Improving Shari’ah Compliant Investing in a Concentrated Investment Universe

Introduction

Shari’ah law demonstrates the principles of Islam, which are to promote ethical and socio-economic wellbeing along with the accumulation of wealth in a manner that avoids wastefulness and extravagance. Shari’ah-compliant investing also promotes companies that focus on environmental sustainability, clean technology and/or alternative energy sources. As a result, Shari’ah-compliant investing principles often align with the principles of Socially Responsible Investing (SRI), ultimately increasing the size of the populace who could be interested in Shari’ah-compliant investments. A study conducted by the Pew Research Institute in 2017 indicated that there are 1.8 billion Muslims in the world, approximately a quarter of the world’s population, and, the Global Sustainable Investment Review (2016) identified a growing demand for SRI investments (GSIR, 2016:24) on both a global and local scale, revealing an increasing need for this universe of investment opportunity. Coupled with this is the increasing need for optimisation in the current concentrated market of Shari’ah-compliant investment opportunity.

Shari’ah law specifically governs the way in which Muslims invest and distribute profits. It stipulates that Islamic investors may not invest in companies or funds that follow certain finance practices (such as insurance or finance companies that do not follow preferred ratios for: financial debt, accounts receivable and interest income). Companies involved in alcohol, tobacco, weapons, arms and defence manufacturing, pork products, non-Halaal packaging, and entertainment companies (casinos, gambling and pornography) are avoided. At this stage, the greater portion of the JSE is made up of such companies, and so has limited the potential investment opportunities for Shari’ah-compliant investors.

In light of these restrictions, it is important to review the efficiency of the JSE’s current Shari’ah equity indices, in order to identify whether alternative methods of constructing a Shari’ah compliant portfolio are needed to deliver superior returns and diversification.

Background

The local Shari’ah listed universe is relatively small, and focusses mainly on the resource and industrial sectors. The South African stock market holds approximately 400 listed companies to invest in. Of these, 164 constituents make up the JSE All Share Index (ALSI), and 97% of the market capitalisation is made up of the Top 100 constituents. Of the same 164 listed companies, only 79 are Shari’ah-compliant with the top 10 representing up to 70% of the universe, based on Free Float market cap. This results in a highly concentrated opportunity set.

Within the Shari’ah ALSI index, there is a large degree of stock-exchange concentration risk from investing in the JSE and sector concentration risk due to limited compliant investment opportunities. It should be noted that the number of companies within each sector (represented in the brackets of Table 1) is substantially larger within the wider ALSI, than in the Shari’ah ALSI.

Summary

Shari’ah law demonstrates the principles of Islam, which are to promote ethical and socio-economic wellbeing, along with the accumulation of wealth in a manner that avoids wastefulness and extravagance. As a result, the Shari’ah-compliant investment universe is a limited version of the JSE’s already concentrated ALSI, further increasing concentration risks felt by Shari’ah investors.

To create a more optimal portfolio, methods such as Risk Parity and the Kalman Filtering approach can be used to re-weight the Shari’ah ALSI index. The Risk Parity approach involves re-weighting the index based on constituent risk, whilst the Kalman Filtering approach uses algorithms to estimate the optimum weight of each constituent.

While the objective of both approaches is to increase diversification, the Kalman Filtering approach offers additional benefits of increased, smoother returns, as well as reduced risk.
Reducing concentration risk using diversification

The diversification ratio measures how diversified a portfolio is - the higher the ratio the more diversified the portfolio - and is calculated by weighting average individual volatility against portfolio volatility. The diversification ratio for the Shari‘ah ALSI currently reads 1.7, indicating that there are only approximately two sources of independent risk factors. But, the current weighting of the Shari‘ah ALSI can be further diversified, increasing the potential maximum number of independent risk factors to 11. This poses the question of how to better diversify stocks to increase the fairly low diversification currently experienced by Shari‘ah investors, as well as determining whether we can improve the expected return.

To create a more optimal portfolio, concentration risk can be minimised by re-weighting the Shari‘ah ALSI, increasing the index’s diversification, with Risk Parity and Kalman Filtering approaches. The Risk Parity approach involves re-weighting the index based on constituent risk, while the Kalman Filtering approach uses algorithms to estimate the optimum weight of each constituent.

**Method 1: Risk-weighted diversification**

Risk Parity weights constituents on risk rather than total market cap as the ALSI does. The ALSI has consisted of approximately 800 constituents since initiation, while the Shari‘ah ALSI consisted of 155 constituents, 66% of which are currently allocated to the resources sector. The top three constituents, BHP Billiton, Anglo American PLC and Sasol make up 46% of the index (25%, 12% and 9% respectively). After modelling for Risk Parity, the highest allocation to a given stock was 2.8% (Liberty Two Degrees), while allocation to the top three stocks reduced to 0.32%, 0.29% and 0.35% for BHP Billiton, Anglo American PLC and Sasol, respectively.

The results of the risk parity strategy show a significant reduction in portfolio volatility of 91%, from 2% to 0.2% volatility. The diversification ratio also improves significantly from 1.7 to 5, increasing the potential independent risk factors from 2 to 21. Thus, the sector allocation is better diversified with the Risk Parity strategy than the current Shari‘ah ALSI index (Chart 1).

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**Table 1: Sector Concentration levels of Shari‘ah ALSI and ALSI**

<table>
<thead>
<tr>
<th>Sector</th>
<th>Shari‘ah ALSI</th>
<th>ALSI</th>
</tr>
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<tbody>
<tr>
<td>Resources</td>
<td>66.1%(23)</td>
<td>25.3%(24)</td>
</tr>
<tr>
<td>Industrials</td>
<td>25.2%(25)</td>
<td>47.5%(51)</td>
</tr>
<tr>
<td>Financials*</td>
<td>4.7%(5)*</td>
<td>24.2%(48)</td>
</tr>
<tr>
<td>Small Cap</td>
<td>4.0%(26)</td>
<td>5.0%(41)</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100.0% (79)</strong></td>
<td><strong>100.0% (164)</strong></td>
</tr>
</tbody>
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* Shari‘ah financials are limited to real estate stocks only

Source: Sanlam Investments, Client Solutions (2019)

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**Chart 1: Significant impact on asset allocation after application of the Risk Parity strategy**

Risk Parity Asset Allocation vs Shariah ALSI Asset Allocation
Chart 1 indicates that re-weighting the constituents with the Risk Parity approach creates a more diversified index. The current Shari’ah ALSI index holds up to half of the portfolio (48.48%) in the mining sector, resulting in higher risk, where the Risk Parity re-weighting strategy leads to only 7.59% in mining, substantially decreasing the constituent risks of a single industry.

Method 2: Estimation by Algorithms

The Kalman Filtering approach uses an estimation algorithm that computes information known to have some uncertainty by filtering the aspects in order to reduce noise and projecting forward the next state, creating a more optimal estimation. With every step the algorithm improves the estimate based on known information.

The Kalman Filter can be applied to the Shari’ah ALSI index and Shari’ah Top 40 index. The optimal estimate is given by rescaling the constituents within the index, and leads to an extensive and more diversified allocation amongst the various constituents. The Kalman Filtering approach significantly improves returns compared to returns experienced by the Shari’ah indices (Table 2).

**Table 2: Application of Kalman produces improved returns at lower levels of risk**

<table>
<thead>
<tr>
<th>Index</th>
<th>Shari’ah ALSI</th>
<th>Shari’ah Top 40</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Kalman</td>
<td>Actual</td>
</tr>
<tr>
<td>Annualised Return</td>
<td>8.2%</td>
<td>4.3%</td>
</tr>
<tr>
<td>Ann. Stdev</td>
<td>10.1%</td>
<td>15.3%</td>
</tr>
<tr>
<td>Diversification Ratio</td>
<td>3.0</td>
<td>1.7</td>
</tr>
</tbody>
</table>

Source: Sanlam Investments, Client Solutions (2019) (Annualised Return from June 2011)

**Chart 2: The Kalman Filter approach on index growth**

Source: Sanlam Investments, Client Solutions (2019)
It should be noted that the Kalman filter approach provides a smoother return series as well as a significant reduction in sector concentration (Chart 2).

The Kalman Filtering approach improves diversification within the Shari’ah ALSI index by re-weighting accordingly (Chart 3). Focussing on the resources sector, the weight halved from 67% to 32% after applying the Kalman Filter to the Shari’ah ALSI index. Thereby increasing diversification while providing higher and smoother returns.

**Chart 3: The impact of applying the Kalman Filter on sector allocation**

![Chart 3](chart.png)

Source: Sanlam Investments, Client Solutions (2019)

**Chart 4: Comparison of the Kalman Filter Shari’ah AALSI including 25% offshore relative to competitors**

![Chart 4](chart.png)

Source: Sanlam Investments and Morningstar
When comparing the performance of the Kalman Filter Shari’ah ALSI (including a 25% allocation to foreign represented by the MSCI World Islamic Fund) relative to competitors, the returns experienced by the Kalman Filtering approach has exceeded competitive funds since 2011 with the exception of the period between 2015/05 – 2016/04. This period in history saw the rand weaken by 16% and any funds that had an allocation greater than 25% to foreign investments would have outperformed during this specific year.

**Conclusion**

Shari’ah investors face limited investment opportunities, making it difficult to provide investors with diversified portfolio returns. As such, it is imperative for the investment opportunities that are Shari’ah compliant to provide maximum diversification and smoother returns. This can be done by implementing the Risk Parity strategy as well as the Kalman Filtering approach. The objective of both the Risk Parity and Kalman Filtering approach is to increase diversification. However, the Kalman Filtering approach offers additional benefits, such as increased and smoother returns, as well as reduced risk (represented by standard deviation). Additionally, both strategies offer re-weighting at a lower cost compared to active strategies as they're implemented using minimal human intervention. Furthermore, the re-weighting methods used in this study can be applied across indexes, allowing for optimal portfolio construction while mitigating concentration risk that may be present.

**References**


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