Unpacking Divestment Risk: An empirical look at the level of risk inherent in divestment

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1 As of February 2013
Overview

- Risk profile of the Energy sector
- Simulation on CalSTRS Fossil Fuel List divestment
- Simulation on MSCI Carbon List divestment
- Concluding thoughts
Risk Profile of the Energy Sector
Risk Across Economic Sectors

- The Energy sector has consistently been one of the most risky sectors in the global economy since 2005.
- The overall level of risk of the global economy increased dramatically at the time of the financial crisis and has since subsided to pre-recession levels.

![Sector Ex-Ante Risk Over Time](chart)
Risk Within the Energy Sector

- Risk dispersion among Energy sub-industries has declined over the past decade
- Coal was among the riskier Energy sector sub-industries over the past 10 years
- Integrated Oil & Gas was among the least risky Energy sub-industries in this period

Sub-Industry Ex-Ante Risk Over Time (Energy Sector)
Simulation on CalSTRS Fossil Fuel List
Simulation on Fossil Fuel Divestment

- Study conducted by MSCI on behalf of CalSTRS
- Based on exclusion of a list of fossil fuel companies provided by CalSTRS
- Covering June 2003-May 2013

Methodology

- Any security on the exclusion list was excluded throughout its history, regardless of its carbon reserves historically
- Any security that was historically part of the underlying MSCI Indices and that is not on the exclusion list was not excluded, regardless of its carbon reserves historically
- Some securities on the exclusion list may not have been constituents of the underlying MSCI Indices
- Exclusions are identified based on the current corporate entity, so companies that have undergone restructuring may not be excluded in the history. For example, if a security on the exclusion list is the result of a merger of two entities, the two entities prior to the merger would not be excluded in the history.
- The further back in the history, the smaller the number of companies excluded
MSCI ACWI IMI vs. MSCI ACWI IMI CalSTRS ex-Fossil Fuel

- MSCI ACWI outperformed over the 10-year period
- MSCI ACWI ex-Fossil Fuel outperformed in 1-, 3- and 5-year comparisons
- Tracking error was 99 basis points over the time series

These results are based on a simulation. Past performance is not indicative of future results.
## Performance and Risk Comparison

### Annualized Gross Returns as of 5/31/2013

<table>
<thead>
<tr>
<th>Index</th>
<th>1 year</th>
<th>3 Year</th>
<th>5 Year</th>
<th>10 Year</th>
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<td>CALSTRS FOSSIL FUEL ON MSCI ACWI IMI</td>
<td>27.96%</td>
<td>13.55%</td>
<td>2.74%</td>
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<td>MSCI ACWI IMI</td>
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<td>CALSTRS FOSSIL FUEL ON ACWI ex USA IMI</td>
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<td>CALSTRS FOSSIL FUEL ON WORLD ex USA IMI</td>
<td>31.73%</td>
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<td>MSCI WORLD ex USA IMI</td>
<td>29.87%</td>
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<td>CALSTRS FOSSIL FUEL ON MSCI EM IMI</td>
<td>15.96%</td>
<td>6.11%</td>
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<td>MSCI EM IMI</td>
<td>15.63%</td>
<td>6.01%</td>
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<td>15.59%</td>
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### ACWI IMI CalSTRS ex Fossil Fuel compared to ACWI IMI (6/2003-5/2013)

<table>
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<tr>
<th>Tracking Error</th>
<th>Annualized Performance</th>
<th>Information Ratio</th>
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<tbody>
<tr>
<td>0.99%</td>
<td>-0.16%</td>
<td>-0.16%</td>
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</table>
Simulation on MSCI Carbon List
Simulation on Exclusion of the MSCI Carbon List

- Study conducted by MSCI based on exclusion of the MSCI Carbon List, 247 carbon reserves-owning companies from the MSCI Select Energy Producers IMI Index
- Back test covers the period January 2008-March 2013
- The MSCI ACWI Select Energy Producers IMI Index tracks companies, based on their Global Industry Classification System (GICS) codes, in:
  - Coal & Consumable Fuels
  - Integrated Oil & Gas
  - Oil & Gas Exploration
  - Oil & Gas Refining & Marketing
- Companies that own fossil fuel reserves are concentrated in three of the sub-industries
Performance: MSCI ACWI IMI ex Carbon vs. MSCI ACWI IMI

Cumulative Returns – January 2008-March 2013

* Note that this graph is an example only. Past performance is not indicative of future results.
ACWI ex Carbon List Back Test Performance

- From Jan 2008 to Mar 2013, the market capitalization of the 247 Carbon companies ranged from approximately 7% to 8% of the MSCI ACWI IMI.
- For each 10% active return differential in the Carbon stocks relative to the MSCI ACWI IMI, the effect of removing these stocks from the index ranged from 0.7 to 0.8% (70 to 80 bps) in changes to active returns.
- Nearly all of the performance difference is attributable to industry factors.
- The performance of the MSCI ACWI IMI ex Carbon closely tracked the MSCI ACWI IMI over the time series.
  - Slight underperformance of the MSCI ACWI IMI ex Carbon near the beginning.
  - Slight outperformance of the MSCI ACWI IMI ex Carbon toward the end of the period.
- The active return differential over the entire time series was 1.2% (0.22% annualized) in favor of MSCI ACWI IMI ex Carbon relative to MSCI ACWI IMI.
- The tracking error relative to MSCI ACWI was 1.9% (190 bps).
Risk Factor Analysis: MSCI Carbon List vs. MSCI ACWI IMI
Concluding Thoughts

- **Risk**
  - Fossil fuel divestment has the potential to reduce overall portfolio risk because of Energy sector volatility

- **Performance**
  - 5-year results were consistent between the two MSCI studies, showing modest risk-adjusted outperformance from divestment during that period
  - 10-year results on one study showed modest risk-adjusted underperformance, driven primarily by high oil prices in the early years

- **When contemplating fossil fuel divestment, investors should consider:**
  - What is the most effective way to allocate risk, given the potential overall portfolio risk reduction from divestment?
  - How do you compensate for the impact of underweighting energy?
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