aversion to Regret:**   H Shefrin, A Statman; Q Group 1993
  Investors take comfort in good names and strong company reports.
- **Overshooting:**   R Haugen; The New Finance 1999
  Stocks tend to overshoot so Value methods of investment gain.
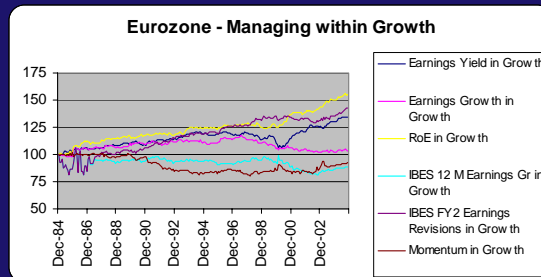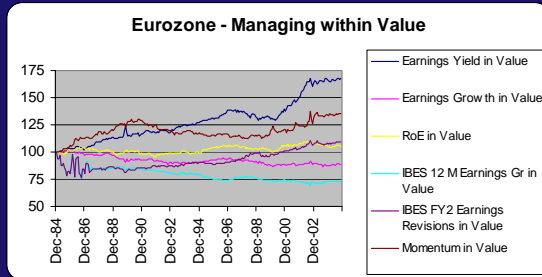
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20 Years of Managing within the Basic Styles – The United States

US - Managing within Value

US - Managing within Growth

20 Years of Managing within the Basic Styles – The United Kingdom

UK - Managing within Value

Legend:
- Earnings Yield in Value
- Earnings Growth in Value
- RoE in Value
- IBES 12 M Earnings Gr in Value
- IBES FY2 Earnings Revisions in Value
- Momentum in Value

UK - Managing within Growth

Legend:
- Earnings Yield in Growth
- Earnings Growth in Growth
- RoE in Growth
- IBES 12 M Earnings Gr in Growth
- IBES FY2 Earnings Revisions in Growth
- Momentum in Growth
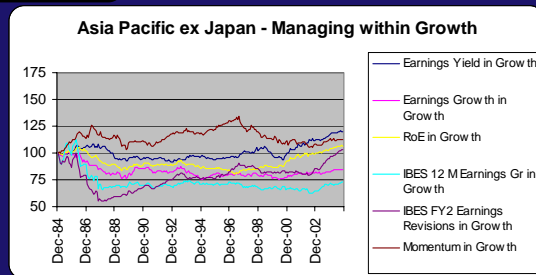
Style and Style Analysis in Global Equity Markets

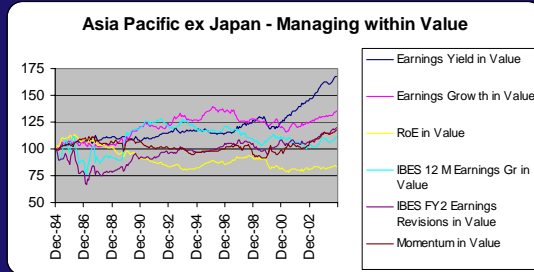www.StyleResearch.com

20 Years of Managing within the Basic Styles – The Eurozone

Eurozone - Managing within Value

- Earnings Yield in Value
- Earnings Growth in Value
- RoE in Value
- IBES 12 M Earnings Gr in Value
- IBES FY2 Earnings Revisions in Value
- Momentum in Value

Eurozone - Managing within Growth

- Earnings Yield in Growth
- Earnings Growth in Growth
- RoE in Growth
- IBES 12 M Earnings Gr in Growth
- IBES FY2 Earnings Revisions in Growth
- Momentum in Growth

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20 Years of Managing within the Basic Styles – Asia Pacific ex Japan

Asia Pacific ex Japan - Managing within Value

Legend:
- Earnings Yield in Value
- Earnings Growth in Value
- RoE in Value
- IBES 12 M Earnings Gr in Value
- IBES FY2 Earnings Revisions in Value
- Momentum in Value

Asia Pacific ex Japan - Managing within Growth

Legend:
- Earnings Yield in Growth
- Earnings Growth in Growth
- RoE in Growth
- IBES 12 M Earnings Gr in Growth
- IBES FY2 Earnings Revisions in Growth
- Momentum in Growth

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20 Years of Managing within the Basic Styles – Japan

Japan - Managing within Value

Legend:
- Earnings Yield in Value
- Earnings Grow th in Value
- RoE in Value
- IBES 12 M Earnings Gr in Value
- IBES FY2 Earnings Revisions in Value
- Momentum in Value

Japan - Managing within Growth

Legend:
- Earnings Yield in Grow th
- Earnings Grow th in Grow th
- RoE in Grow th
- IBES 12 M Earnings Gr in Grow th
- IBES FY2 Earnings Revisions in Grow th
- Momentum in Grow th

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The Complexity of Style Returns
The Eurozone

The Complexity of Style Returns
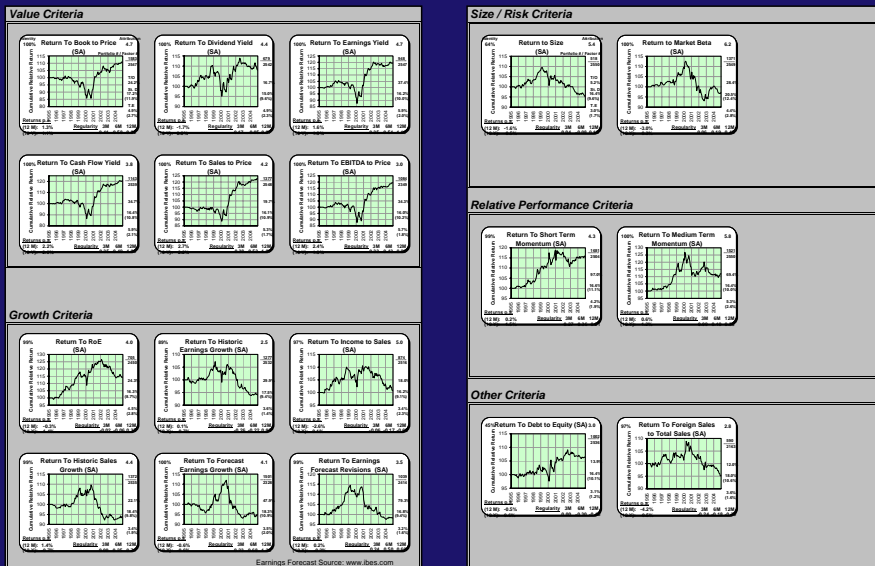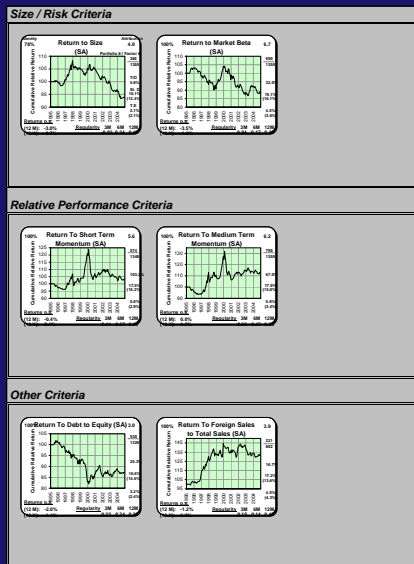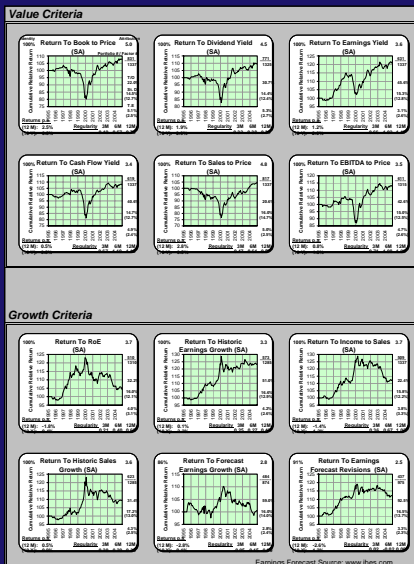# Asia Pacific ex Japan

The Complexity of Style Returns
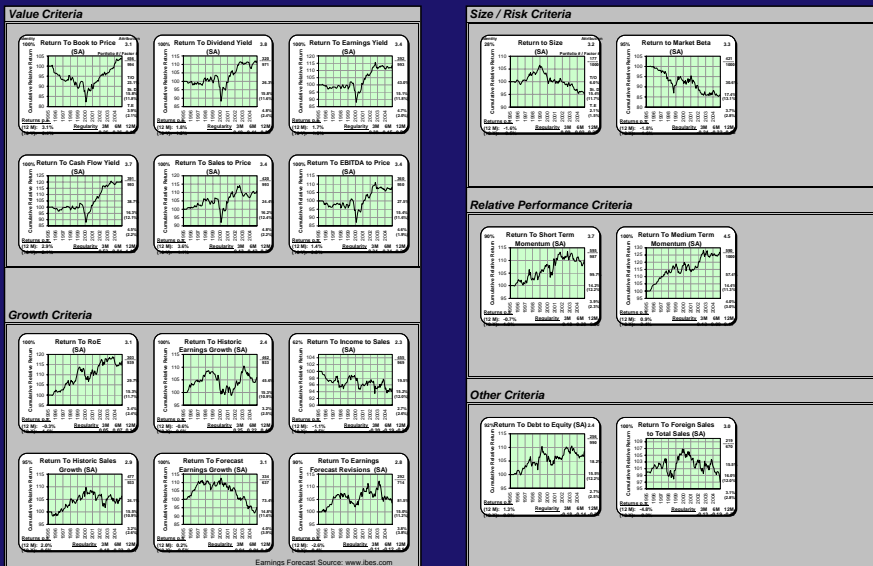# The United States

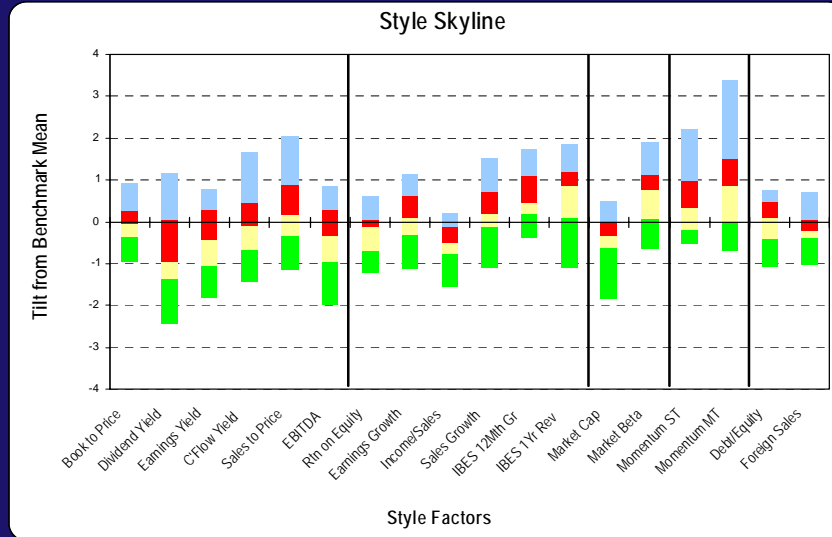Style and Style Analysis in Global Equity Markets   www.StyleResearch.com

The Complexity of Style Returns
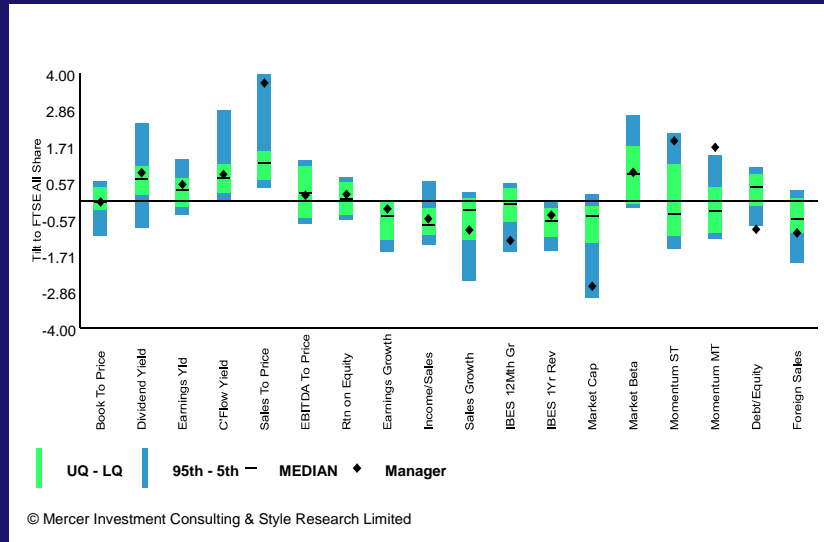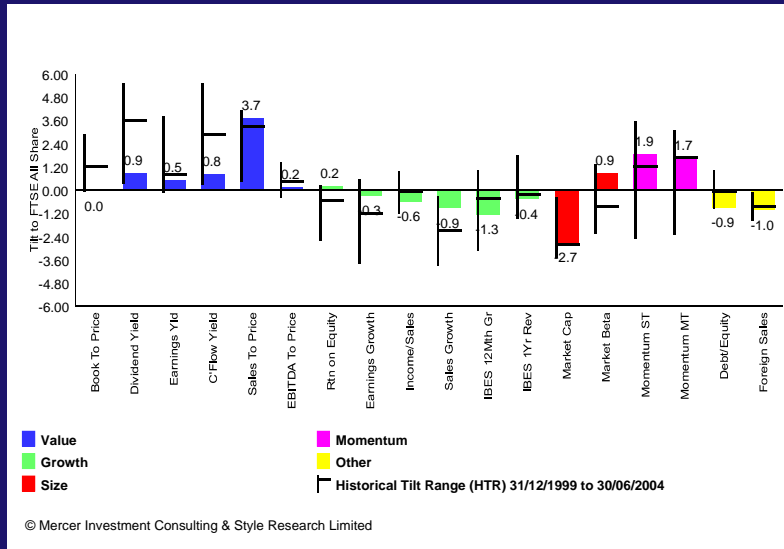# Japan

The Complexity of Style Returns
The United Kingdom

Examples of Consulting Usage
Manager vs. Peer Group Skyline

Tilt to FTSE All Share

Categories: Book To Price, Dividend Yield, Earnings Yld, C'Flow Yield, Sales To Price, EBITDA To Price, Rtn on Equity, Earnings Growth, Income/Sales, Sales Growth, IBES 12Mth Gr, IBES 1Yr Rev, Market Cap, Market Beta, Momentum ST, Momentum MT, Debt/Equity, Foreign Sales

Legend: UQ - LQ, 95th - 5th, MEDIAN, Manager

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Examples of Consulting Usage
Snail Trail

VALUE   4.0   GARP

3.5

3.0

2.5

Dec 99

2.0

1.5

Jun 04   1.0

0.5

-3.0 -2.5 -2.0 -1.5 -1.0 -0.5 0.0 0.5 1.0

0.0

-0.5

DARP   -1.0   GROWTH

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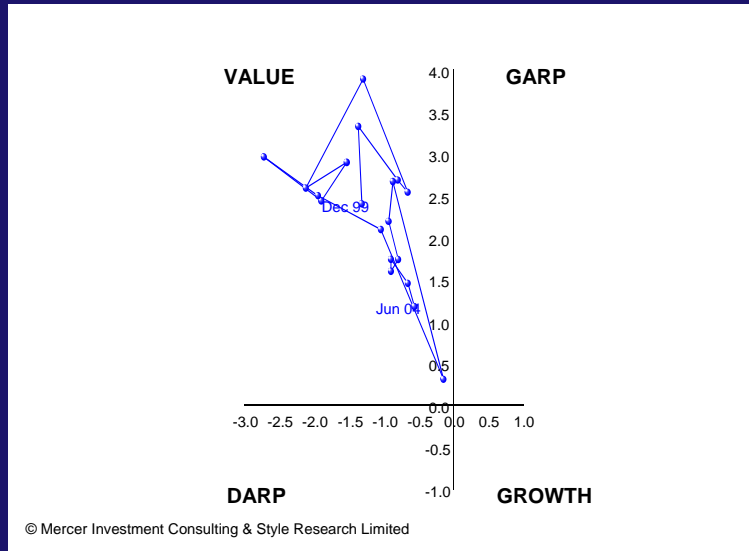
Comparing Returns-Based and Holdings-Based Style Analysis

Some Published Results:

On Mutual Fund Investing Chan, Chen, Lakonishok, NBER July 1999

Based on Consistency: Holdings-Based Analysis dominates Returns-Based Analysis

Based on Predictability: Holdings-Based Analysis dominates Returns-Based Analysis

(Holdings using Size and B/P quintiles (5x5), Returns using Fama & French 3 factors: 3336 US Mutual funds)

Evaluating Style Analysis de Roon, Nijman, ter Horst, Journal of Empirical Finance 2004

Based on Consistency: Holdings-Based Analysis dominates Returns-Based Analysis

Based on Predictability: Returns-Based Analysis dominates Holdings-Based Analysis

Citing: Correlations among the Style indices and differing Style-relative Beta's as factors detracting from reliability of performance predictions from Holdings-Based Analysis.

(Holdings and Returns both using only V & G in N America, Europe, Pacific, & Cash: 18 US Based Global funds)

Estimating Portfolio Style in US Equity Funds Rekenthaler, Gambera, Charlson, Morningstar February 2004

Based on Consistency: Holdings-Based Analysis dominates Returns-Based Analysis

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