Understanding Low Vol: The High Risks of Low Volatility Investing

QWAFAFEW New York

Robert Michaud
New Frontier Advisors

November 13, 2013
Overview

- Asset Allocation
- Low vol as an asset class
- Low vol strategies
- Low vol and leverage
Importance of Asset Allocation

- New paradigm
  - Active alpha using passive indices
  - Lower fees
  - Greater transparency
  - Risk tailored portfolio
## Asset Allocation Approaches

<table>
<thead>
<tr>
<th>Asset Allocation Approach</th>
<th>Risk Estimation</th>
<th>Return Estimation</th>
<th>Result</th>
<th>Comments/Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean Variance Optimization</td>
<td>Exact</td>
<td>Exact</td>
<td>Full Frontier</td>
<td>Theoretically correct</td>
</tr>
<tr>
<td>Minimum Variance Optimization</td>
<td>Exact</td>
<td>N/A</td>
<td>1 Portfolio</td>
<td>No inefficiencies or risk premia</td>
</tr>
<tr>
<td>Risk Parity Investing</td>
<td>Exact</td>
<td>N/A</td>
<td>1 Portfolio</td>
<td>Pre-identify investable asset classes/risk factors and all approximately equally good</td>
</tr>
<tr>
<td>Black-Litterman</td>
<td>N/A</td>
<td>N/A</td>
<td>1 Portfolio</td>
<td>Know the portfolio you want</td>
</tr>
<tr>
<td>Michaud <em>Resampled Efficiency™</em> Optimization</td>
<td>Approximate</td>
<td>Approximate</td>
<td>Full Frontier</td>
<td>Models uncertainty</td>
</tr>
</tbody>
</table>
How Important is Low Vol?

- Compare low vol tracking error to other asset classes
  - REITs: >20%
  - Emerging: 15%
  - Pacific Equities: 11%
  - Small Cap: 8%
  - Low Vol: 6%
Comparing Allocations to Low Vol

Graph showing the relationship between Low Vol Equity Proportion and Low Vol Premium (bps) for different allocation methods: Mean-Variance Allocation, Resampled Optimal Allocation, Min Variance Allocation, Risk Parity Allocation.
Explaining Low Volatility
Heads Manager Wins…
Tails Investors Lose

* Baker and Haugen 2012
CAPM/MPT Without Leverage

Investors no longer leveraging

Market Portfolio
Can You Spot the Low Vol Decile?
Distribution of Low & High Vol Equities

Lowest Vol Decile

Highest Vol Decile
Risk and Return by Volatility Decile:
No returns to risk
Risk and Return by Volatility Decile:
Risk works in up markets
<table>
<thead>
<tr>
<th>Decile</th>
<th>CAPM</th>
<th>Fama-French</th>
<th>Scholes-Williams</th>
<th>Dimson</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ret</td>
<td>Beta</td>
<td>Ret</td>
<td>Beta</td>
</tr>
<tr>
<td>1 (Low)</td>
<td>11.4%</td>
<td>0.4</td>
<td>10.7%</td>
<td>0.4</td>
</tr>
<tr>
<td>2</td>
<td>11.8%</td>
<td>0.6</td>
<td>11.7%</td>
<td>0.6</td>
</tr>
<tr>
<td>3</td>
<td>13.4%</td>
<td>0.7</td>
<td>13.7%</td>
<td>0.7</td>
</tr>
<tr>
<td>4</td>
<td>13.4%</td>
<td>0.8</td>
<td>12.4%</td>
<td>0.8</td>
</tr>
<tr>
<td>5</td>
<td>13.4%</td>
<td>0.9</td>
<td>13.4%</td>
<td>0.9</td>
</tr>
<tr>
<td>6</td>
<td>12.9%</td>
<td>1.0</td>
<td>13.1%</td>
<td>1.1</td>
</tr>
<tr>
<td>7</td>
<td>13.8%</td>
<td>1.1</td>
<td>14.9%</td>
<td>1.2</td>
</tr>
<tr>
<td>8</td>
<td>14.4%</td>
<td>1.3</td>
<td>15.2%</td>
<td>1.3</td>
</tr>
<tr>
<td>9</td>
<td>15.2%</td>
<td>1.5</td>
<td>14.3%</td>
<td>1.5</td>
</tr>
<tr>
<td>10 (High)</td>
<td>15.2%</td>
<td>2.0</td>
<td>15.4%</td>
<td>2.0</td>
</tr>
</tbody>
</table>
Is Low Vol an Asset Class?

See if we can replicate the returns with optimization/other asset classes
Mimicking Low Vol—Partial Success*

* Replication possible if we exclude high vol assets.
Low Vol Is More Similar Than Not
SPLV vs USMV
Alternative Ways of Managing Volatility

Dynamic Asset Allocation
S&P 500
Min Vol

© 2013 New Frontier Advisors, LLC. All rights reserved.
Sector Volatility
Sector Volatility doesn’t matter
Volatility Limited Sectors… Produce superior returns?
Volatile Limited Sectors…
Sensitive to Design
Leverage in Asset Allocation

The risks of leveraging lower volatility strategies
Leverage Isn’t Always the Answer:
Low frequency leverage risks total loss
High frequency leverage guarantees underperformance
Return vs Leverage

Every strategy has a tipping point, no matter what the IR.

2008 Emerging Markets

daily mean: -0.18%
daily std: 4.46%
250-day cumulative return: -50.60%
End note: Risk Parity isn’t the answer either. It’s not that easy to beat a balanced portfolio.

*"Will My Risk Parity Strategy Outperform?" Anderson, Bianchi, Goldberg 2012
Conclusions for Low Vol

- Presents asset allocation challenges
- Excess returns not statistically significant, and may not persist
- May underperform in up markets
- Leverage dangerous
- High Vol anomaly explanatory power
  - Value, Quality, Dividends, Buffet…
Thank You

New Frontier Advisors, LLC
Boston, MA  02110
www.newfrontieradvisors.com
NFA Research

- Portfolio Monitoring in Theory and Practice, Michaud, Esch, Michaud
  - JOIM 2012 4th quarter
  - [https://www.joimconference.com/index0.asp](https://www.joimconference.com/index0.asp)

- Non-Normality Facts and Fallacies, Esch
  - JOIM 2010 1st quarter
  - Markowitz Special Distinction Award winner, March 2011

- Deconstructing Black-Litterman, Michaud, Esch, Michaud
  - JOIM 2013 1st quarter
New Frontier in the News

- **Markowitz Award Sponsorship**
  NFA proud sponsor *Harry M. Markowitz Award at JOIM.*
  [http://www.newfrontieradvisors.com/Announcements/MarkowitzAward.html](http://www.newfrontieradvisors.com/Announcements/MarkowitzAward.html)

- **Institutional Investor Article**
  “From Markowitz to Michaud:” New Frontier's Michaud Efficient Frontier is featured as the latest evolutionary step in Modern Portfolio Theory.
Robert O. Michaud

- Managing Director of Research and Development
- Co-inventor (with Richard Michaud) of Resampled Efficient Frontier ™ and three other patents
- Academic and practitioner refereed journal articles.
- Education:
  - Masters in Mathematics, Boston University
  - Pursued a PhD in Finance, Anderson School of Management at UCLA