UBS Global Asset Management

Looking for the optimal value tilt
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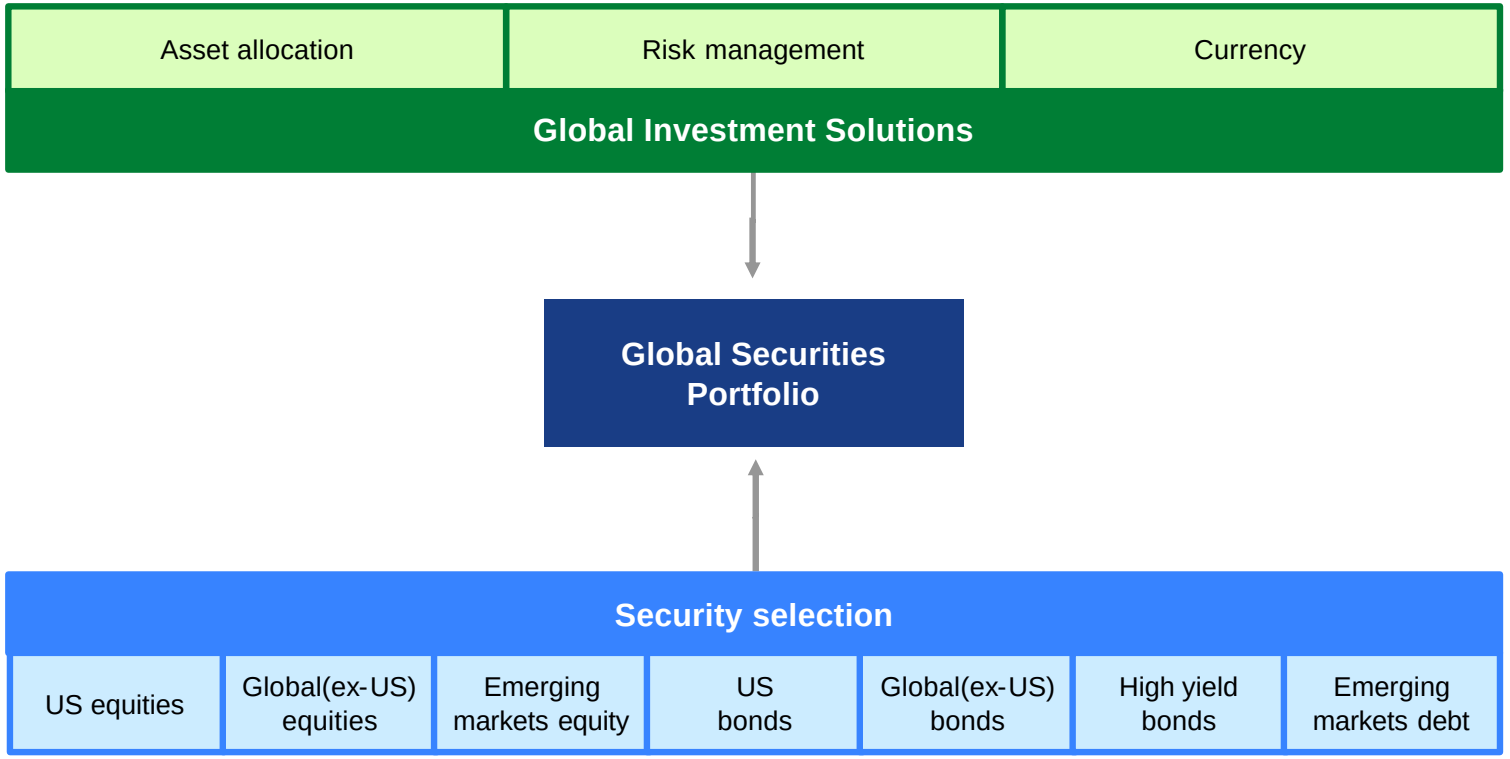
SECTION 1

Simple hedge of a value exposure

Asset allocation process

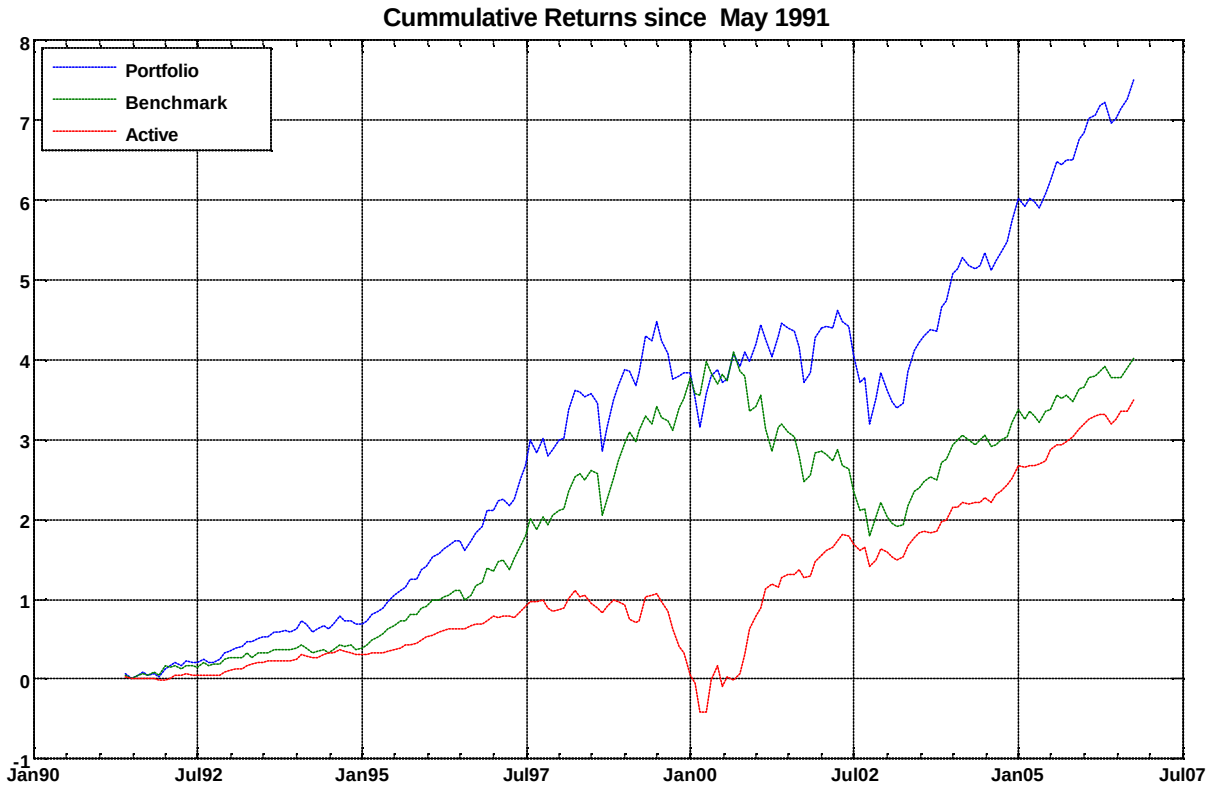
SB – I assume we're talking about GSP – penciled that in

Portfolio is broadly diversified through top-down and bottom-up input from Investment Management & Research



Performance of a portfolio with value tilt

Long-term performance does not help in the short term!



Portfolio: U.S. Large Cap Equity Model since inception Benchmark: Russell 1000.

Source : UBS Global Asset Management

- How can we hedge this exposure?
- In order to hedge our value exposure we need to measure it.

Measuring the value tilt: The academic perspective

- Fama and French (1992): Book value to Market Value (B/P) is a better measure of value/growth than earnings to price (E/P). B/P explains a greater proportion of the cross-section of asset returns. The role of E/P in explaining the cross-sectional variations of asset returns can be captured by a combination of asset size and B/P.
- Lakonishok et. al (1994): find a larger spread between value and growth portfolio performance when defining value/growth with cash flow to price (CF/P) or with a combination of CF/P and past growth in sales.
- Lie and Lie (2002): Test the accuracy of the different valuation multiples used to assess corporate value. B/P provides the most accurate estimate of corporate value when using industry average multiples.
- Chan and Lakonishok (2004) use a cross-sectional regression to estimate how to combine B/P, CF/P, E/P and S/P (sales to prices) to get to an overall value indicator.

Sources:

Fama, E., French, K.,"The Cross-Section of Expected Stock Returns" - The Journal of Finance, 1992

Lakonishok, J., Shleifer, A., Vishny, R.,. "Contrarian investment, extrapolation, and risk." Journal of Finance 49, 1541–1578. 1994

Chan,L., Lakonishok, J. "Value and Growth Investing: Review and Update" Financial Analysts Journal January 2004, Vol. 60, No. 1: 71-86

Lie, E., Lie, H., "Multiples Used to Estimate Corporate Value" Financial Analysts Journal, Mar 2002, Vol. 58, No. 2: 44-54.

Measuring the value tilt: Industry standards

- Model providers and index providers each have a different definition for value.
- However, B/P is the most commonly used measure for value.

	Northfield (US model)	MSCI	S&P Citigroup	Russell	Barra	Style Research
B/P	X	X	X	X	X	X
Growth*	X	X	X	X	X	X
D/P	X	X	X		X	X
E/P	X	X			X	X
C/P			X			X
S/P			X			X
EBITDA/P						X

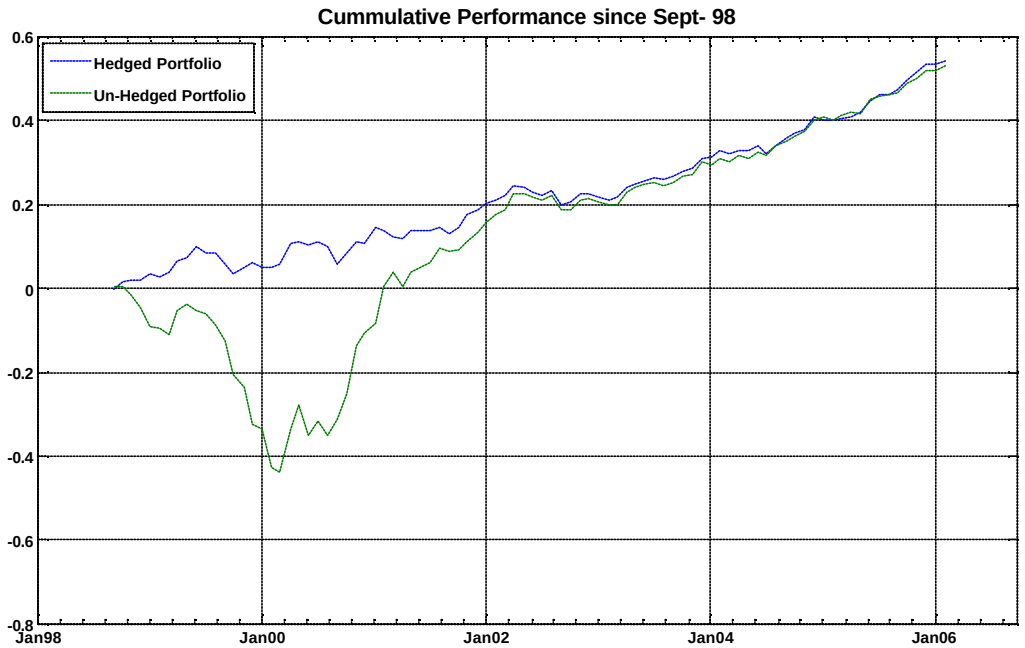
* Growth is defined differently across vendors

Source : UBS Global Asset Management

B/P= Book to Price, D/P= Dividend to Price, E/P= Earnings to Price, C/P= Cash-Flow to Price, S/P= Sales to Price and EBITDA/P=Earnings Before Interest, Taxes, Depreciation and Amortization to Price

Performance with a value hedge

- Futures or total return swaps
  - Hedging costs = negative alpha
- Invest in a value fund
  - Positive alpha
  - Diversification of asset selection risk



Un-Hedged Portfolio: U.S. Large Cap Equity Model; Hedged Portfolio: Simulated performance of a portfolio mixing U.S. Large Cap Equity Model and Large Cap Growth Model Portfolio. Active returns versus the Russell 1000 Growth

Source : UBS Global Asset Management

- In this example, the “value hedge” consists of an allocation to a growth portfolio. The Growth and Core portfolios were rebalanced on a monthly basis in order to maintain a B/P ratio equal to that of the Russell 3000 Index.

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Un-Hedged Portfolio: U.S. Large Cap Equity Model; Hedged Portfolio: Simulated performance of a portfolio mixing U.S. Large Cap Equity Model and Large Cap Growth Model Portfolio. The weight of the Growth portfolio changes so that the Value tilt of the overall portfolio=0. Active returns are computed versus the Russell 1000 Growth (i.e. portfolio returns – performance of the Russell 1000). The performance shown is a back-tested; not realized performance. The model assumes constant rebalancing guidelines throughout the period. The model performance does not take into account transaction costs linked to the rebalancing of the portfolios between the two underlying portfolios. 1. The model assume adjustments for risk capital on a monthly basis after the close of business on a specific day. Live portfolios may not adjust allocations at exactly the same time.

Does it make sense to fully hedge?

- A fully hedged strategy performed better than an unhedged strategy.
- This does necessarily mean that we need to completely remove the Value bias.
- If we maintain a value-neutral profile at all times, we would give up the value premium.
- We need to measure the risk and return of the value premium to assess how much of the value tilt we want to keep in our portfolio .

We can't implement forward-looking strategies using the tech-bubble period as a reference point.

SECTION 2

Assessing the value premium

The academic perspective

- Fama and French (1992) find that B/P is the most important factor in explaining the cross-section of asset returns.
  - The results of Fama and French were replicated numerous times in different markets over different horizons.
- Does the value premium reflect higher risk of value stocks?
  - "If asset pricing is rational, size and BE/ME must proxy for risk. ... If stock prices are irrational, however, the likely persistence of the results is more suspect" Fama & French (1992)
- We have two competing explanations:
  - Behavioral finance: Cognitive bias and agency costs are the source of the value premium.
  - Efficient market hypothesis: Value stocks are riskier since they are more prone to financial distress.

The academic perspective

- What is the magnitude of the value premium?
- Chan and Lakonishok (2004) refined the definition of value and growth based on BV/MV (Book Value to Market Value), CF/P, E/P, and the sales-to-price ratio

	Spread Decile 10 minus Decile 1	Spread Decile 9 & 10 minus Decile 1 & 2	Spread Decile 9 minus Decile 2
Average Annual Return	27.10%	21.07%	15.95%
Standard Deviation of Annual Returns	10.14%	9.31%	8.48%
Information Ratio	0.37	0.44	0.53

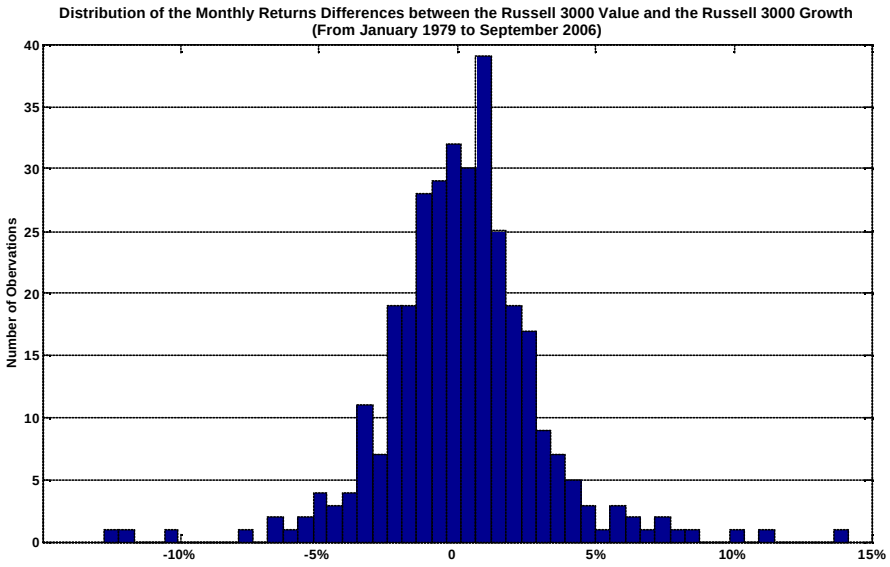
Decile 10 contains Value stocks and decile 1 contains Glamour or Growth stocks

Source : Chan and Lakonishok (2004) and UBS Global Asset Management

- However, we cannot invest in deciles portfolios; we are considering portfolios benchmarked against value, growth or core indices.

Performance of Russell value and growth indices

- When using market cap-weighted indices instead of a deciles portfolio the value premium is less attractive.
- Nevertheless we still observe an IR between 0.15 and 0.20.



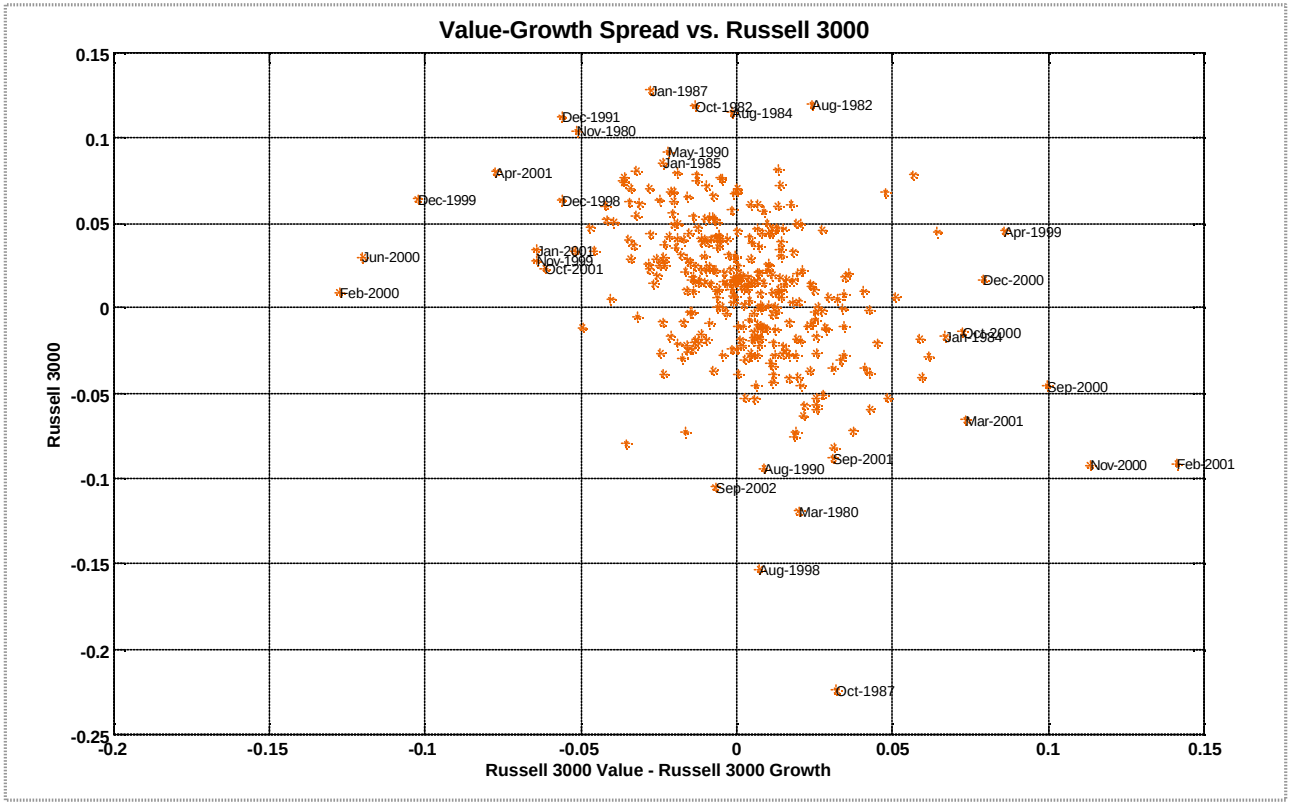
Monthly Returns	Russell 3000	Russell 3000 Value	Russell 3000 Growth	Russell 3000 Value - Russell 3000 Growth
Mean	1.14%	1.22%	1.05%	0.16%
Median	1.49%	1.42%	1.26%	0.19%
Standard Deviation	4.38%	4.02%	5.14%	2.89%
Min	-22.4%	-20.8%	-24.0%	-12.8%
Max	12.8%	13.2%	14.2%	14.1%
5th Percentile	-5.9%	-5.0%	-7.4%	-4.0%
Number of Observations	333	333	333	333

Annual Returns	Russell 3000	Russell 3000 Value	Russell 3000 Growth	Russell 3000 Value - Russell 3000 Growth
Mean	14.33%	15.33%	13.29%	2.04%
Median	17.27%	18.30%	13.13%	1.07%
Standard Deviation	15.52%	13.44%	19.60%	12.85%
Min	-21.5%	-15.2%	-28.0%	-27.2%
Max	36.8%	37.0%	41.7%	30.5%
5th Percentile	-12.5%	-9.5%	-23.0%	-22.1%
Number of Observations	28	28	28	28

Source : FactSet and UBS Global Asset Management

Impact of the strategy's beta

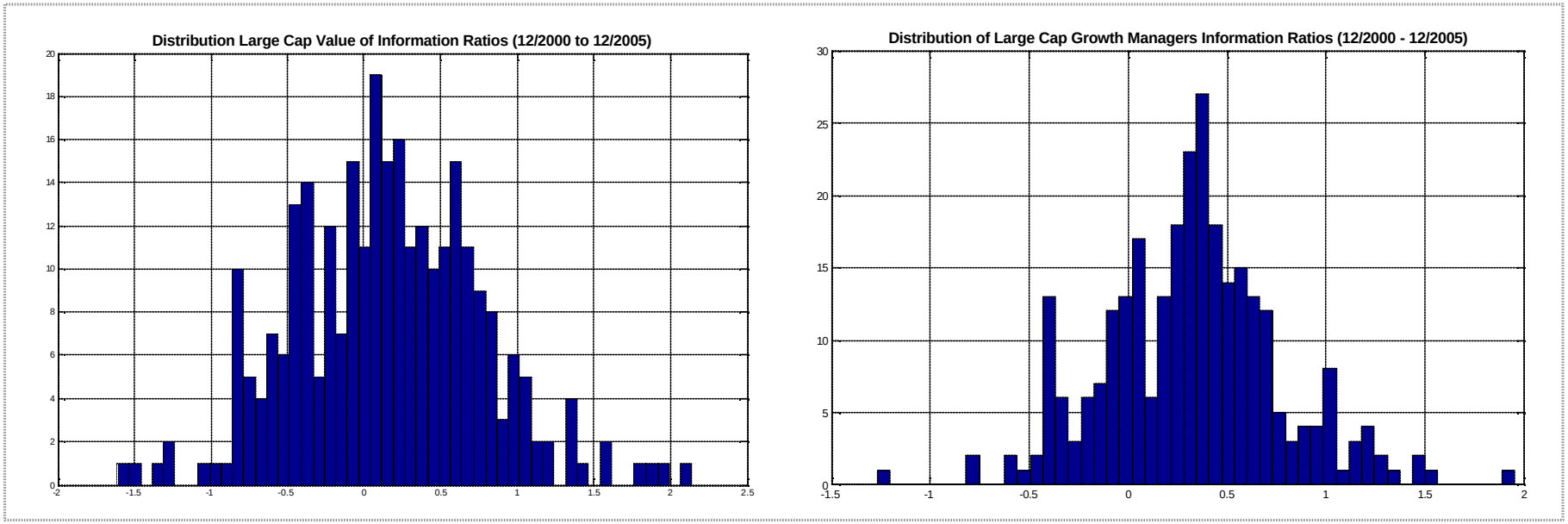
- From an asset allocation standpoint, we need to pay attention to the fact that a value tilt will affect other parameters; for example beta:
- Historical beta of Russell 3000 Value – Russell 3000 Growth is -0.27



Source : FactSet and UBS Global Asset Management

Is the value premium only true for indices?

- According to some studies the value premium is less important for active managers.
- Median IR across value managers was 0.13, while it was 0.33 across growth managers.



Source: UBS Global Asset Management and PSN database

Not if we account for survivorship bias…

- Survivorship bias is the most likely explanation.

Table 7. Formation and Liquidation of Equity Funds

Decade	No. of New Funds	Fund Creation Rate	No. of Dying Funds	Fund Failure Rate
1950s	28 (est.)	80% (est.)	10 (est.)	13%
1960s	211	88	37	21
1970s	123	34	202	61
1980s	534	110	78	17
1990s	1,604	125	462	36
2000s[a]	980	52	1,045	56

Source: John C. Bogle "The Mutual Fund Industry 60 Years Later: For Better or Worse?" Financial Analyst Journal, January/February 2005

Principles behind our allocation to value

- The value premium does not reflect higher risk for value stocks.
- The value premium does not disappear if we allocate to active managers instead of indices.
- The value premium is not risk free, we need to balance the active return and active risk it brings to our portfolio.
- If we consider indices instead of portfolio of deep value and deep growth stocks, the risk-adjusted return of the value tilt is less important.
- From an asset allocation perspective we need to base our decision process on the performance of indices.

SECTION 2

Measuring the impact of the value tilt on the information ratio

Measuring the impact of the value tilt on the portfolio IR

- How much of our alpha is due to our exposure to the Russell Growth Index and the Russell Value Index?
- Approach 1: Brinson based decomposition of returns:

$$a = w^{g}_{PORT} R^{g}_{1000} + w^{v}_{PORT} R^{v}_{1000} - R_{1000}$$

$a^{V/G}$ = Style rotation alpha

$$+ (R^{g}_{PORT} - R^{g}_{1000}) w^{g} + (R^{v}_{PORT} - R^{v}_{1000}) w^{v}$$

a^{S} = Security selection + cross-product

Growth stocks selection + Value stocks selection

Source : UBS Global Asset Management

Measuring the impact of the value tilt on the portfolio IR

- Let Δ^{v}_{LCC} be the value-stock weight in excess of 50% of the fund:

$$w^{g}=0.5-\Delta^{v}_{PORT} \text{ and } w^{v}=0.5+\Delta^{v}_{PORT}$$

- The style rotation alpha of the portfolio is:

$$\text{Style Rotation Alpha}=\Delta^{v}\left(R^{v}_{1000}-R^{g}_{1000}\right)$$

- The style rotation active risk is:

$$\text{Style Rotation Active Risk}=\Delta^{v} s_{R^{v}_{1000}-R^{g}_{1000}}$$

Source : UBS Global Asset Management

Measuring the impact of the value tilt on the portfolio IR

- Now we can quantify the elements that will enter in our decision:

$$IR = \frac{\left[w_1\Delta_1^v + (1-w_1)\Delta_2^v\right](R_{1000}^v - R_{1000}^g) + w_1 a_1^S + (1-w_1)a_2^S}{\sqrt{\left[w_1\Delta_1^v + (1-w_1)\Delta_2^v\right]^2 s^2_{R^v_{1000}-R^g_{1000}} + w_1^2 s_1^2 + (1-w_1)^2 s_2^2 + 2w_1(1-w_1)s_1 s_2 r_{12}}}$$

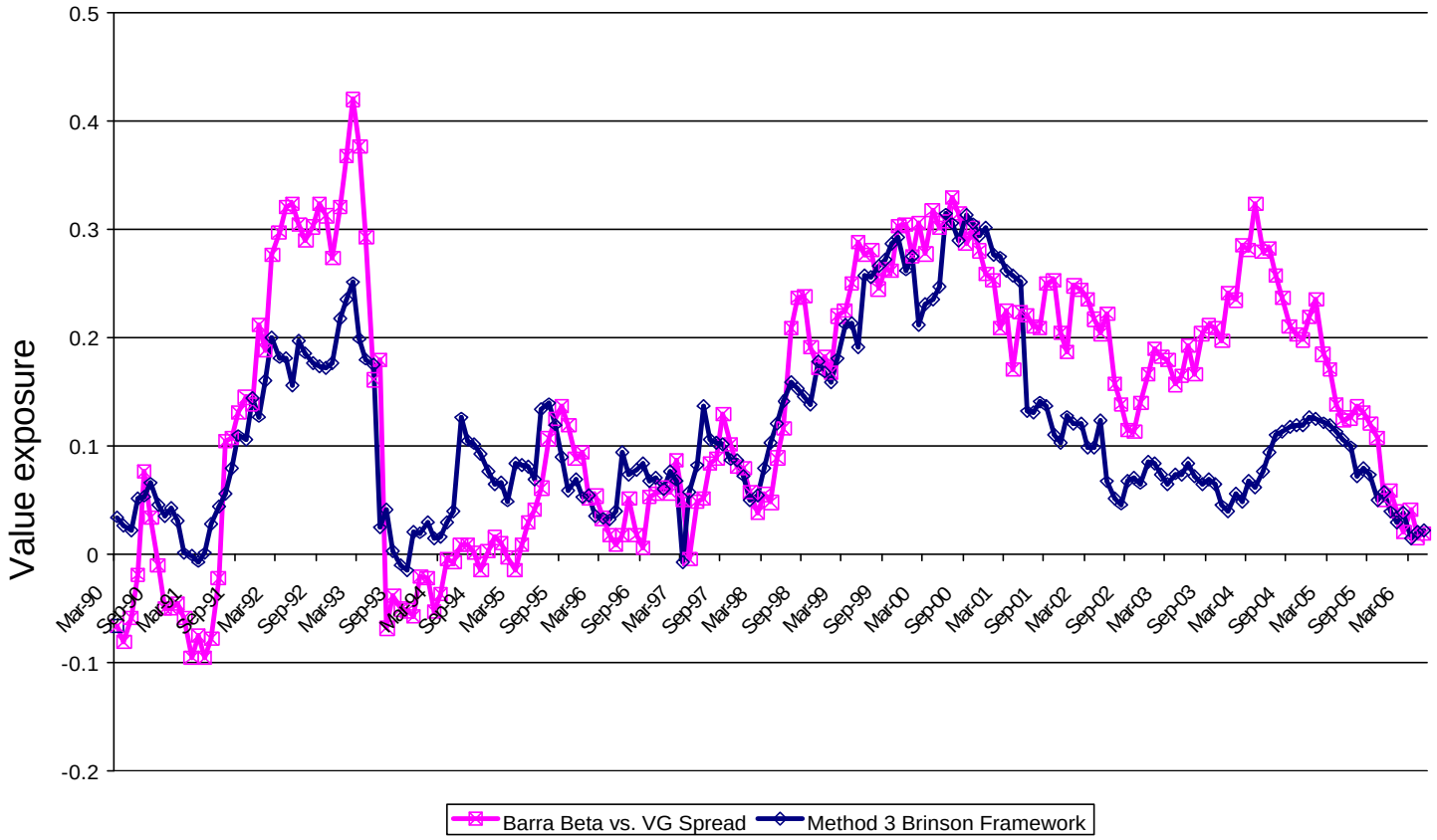
  - The value tilt of each fund
  - The value premium
  - The risk associated with the value premium
  - The pure security selection active return of each fund
  - The pure security selection risk of each fund
  - The correlation between the pure security selection active returns of the two funds
- Second alternative, measure the historical delta or use a multi-factor model:

$$\Delta = \frac{Cov(Fund, R_{1000}^v - R_{1000}^g)}{s^2(R_{1000}^v - R_{1000}^g)}$$

Source : UBS Global Asset Management

Measuring the impact of the value tilt

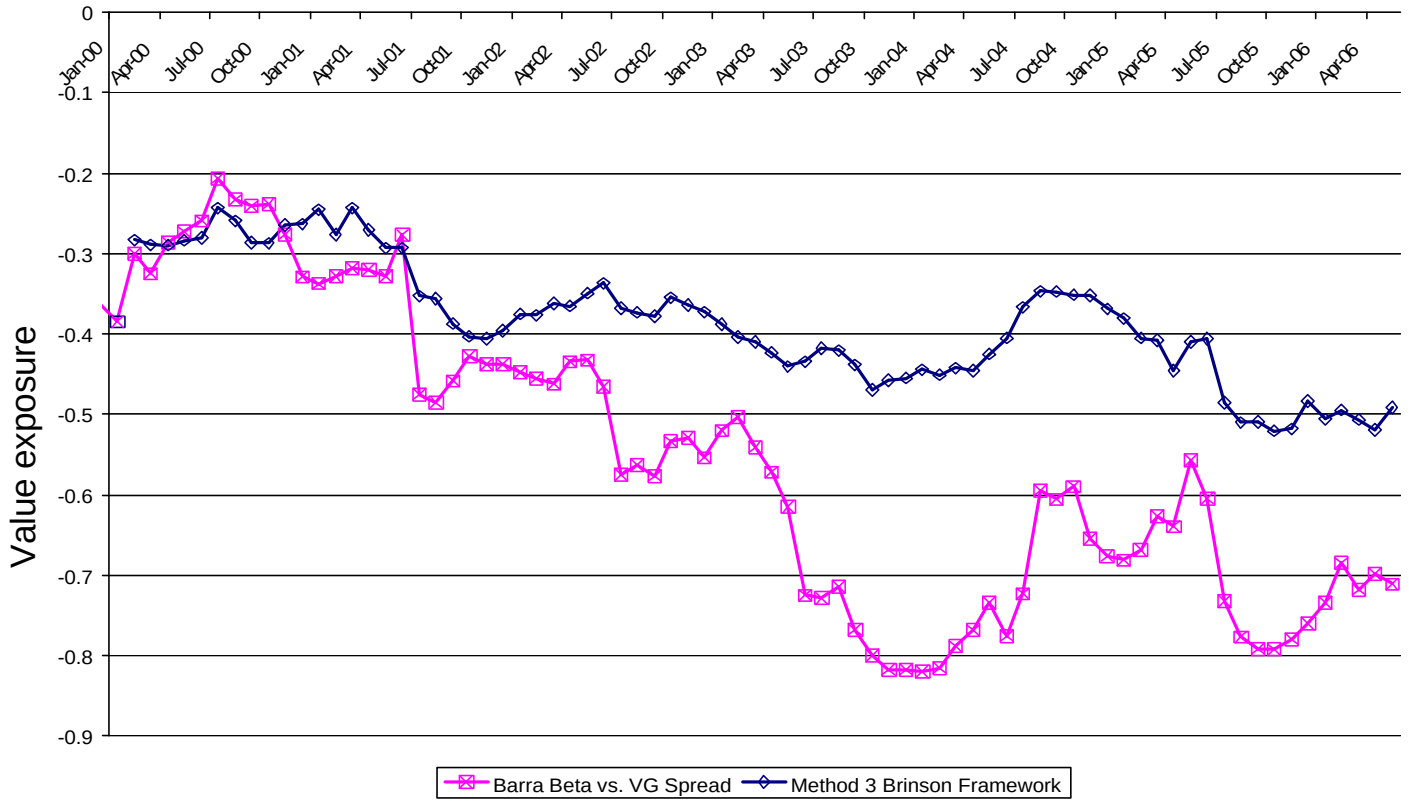
- Using Brinson approach or model approach leads to similar results.



Source : UBS Global Asset Management

Measuring the impact of the value tilt

- However, when we consider a portfolio with a large tilt, the Brinson-based methodology shows its limits.



Source : UBS Global Asset Management

SECTION 2

Finding the optimal exposure

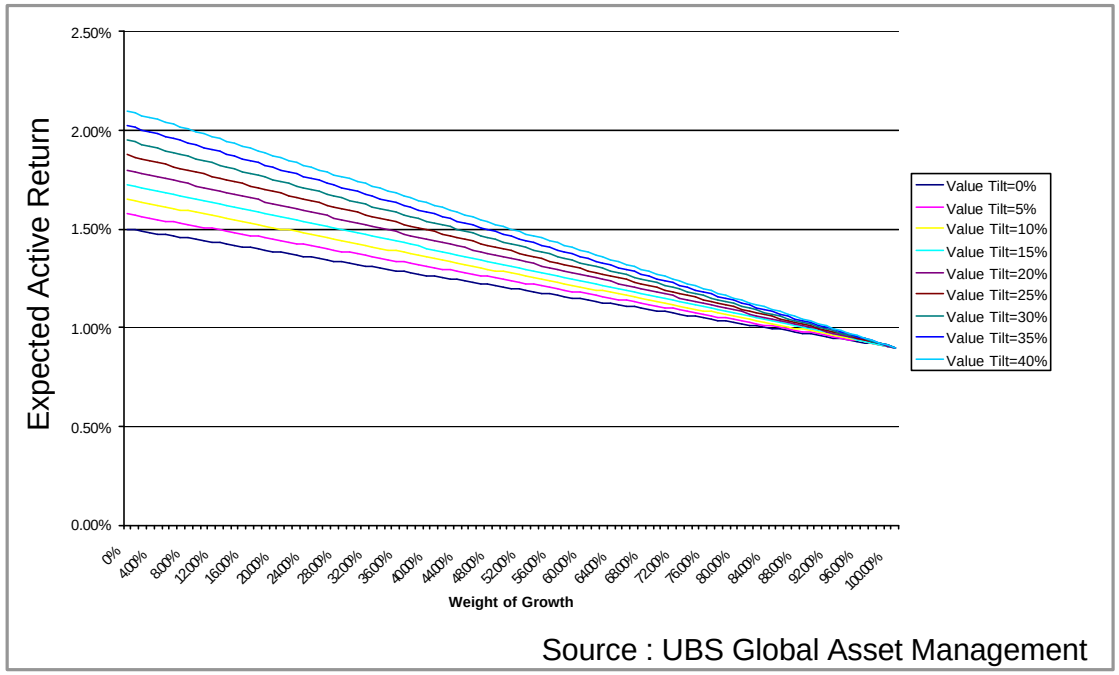
The parameter of the problem

- We estimate all the parameters of the problem:

The value tilt of each fund	Beta with respect to the spread between the value and growth indices
Value premium & risk associated with the premium	Historical analysis
The pure security selection active return of each fund	Due diligence
The pure security selection risk of each fund	Due diligence + risk model + historical analysis
The correlation between the active returns of the two funds	Due diligence + historical analysis

Impact on active returns

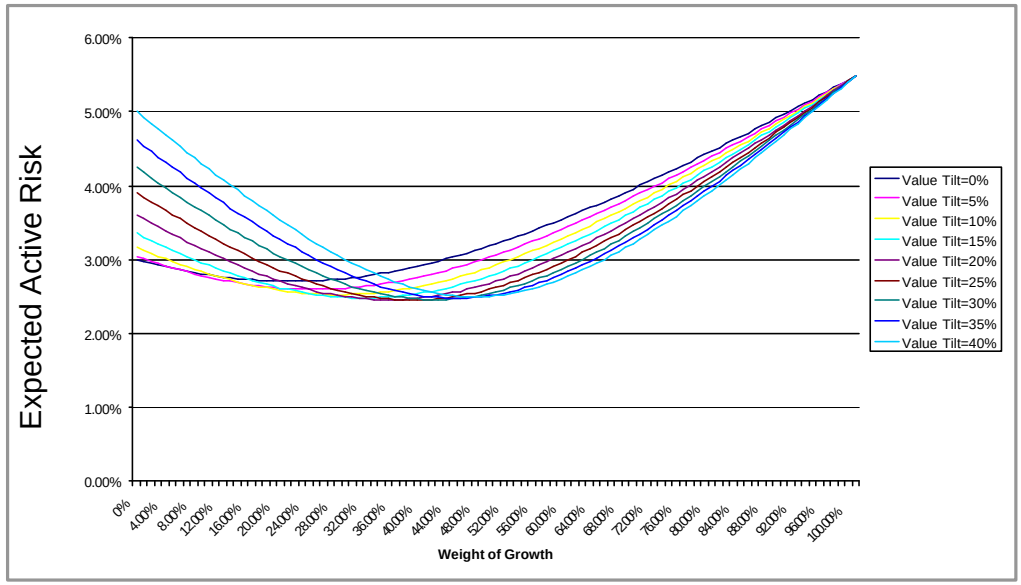
SB – second bullet – the steeper the decline in returns?



Source : UBS Global Asset Management

- As we increase our exposure to the growth fund, our alpha decreases since:
  - We are losing the value premium.
  - We assumed the selection alpha of the growth fund to be equivalent to the selection alpha of the initial portfolio.
- The higher the value tilt in the initial portfolio, the steeper the decline.

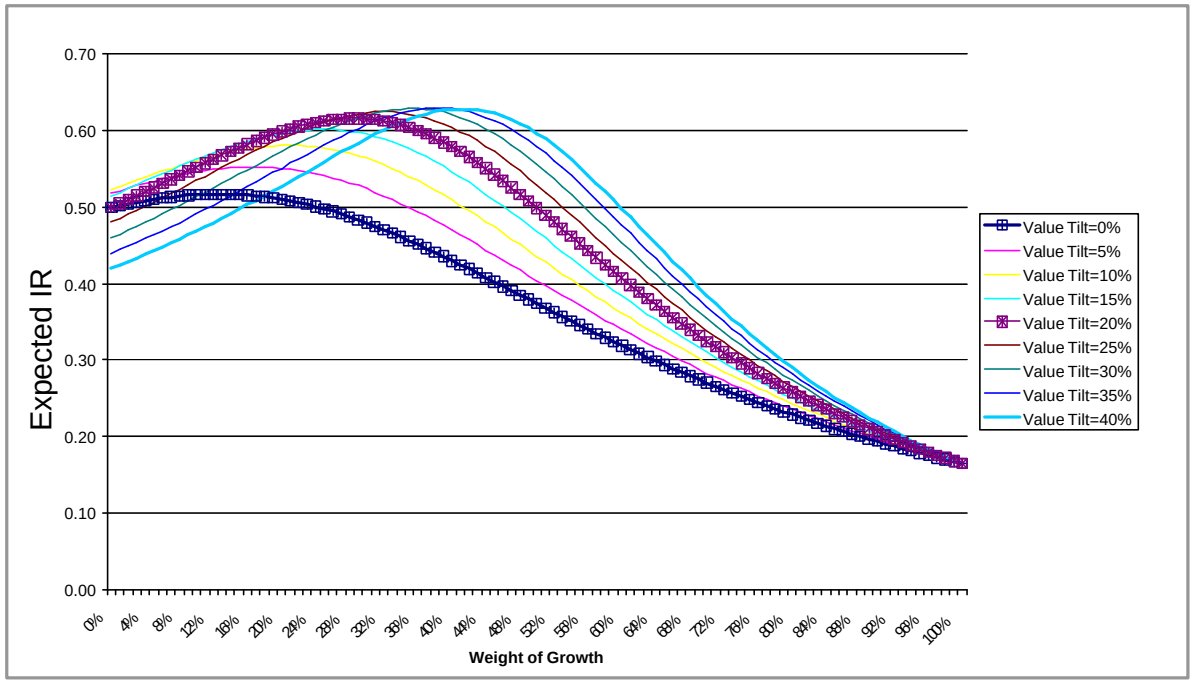
Impact on active risk



Source : UBS Global Asset Management

- Active risk first declines as investing in the growth fund brings diversification benefits and hedges the value exposure.
- Then risk increases as further investment in the growth fund creates more growth exposure.
- The risk decrease is more pronounced when the initial portfolio has a strong value tilt since adding growth hedges this tilt.
- On the other hand, when there is no initial tilt, the diversification effects bring a small risk reduction; very quickly the impact of taking a negative value exposure dominates the diversification benefits.

Impact on information ratio

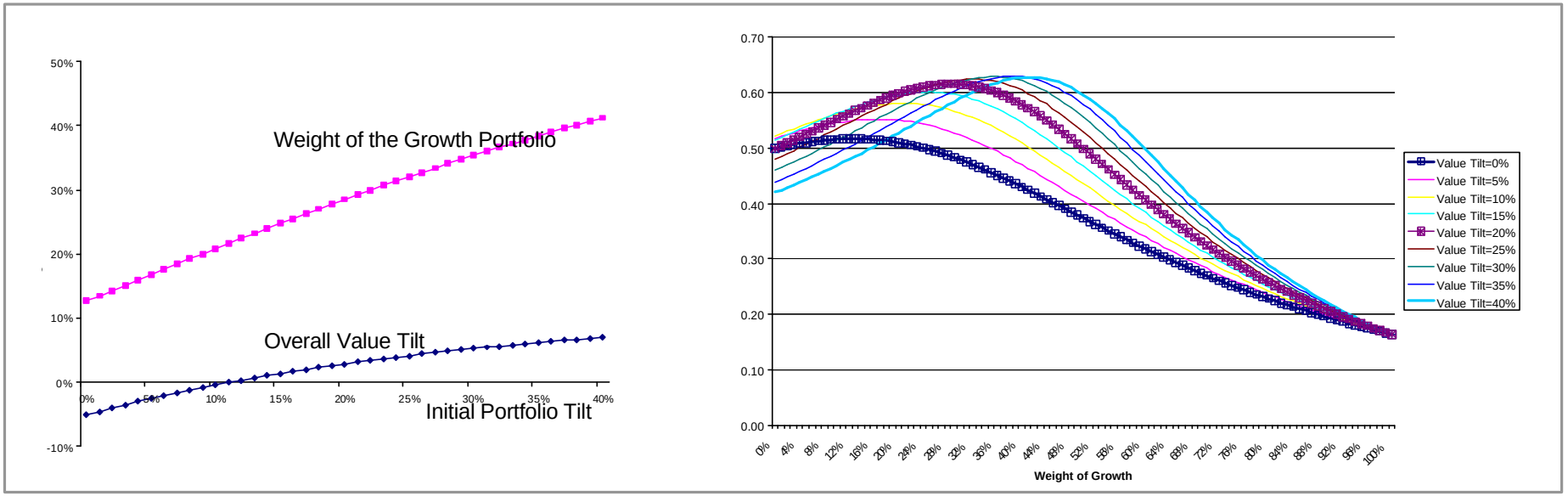


Source : UBS Global Asset Management

- The information ratio first increases under the impact of the diversification benefits and the hedging of the value tilt, then decreases because of the negative value tilt.
- The diversification benefits are greater than the alpha loss due to a negative value tilt.

How exact should the implementation be?

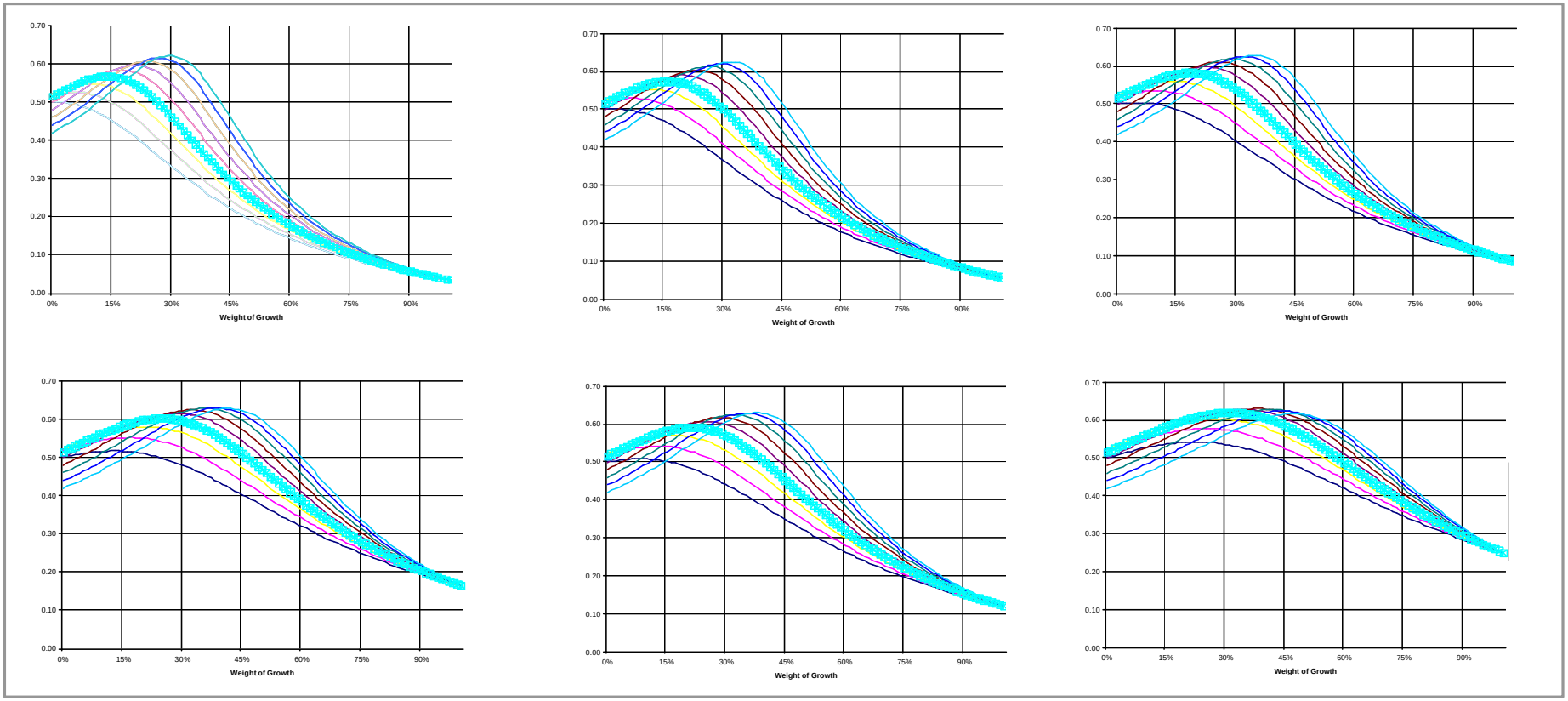
- The exact rebalancing of the portfolio results in small IR gains.



Source : UBS Global Asset Management

Impact of the negative value tilt in the growth fund

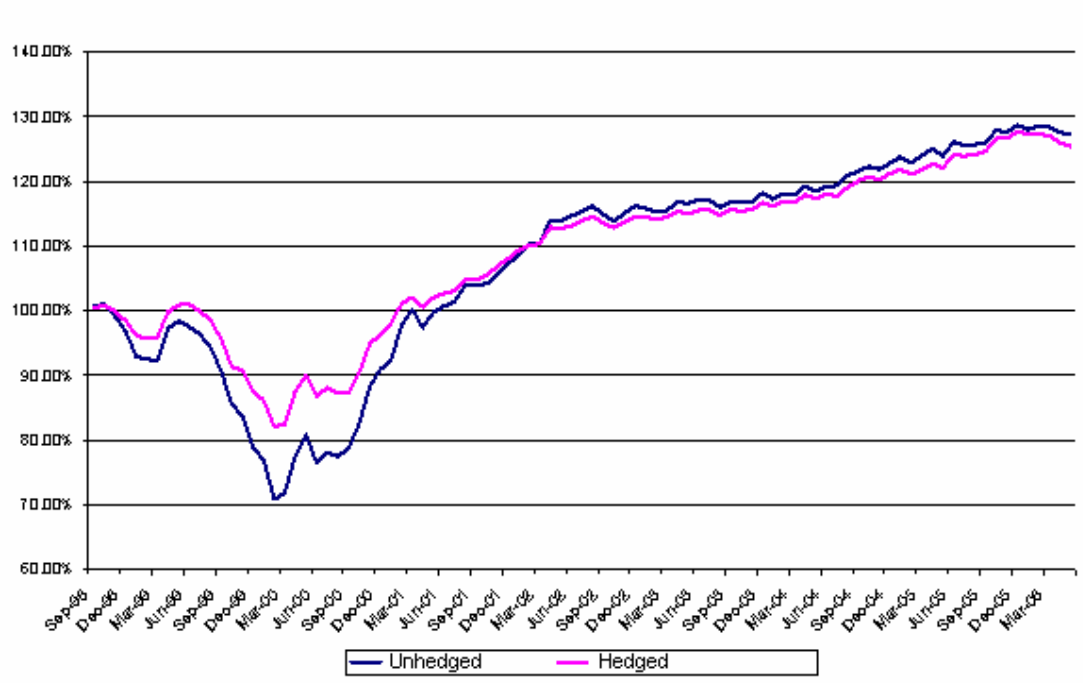
- Variation in the tilt in the growth portfolio does not significantly impact the optimal allocation.



Source : UBS Global Asset Management

Backtesting the strategy

- A simple hedge of the Value exposure results in higher IR during the bubble.
- We cannot implement forward-looking strategies, using the technology bubble as a reference point.



Source : UBS Global Asset Management

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Conclusions

- A simple rebalancing process works just as well as complex rebalancing one.
- Automatic rebalancing may result in overriding decision from our bottom-up process.
- The keys to our investment decision are:
  - To keep the active risk coming from our value exposure in line with the premium it generates;
  - To take advantage of diversification benefits;
  - To stick to a strong due diligence process; and
  - To learn from past events to implement forward looking policies.

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