

# **Using Quantitative Stock Selection to Offer Shari<sup>c</sup>a-Compliant Strategies across All Equity Styles:**

Comparison with Conventional Benchmarks  
and Implications for Asset Allocation and Style Rotation

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## **ABSTRACT**

Quantitative methods of stock selection are being increasingly used to select conventional portfolios which typically track established equity styles and which can be evaluated against benchmarks. Quantitative methods of stock selection have even more advantages in selecting Shari<sup>c</sup>a-compliant portfolios but are not commonly used. This paper uses a quantitative analysis of estimate revisions to develop Islamic strategies which track established equity styles. These strategies strongly outperform their conventional benchmarks in twenty years of backtesting in up and down markets.<sup>3</sup> The opportunities for asset allocation and style rotation are also discussed.

## **INTRODUCTION**

Quantitative methods of stock selection are being increasingly used to select conventional portfolios. Quantitative methods can lead to improved performance because they can select from a broader universe of stocks. The stock market is a complex system and quantitative methods can also lead to improved performance because they allow the use of more complex decision rules. The portfolios typically track established equity styles, such as a large cap growth or a small cap value style, or variations on these styles, such as dividend growth or GARP ("growth at a reasonable price",) so that the performance of a strategy can be evaluated against its benchmark. A quantitative strategy can also be backtested to see how it would have performed over past market cycles and this allows a better understanding of the risk profile of the strategy. The possibility of backtesting is particularly important for a new strategy that can be evaluated against its benchmark in terms of such measures as the Information Ratio, which compares the expected alpha with the tracking error against the benchmark. The availability of strategies across established equity styles also allows the possibility of asset allocation, which attempts to optimise the risk-return tradeoff of an investor by holding equity styles that are not well correlated. The investor can also engage in style rotation strategies if he can anticipate

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<sup>3</sup> Although the results we will be discussing are all backtests, they use the same screens that Lightstone Capital Management has been using as a portfolio consultant with conventional live portfolios.

which equity styles are likely to be in favour in the future. Quantitative strategies will also not show style drift which is required to apply asset allocation strategies and style rotation strategies.

Despite these advantages, quantitative strategies are not commonly used to select Shari'a-compliant portfolios. In fact, they have even more advantages in the selection of Shari'a-compliant portfolios. They permit the objective exclusion of stocks that do not meet Shari'a guidelines and a strategy can be readily customised for a given Shari'a Board. Quantitative methods also allow us to consider a broader selection universe, so that more stocks will remain after excluding stocks that do not meet Shari'a guidelines. Understanding the risk profile of an Islamic strategy from its backtested performance is also particularly important because of the relatively short history of most Shari'a-compliant strategies. Quantitative methods of stock selection are also well suited to managing the sector concentrations introduced by Shari'a constraints.

For these reasons, quantitative methods of stock selection are well suited to the development of active Shari'a strategies in established equity styles, such as large cap growth or small cap value. This is an interesting opportunity for Islamic investors as Islamic strategies have not typically been benchmarked against conventional equity styles. Quantitative methods of stock selection are also well suited to develop modifications to these basic strategies, where we modify the risk-return profile in a way that may be attractive to a class of investors.

This paper uses a quantitative analysis of estimate revisions to develop active Islamic strategies benchmarked to conventional equity styles. These strategies strongly outperform their conventional benchmarks in twenty years of backtesting for which we have data. We will show how the risk-return profile of an Islamic large cap growth strategy may be modified to exclude stocks that are strongly overvalued. We will also discuss an Islamic Dividend Growth Strategy.

Asset allocation becomes possible with the availability of Islamic equity strategies benchmarked to conventional equity styles and we discuss a simple asset allocation strategy that combines these various Islamic strategies. The paper also discusses the opportunity to improve performance by style rotation if an investor can anticipate which equity styles are likely to show the best performance in the future.

## **METHODOLOGY**

We backtested active Islamic strategies designed to track and outperform four established equity styles, large cap growth, large cap value, small cap growth and small cap value, and two styles, large cap GARP and large cap dividend growth, where we modify the risk profile of the basic style. The strategies were backtested on a monthly basis from the beginning of 1987 through the end of the first quarter 2007<sup>4</sup>. The twenty-year period of the backtest allows us to examine the performance of the strategies in different market environments over complete market cycles. Islamic large cap growth portfolios have the

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<sup>4</sup> Data for the Islamic large cap Dividend Growth Strategy was only available from April 1, 1989.

smallest number of stocks, with an average of 45 stocks in a portfolio. Islamic small cap growth portfolios have the largest number of stocks, with an average of 116 stocks in a portfolio.

In each case, we started with stocks that were members of the Russell 1000 Index or Russell 2000 Index<sup>5</sup> as of the selection date<sup>6</sup> and we then exclude<sup>7</sup> stocks that are not Shari'ca-compliant<sup>8</sup> or have a price less than \$5. We use momentum or Book/Market (B/M) or Price/Sales (P/S) screens<sup>9</sup> to take us to the right equity style within the selection universe. We then select the stocks with the highest Earnings Pressure, which uses a proprietary analysis of estimate revisions; we are "analyzing the analysts." The fact that we can use the same Earnings Pressure screen to select stocks in the different universes is a sign of the robustness of the screening process. Some of the strategies have other valuation and quality screens, as noted in the discussion of each strategy. Each strategy also has a cap on the weighting of a given stock in a portfolio and/or a cap on the weighting of all stocks in a given sector.

We evaluate the performance of each strategy against its benchmark in terms of average return, volatility, 10% MAR Downside Deviation, Sharpe Ratio, 10% Sortino Ratio, Information Ratio, Upside and Downside Capture Ratios and the percentage of rolling 12-month periods showing losses. We also compare the VAMI (value of \$100 invested) for each strategy and its benchmark<sup>10</sup>. Finally, we consider a simple asset allocation strategy and examine the opportunity to improve performance by style rotation if an investor can anticipate which equity styles are likely to show the best performance in the future.

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<sup>5</sup> Russell 1000 Index and Russell 2000 Index are trademarks of the Russell Investment Group.

<sup>6</sup> We want to avoid survivorship bias so that in backtesting a strategy, we use a research database which gives us this historical membership.

<sup>7</sup> Stocks in the following sectors/industries are excluded:

- *alcoholic beverages*
- *finance*
- *tobacco*
- *aerospace and defense*
- *movie and tv production and distribution*
- *meat products*
- *gambling*

Stocks are also excluded with unacceptable levels of debt or interest income:

- *debt greater than 33% of equity*
- *accounts receivable greater than 45% of total assets*
- *cash and interest bearing securities greater than 33% of equity*

<sup>8</sup>As we noted earlier, the specific constraints can be readily modified for a given Shari'ca Board.

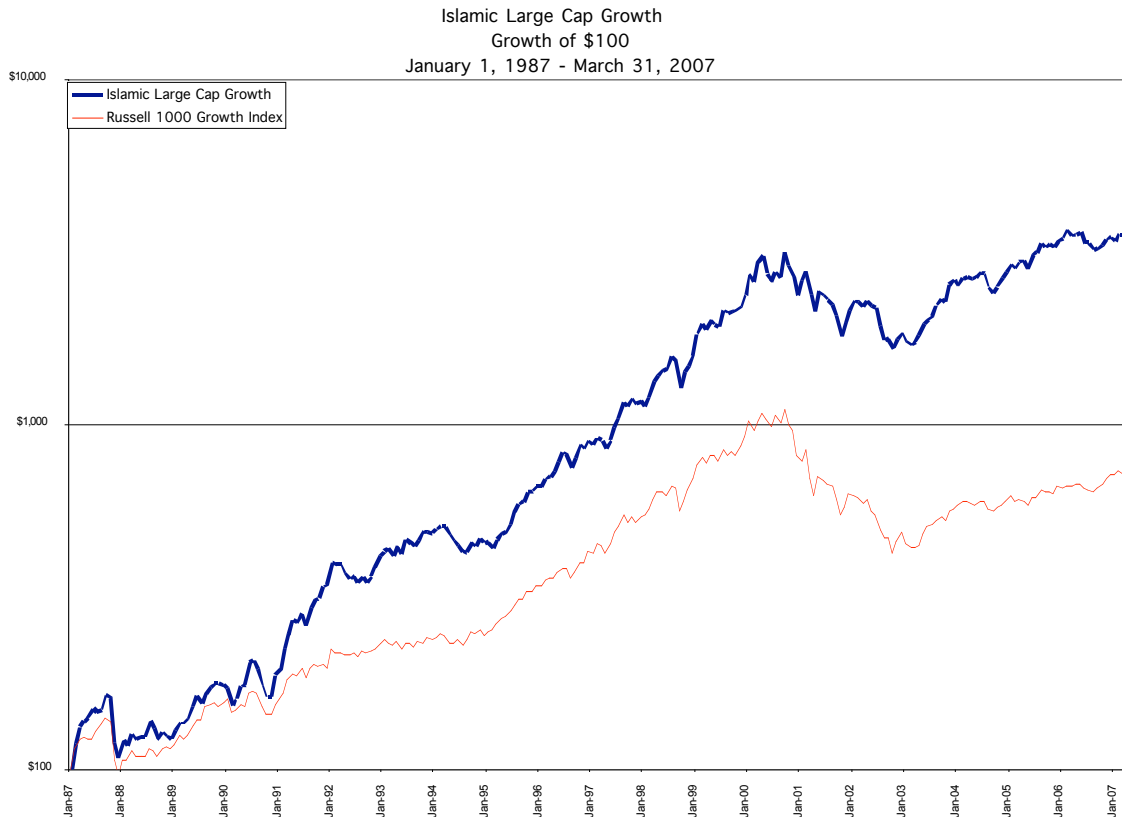
<sup>9</sup> In backtests, B/M and P/S screens are lagged to avoid forward-looking bias.

<sup>10</sup> The VAMI graph uses a semilog scale to allow comparison of rates of return.

# RESULTS<sup>11</sup>

## ISLAMIC LARGE CAP GROWTH STRATEGY

The Islamic Large Cap Growth Strategy follows the usual screening process, with the addition of a quality screen after the Shari<sup>c</sup>a screen, followed by a momentum screen.



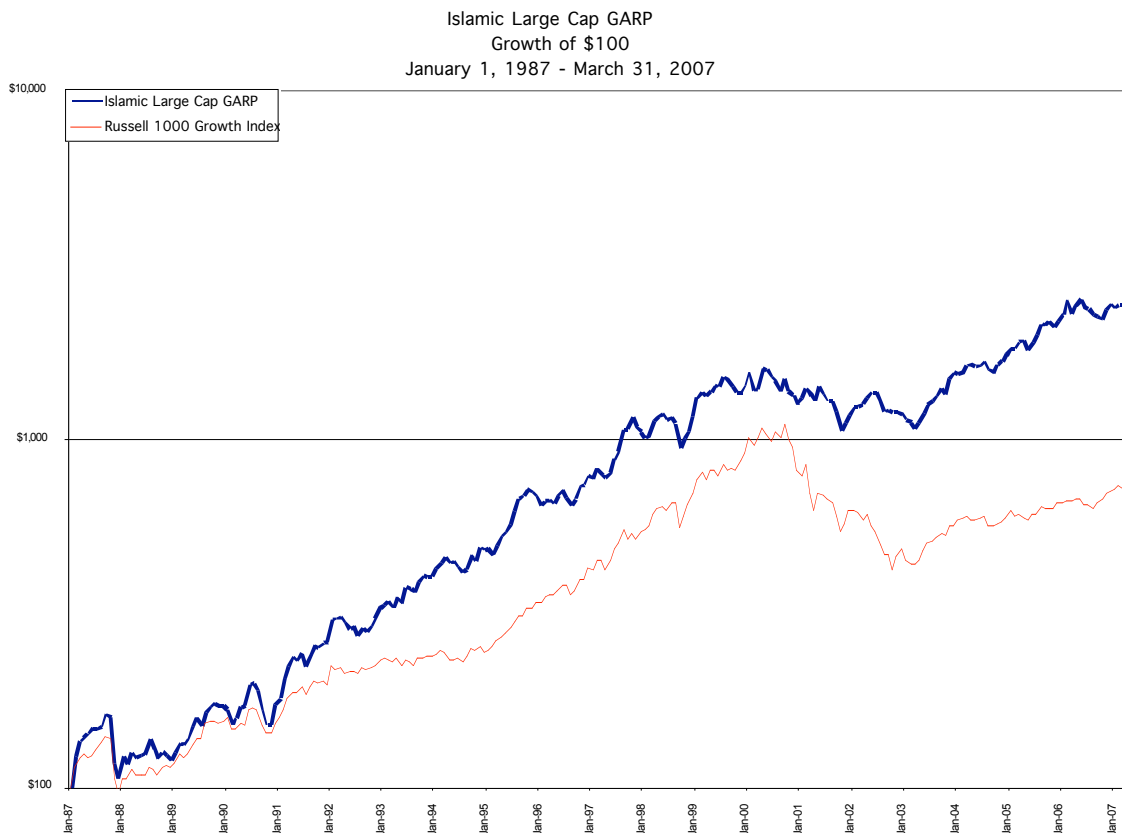
The Strategy has an average return<sup>12</sup> of 22.4% per year over the twenty years of backtesting compared with an average return of 12.3% for the Russell 1000 Growth Index over the same period, for an alpha of 10.1% per year. The Strategy shows a balanced performance, outperforming the Benchmark during the bull market of the late nineties, but also showing a smaller decline during the 2000-2002 bear market, and then again outperforming the benchmark in the subsequent recovery. The Sharpe Ratio is 0.79 for the Strategy and 0.43 for the Benchmark. The Information Ratio is 0.84.

<sup>11</sup> The graphs represent a hypothetical \$100 investment in a given strategy and the associated benchmark over the period indicated in the graph with no deduction for fees or trading expenses. Past performance is no guarantee of future results. In any given year a strategy may lose money or underperform the index and there is no assurance that a strategy will achieve its investment objective.

<sup>12</sup> The average return is calculated as the arithmetic average of the twenty calendar year returns, with no deduction for fees or trading costs. However, the turnover in every strategy is less than 100% per year.

## ISLAMIC LARGE CAP GARP ("*growth at a reasonable price*") STRATEGY

The Islamic Large Cap Growth Strategy showed smaller losses than its Benchmark during the 2000-2002 bear market while also outperforming the Benchmark during the bull market. However, some risk averse investors may want a large cap growth strategy with even more resistance to declines in a bear market. This can be accomplished by introducing a screen which excludes stocks that are strongly overpriced<sup>13</sup>. This strategy of "growth at a reasonable price" has an average return of 18.6% per year over the twenty years of backtesting, with an average alpha of 6.3% per year.



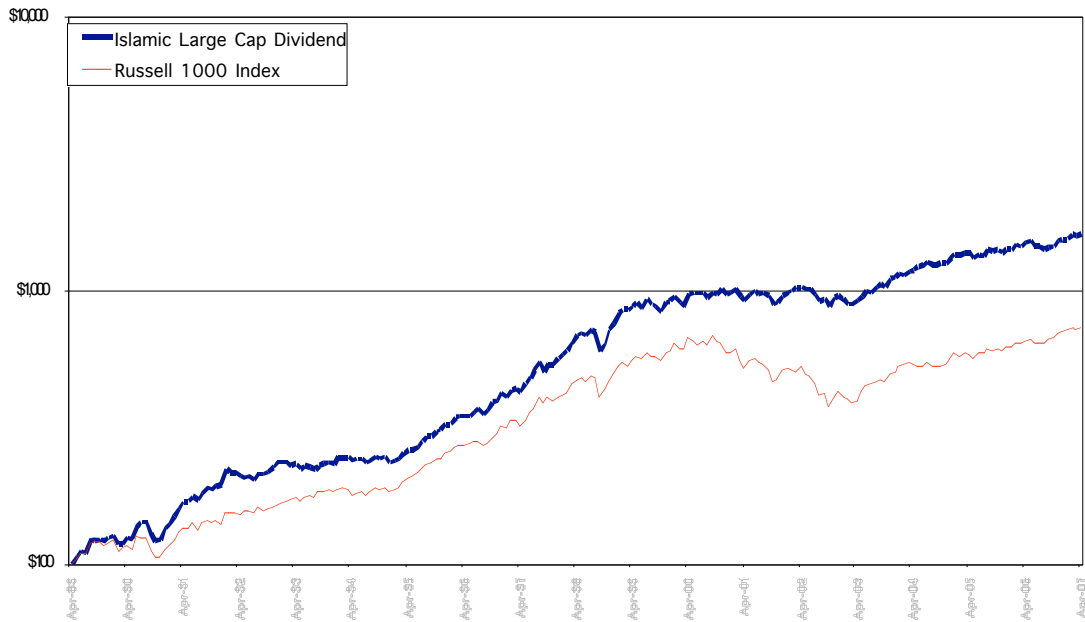
The Islamic Large Cap Growth Strategy outperforms the Benchmark throughout the bull market. The GARP Strategy fully participates in most of the bull market but underperforms the Benchmark during the irrational exuberance at the end of the bull market, when stocks became very overpriced. The Islamic GARP Strategy then shows smaller declines than Islamic Large Cap Growth during the subsequent bear market and again outperforms the Benchmark in the subsequent recovery.

<sup>13</sup> This is of course different from limiting the portfolio to value stocks.

## ISLAMIC LARGE CAP DIVIDEND GROWTH STRATEGY

In the Islamic Large Cap Dividend Growth Strategy, after the Shari'a screen we introduce a screen that excludes stocks that do not have a history of increasing dividends. The Strategy is a core strategy, benchmarked to the Russell 1000 Index, with both value and growth characteristics. Its average return is 17.2% per year versus 12.4% for the Benchmark.

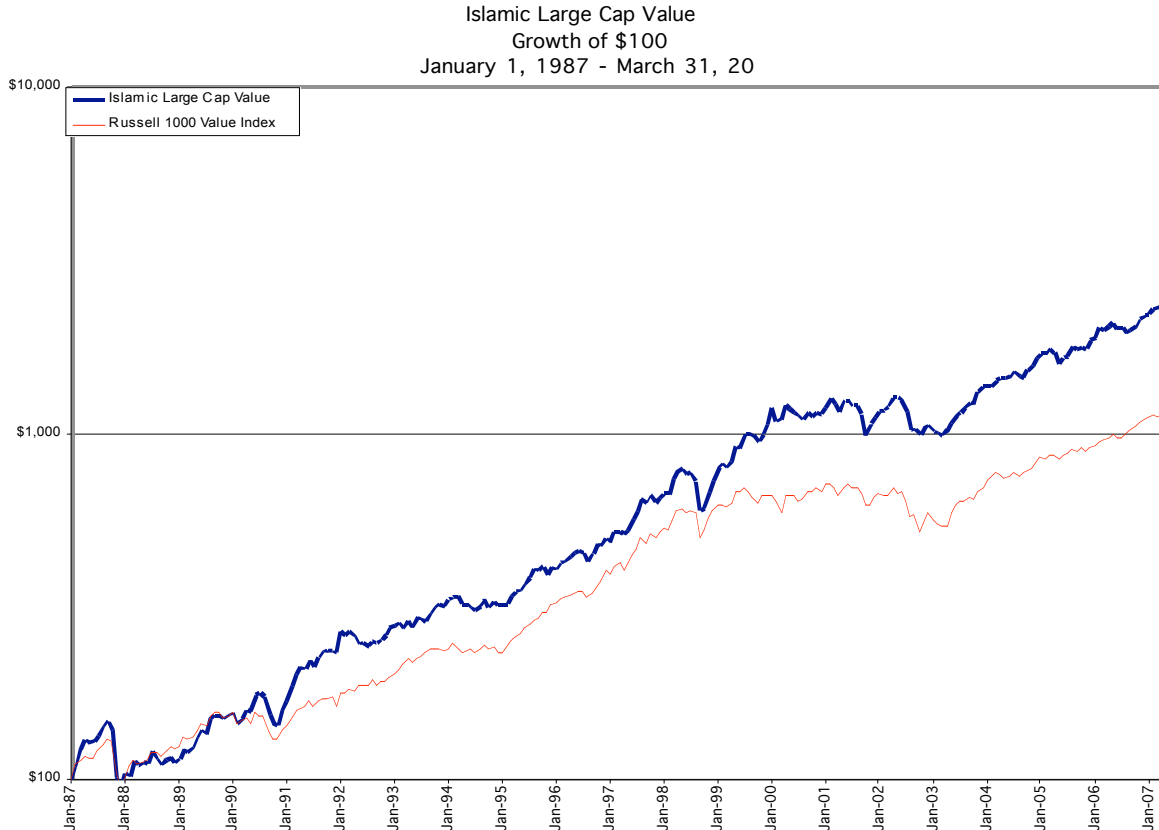
Islamic Large Cap Dividen  
Growth of \$100  
April 1, 1989 - March 3



The Strategy showed almost no decline during the 2000-2002 bear market. It shows a very balanced performance, with an Upside Capture Ratio of 1.45 and a Downside Capture Ratio of 0.79 and a beta of 0.89. It has a Sharpe Ratio of 0.91 versus 0.58 for the Benchmark and an Information Ratio of 0.58.

## ISLAMIC LARGE CAP VALUE STRATEGY

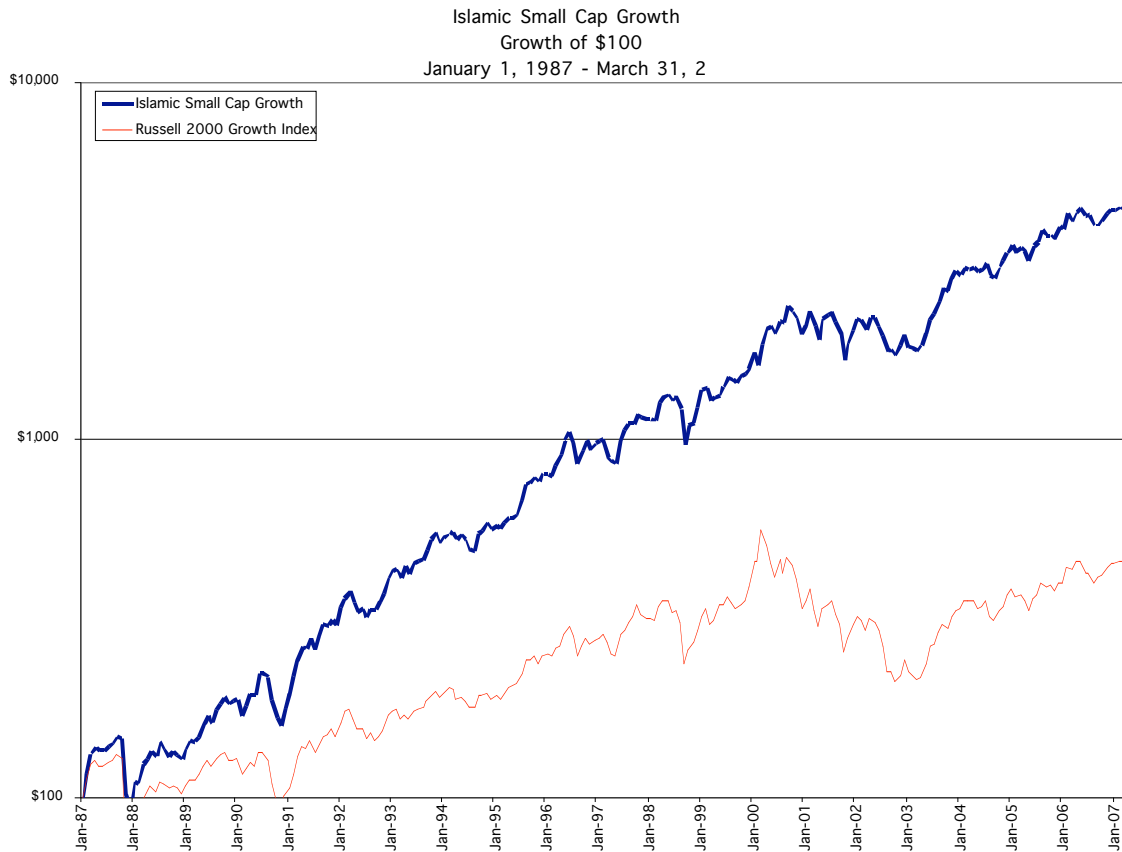
In the Islamic Large Cap Value Strategy, after the Shari<sup>c</sup>a screen we have a quality screen, B/M and P/S screens that take us to a value style, and then the Earnings Pressure screen. The Strategy has an average return of 18.1% per year versus 13.8% for the Russell 1000 Value. It has both value and growth characteristics, with an Upside Capture Ratio of 2.01 and a Downside Capture of 0.98.



## ISLAMIC SMALL CAP GROWTH STRATEGY

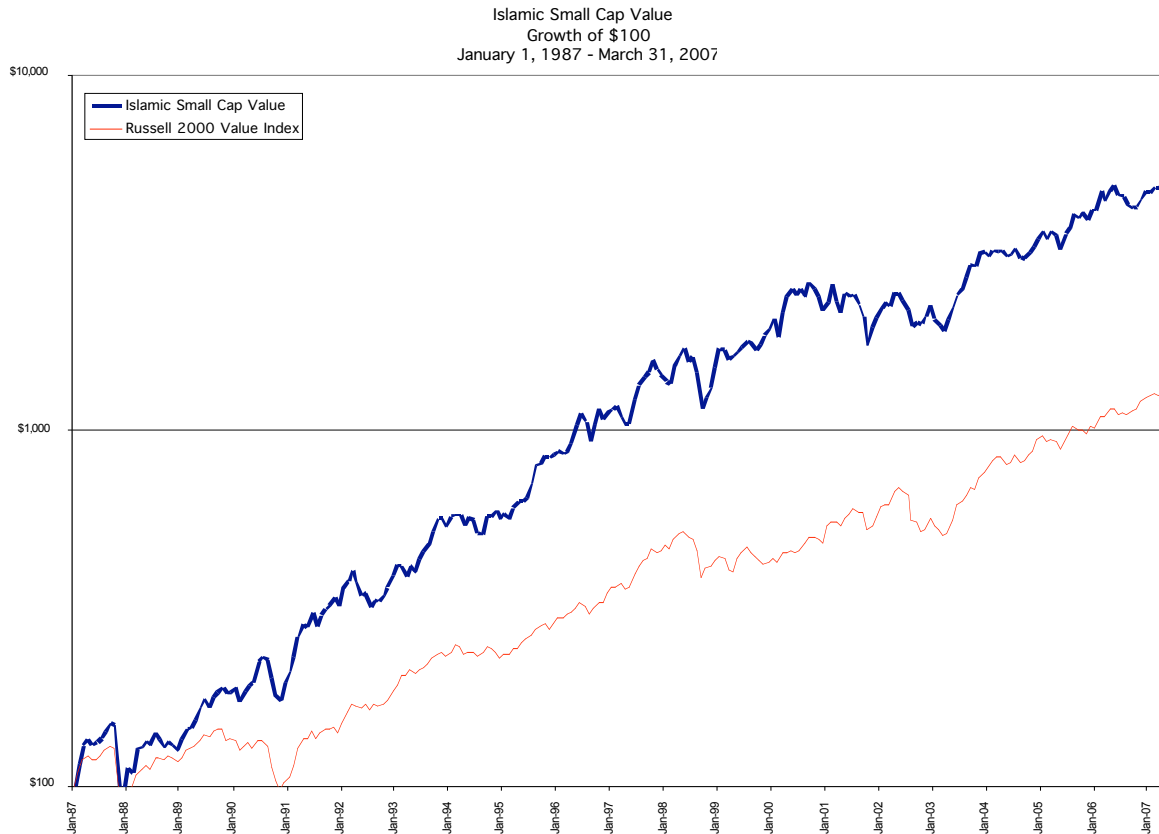
The Islamic Small Cap Growth Strategy has a quality screen after the Shari<sup>c</sup>a screen, followed by the Earnings Pressure screen. The Strategy has an alpha of 12.3% per year, with an average return of 22.3% per year versus 10.0% for the Russell 2000 Growth Index but the same volatility as the Benchmark (23.2% per year for the Strategy and 23.3% for the Benchmark.) In backtests of the strategy, it has outperformed the Benchmark in trailing 1, 3, 5, 10 and 20 year periods. It has a balanced performance, with an Upside Capture Ratio of 2.45 and a Downside Capture of 0.87. The Strategy had a decline of 5.8% during the 2000-2002 bear market when the Benchmark declined by 58.1%. The Sharpe Ratio of the Strategy is 0.76 versus 0.23 for the Benchmark. The Information

Ratio is 1.27, which attests to the strong performance of the Strategy and its faithfulness to the Benchmark. The excellent performance is achieved at less risk than the Benchmark, with a beta of 0.90. The Strategy has just over half the number of losing rolling 12-month periods as the Benchmark (35/232 or 15.1% versus 67/232 or 28.9%).



### ISLAMIC SMALL CAP VALUE STRATEGY

In the Islamic Small Cap Value Strategy, after the Shari<sup>c</sup>a screen we have a quality screen, B/M and P/S screens that take us to a value style, and then the Earnings Pressure screen. The Strategy has an average return of 22.6% per year versus 14.9% for the Russell 2000 Value Index. It has both value and growth characteristics, with an Upside Capture Ratio of 4.16 and a Downside Capture of 1.01. It has an Information Ratio of 0.51.



## ASSET ALLOCATION

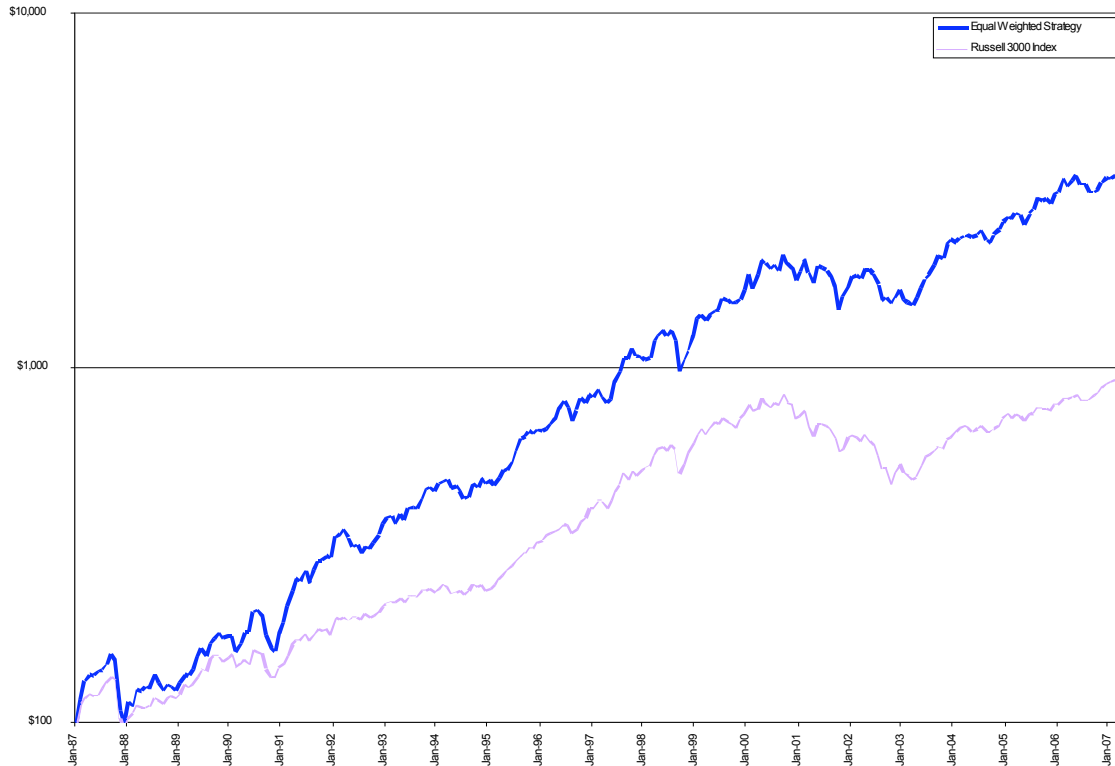
When we have active Islamic strategies across different equity styles which are imperfectly correlated, it is possible to have an asset allocation which offers a preferred risk-return tradeoff and which is consistent with the risk preferences of the investor<sup>14</sup>. By way of a simple example, the graph shows the performance of a simple asset allocation of 20% in the five Islamic strategies discussed previously<sup>15</sup>: large cap growth, large cap GARP, large cap value, small cap growth and small cap value, benchmarked against the Russell 3000 Index<sup>16</sup>. The average return for the Strategy is 20.8% per year versus 12.9% for the Benchmark with an Information Ratio of 0.77.

<sup>14</sup> In this paper, we are concerned with equity investments. More generally, investors will also be concerned with asset allocation between all asset classes, including non-equity investments, such as real estate.

<sup>15</sup> We did not include the Islamic Dividend Growth Strategy because backtested data for the Strategy is only available from April 1, 1989. The other Strategies have backtested data from January 1, 1987.

<sup>16</sup> The Russell 3000 Index is an imperfect benchmark but the development of a more appropriate synthetic benchmark is beyond the scope of this paper.

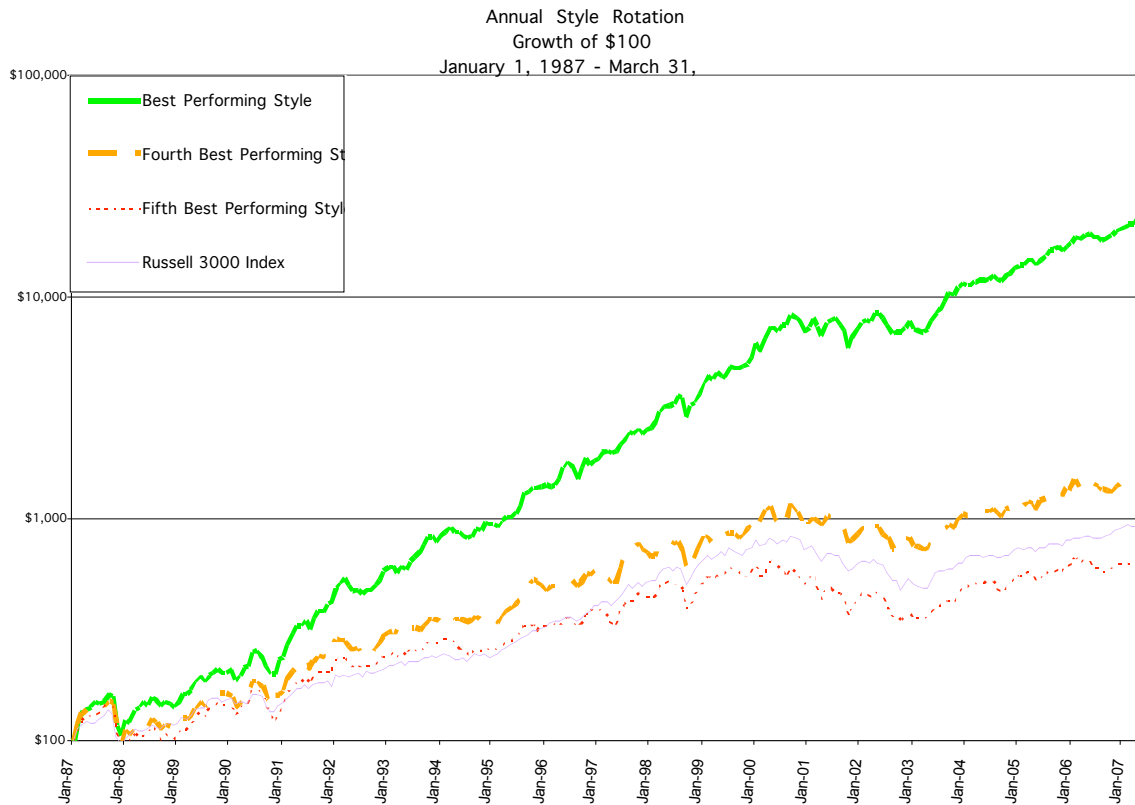
Islamic Equal Weighted Strategy  
 Growth of \$100  
 April 1, 1989 - March 31, 2007



### STYLE ROTATION

If an Islamic investor has a view on which equity styles are likely to show the best performance in the future, the investor can improve performance by style rotation between the various Islamic strategies. We analysed the performance of a style rotation strategy in which, at the beginning of each year, an investor correctly identifies which strategy will be the best performing style during that year and invests in that style. We also considered the performance of other investors who have imperfect knowledge and ex post find themselves investing in the second or third or fourth or fifth best performing style. As we see from the graph, there are large benefits to a successful style rotation strategy<sup>17</sup>.

<sup>17</sup> We have omitted the results of investing in the second and third best performing styles for ease of presentation. What is interesting is that the individual strategies are so robust that an investor can be quite wrong in his style rotation decision, so that he always invests in the fourth best performing style, and yet he still outperforms the Russell 3000 Index!



## CONCLUSION

We have shown that quantitative methods of stock selection are well suited to the selection of active Islamic strategies that track established equity styles and which can be evaluated against their benchmarks. We have used a quantitative analysis of estimate revisions to develop Islamic strategies which strongly outperform their conventional benchmarks in twenty years of backtesting in up and down markets. We have shown that given the availability of these strategies, there are now opportunities for asset allocation and style rotation. We will discuss these opportunities in more detail in a later paper.