# ESG in Equities

## Research analysis into the materiality of Environmental, Social and Corporate Governance factors for Equity portfolios

The objective of this research study is to analyse the financial materiality of Environmental, Social and Corporate Governance factors (ESG) for listed Equity as an asset class.

**Please note:** the conclusions from the research studies analysed and summarised in this report do not necessarily reflect AllianzGI's investment opinion. The research does not imply investment advice or investment performance related forecasts.

### Executive summary


**Objective**

This research aims to determine the materiality of ESG dimensions and ESG criteria with respect to financial performance and risk for listed, publicly traded Equities. On the one hand this could mean creating additional returns and alpha through capitalising on an ESG factor premium. On the other hand it could refer to reducing equity portfolio risk such as volatility or down-side risk through ESG integration into the investment process.

The research was developed using recent, publicly available studies written by academics and financial services providers. The sample analysed comprises nine core studies and one meta-study which includes more than 190 sub-studies.

Further, we constructed a time series comparison of traditional and ESG MSCI indices based on publicly available MSCI Index data. The analysis was compiled using different equity markets i.e. Emerging vs. Developed and Europe vs. US.

Finally, we also analysed a recent MSCI research study, which examined different concepts for the construction of optimal equity investment portfolios with regard to ESG integration. These concepts included the exclusion of ESG worst-in-class corporate issuers, best-in-class ESG tilts, and ESG momentum strategies.

**Results**

Several studies conclude that of the three ESG dimensions, corporate governance strength appears to be the key value driver for sustainable equity performance. However, according to the Materiality Map of the Sustainability Accounting Standards Board (SASB), different ESG factors underlying the ESG dimensions are material for different industry sectors. For example, while many environmental factors appear material for the non-renewable resources sector, they are deemed less relevant for most of the services sector. According to a recent Harvard study corporates that fully understand which ESG factors are material and immaterial to them and invest accordingly, create the best shareholder value.

The majority of the studies analysed report a positive relationship between the sustainability strength of corporate issuers and stock price behavior. In particular, many of the newer research studies show that superior ESG strength in an equity portfolio appears to lower volatility risk, relative to a portfolio of firms with lower ESG scores. In other words: better ESG-rated corporates seem to surprise markets less often. Equity strategies can capitalise on this result.


Allianz Global Investors

When considering a regional equity investment perspective, we find a variety of different performance results when comparing MSCI ESG indices vs. their traditional MSCI benchmark sisters. On a relative basis vs. the traditional benchmark index, ESG emerging markets indices performed better than ESG developed market indices. Within the developed equity markets , MSCI ESG European indices performed better than MSCI ESG US indices when compared to their traditional benchmark sisters. It needs to be noted that these results are derived from simple time-series analysis. Results may change, for example if different benchmarks are analysed or actively managed strategies are reviewed.

The analysis of the optimal ESG strategy concept for equity portfolios found that overweighting stocks with a positive ESG (rating) momentum and underweighting stocks with a negative ESG (rating) momentum perform comparably better than other strategies such as worst-in-class exclusion and/or overweighting (underweighting) of stocks with high (low) current weighting.

This finding suggest that to create alpha, managers may want to consider anticipating improvements in material ESG factors at a corporate or industry level, as these may not yet have been priced in. Hence, using forward looking ESG analysis rather than backward looking.

In practice, different ESG strategy formats have to be (back-) tested. The availability and quality of ESG research data needs to be considered, particularly for corporate issuers with comparatively little ESG disclosure. This may be the case for emerging market and small cap assets.

**Key findings ESG in Equities materiality**

- Higher ESG performing corporate issuers appear to have a lower cost of capital, deliver higher shareholder value and seem to surprise markets less often (quality stocks).
- ESG criteria integration into stock selection may contribute to a reduction in equity portfolio risk in terms of lower volatility.
- Of the three ESG dimensions, Corporate Governance appears most relevant.
- The materiality of ESG dimensions and the type of ESG criteria may change significantly across industry sectors.
- Looking into the regional stock universe ESG integration appears to have the greatest materiality impact for Emerging Markets stocks.
- From a portfolio strategy perspective various formats of ESG integration need to be tested.
- A forwarding looking ESG momentum strategy, which focuses on the improvements of material ESG factors at a corporate issuer or industry level, that may not been priced in yet, appears to be a promising approach to create alpha.

Integration of material, industry sector relevant ESG criteria into equity investment strategies may contribute to better risk adjusted returns.

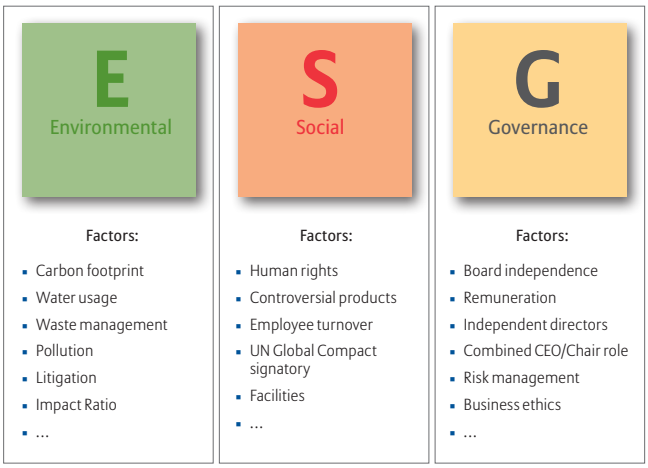
# One step deeper

1. **What are the most relevant ESG dimensions and factors?**
2. **Does ESG add different degrees of value for different stock universes?**
3. **What is the optimal ESG Equity portfolio strategy?**

## 1. What are the most relevant ESG dimensions and factors?

A key question for equity investors in which ESG dimension is most relevant for equity investments in terms of financial materiality – environmental, social or corporate governance? To better understand which underlying factors matter most when considering specific ESG domains and whether there is a difference across industry sectors, we need to analyse these dimensions in more detail. (see figure 1).

Figure 1: Three dimensions – multiple factors[1]




A 2013 Hermes study investigated the performance of companies in the MSCI World Index finding that the corporate governance dimension appeared as key value driver. Performance was analysed along total shareholder return delivered by poorly governed vs. well governed corporates. Hermes did not find a statistically significant relationship between the environmental or the social dimension and shareholder return.

Further, there was a notable difference of financial materiality across investment regions for poorly governed corporates: The smallest impact was reported for North American companies. Possibly in North America there is a more established corporate governance regulation and practice compared to other markets.

The Hermes results are supported by a 2014 study by Auer examining almost 900 European stocks. Auer concluded, that portfolios, which exclude the worst-ranking companies when using a negative filter for corporate governance ratings, significantly outperform. Performance differences are measured in terms of Sharpe ratios comparing filter-portfolios vs. original portfolios.

Materiality of ESG factors underlying ESG dimensions, a 2015 Harvard study by Khan et al. analyses the materiality of ESG factors for a universe of approximately 2,300 US companies. The materiality map methodology of the Sustainability Accounting Standards Board (SASB) was used as an input (see page 4).

Khan et al. structured equal- and value-weighted equity portfolios alongside material and immaterial ESG factors. The resulting annual portfolio alphas that are compared are defined as the difference between high- and low performance portfolios. It was concluded that portfolios that consist of firms scoring high on material ESG factors and low on immaterial factors perform best. In the research, the performance difference of portfolios with 'the right set of issuers' outperform portfolios where corporates score low on material and immaterial ESG factors by approx. 8.9% p.a.

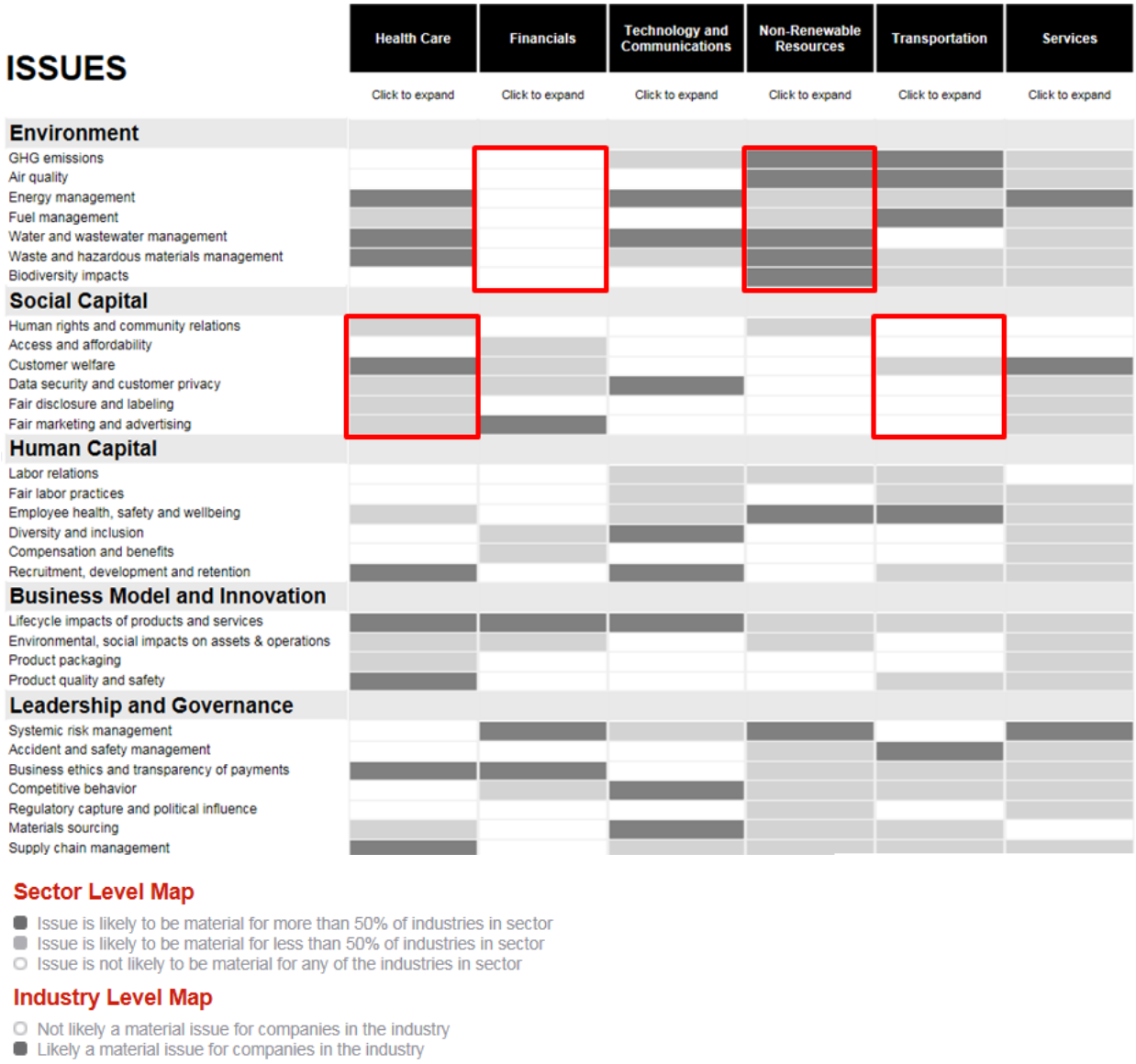
Further, performance effects are better for corporate issuers that score well on material ESG factors only vs. such corporates that score well alongside material and immaterial ESG factors. In other words, the corporates that understand the specific, material ESG factors for their industry sector create the most shareholder value.

[1] Source: Hermes Fund Managers, 2013: ESG investing – Does it just make you feel good, or is it actually good for your portfolio?

## The Sustainability Standards Accounting Board (SASB) materiality map: ESG factor materiality differs across industry sectors[2]

The SASB materiality map finds that materiality of ESG factors differ across industry sectors. For example, environmental factors such as air quality and water management are more material for the non-renewable resources sector compared to the financials sectors.

Figure 2: Materiality map[2]




[2] Source: SASB™ 2015, http://materiality.sasb.orgf as of 24th March 2015.

## Materiality of ESG in Equities - further evidence

We also looked into other recent research analysing the financial benefits of ESG integration into equity strategies.

The 2014 meta-analysis published by the University of Oxford and Arabesque Asset Management investigated over 190 academic studies on sustainability and its effect on cost of capital, operational performance and stock prices. The findings support the hypothesis that the integration of ESG factors into investment decisions positively affects stock portfolio performance. Despite several studies showing no relationship, or a negative relationship, the majority finds a positive relationship between corporate sustainability scores and stock price performance, where superior ESG scores lead to superior stock price performance relative to firms with lower ESG scores.

Another study analysed included Morgan Stanley (2015). This research has a scope of around 6,600 US equity mutual funds and around 2,900 US equity separately managed accounts (SMAs). The research evaluated returns and volatility difference of sustainable and traditional strategies along style clusters such as large, small and mid-cap.

Morgan Stanley concluded that sustainable mutual funds had equal or higher median returns and equal or lower median volatility for 64% of the periods examined over the last seven years. In comparison to their traditional fund counterparts. SMAs had equal or higher median returns for 36% of the periods examined and equal or lower median volatility for 72% of the periods examined over the last seven years compared to traditional strategies. Generally, sustainable mutual funds and SMAs had a tighter return and volatility dispersion than their traditional peers.

Eccles et al. (2013) investigated the effect of corporate sustainability on performance looking at 90 "High Sustainability" and 90 "Low Sustainability" US companies between 1992 and 2010. They found that the "High Sustainability" portfolio exhibits lower volatility and generates higher stock returns than the "Low Sustainability" portfolio. Corporate issuers qualify as "High Sustainability", if they have adopted a substantial number of environmental and social policies for a significant number of years.

Humphrey et al. (2012) looked into, whether Corporate Social Performance (CSP) ratings impact firms' share performance and risk examining more than 250 UK companies from 2002 to 2010. They concluded that neither high- nor low-ranked CSP portfolios significantly out- or underperform the market portfolio. However, they found some weak evidence of high-ranked CSP portfolios having lower betas than low-ranked CSP portfolios.

Lee et al. (2012) investigated whether portfolios comprising high-ranked Corporate Social Performance (CSP) firms out-/underperform portfolios comprising low-ranked CSP firms. They found no significant difference in the risk-adjusted performance, between high- and low-ranked CSP-formed portfolios.

## 2. Does ESG add different degrees of value for different stock universes?

### MSCI ESG Benchmark Performance Analysis[3]
### Time-series analysis of MSCI ESG vs. traditional MSCI indices for emerging and developed equity markets

**Objective**

We examined the performance of MSCI ESG indices (i.e. a comparison of the index performance) with its traditional index siblings. The regional focus is global emerging markets, global developed markets as well as Europe and the US.

**Index Methodology**

- The MSCI Global Sustainability indices apply a Best-in-Class selection process to companies in the regional indexes that make up MSCI All Country World Index (ACWI).
- The methodology aims to include securities of companies with the highest ESG ratings representing 50% of the market capitalisation in each sector of the Parent Index. The regional indexes are aggregated to create the global index.
- Companies must have an MSCI ESG Research Intangible Value Assessment (IVA)[3] rating of 'BB' or above and an Impact Monitor[4] score of 3 or above to be eligible. The Index is float-adjusted market capitalisation weighted.

| MSCI World ESG Index | MSCI EM ESG Index | MSCI Europe ESG Index | MSCI USA IMI ESG Index |
|---|---|---|---|
| Capitalisation weighted index providing exposure to companies with high ESG performance relative to their sector peers | | | |
| Large and mid-cap companies across developed markets countries | Large and mid-cap companies across emerging markets countries[4] | Large and mid-cap companies across European developed markets countries | Large and mid-cap US companies |
| Launched in October 2007 | Launched in June 2013 | Launched in October 2007 | Launched in September 2010 |

### Developed Markets vs. Emerging Markets[5]

**MSCI ESG indices performance**

There is a distinctly greater outperformance by the MSCI Emerging Markets ESG Index than by the MSCI World ESG Index (Figures 3 and 4) relative to their respective traditional counterparts. One possible reason for this difference could be due to a bigger dispersion of ESG/CSR issuer performance in emerging markets compared to developed markets. Hence, a Best-in-Class approach may add more performance contribution.

It is interesting to note that while the World indices have been performing similarly since September 2007, the outperformance of the Emerging Markets ESG Index relative to the World ESG Index has been continuously increasing since September 2007.

Figure 3: MSCI Emerging Markets ESG Index

Cumulative index performance – gross returns (Sep 2007 – Feb 2015) – USD

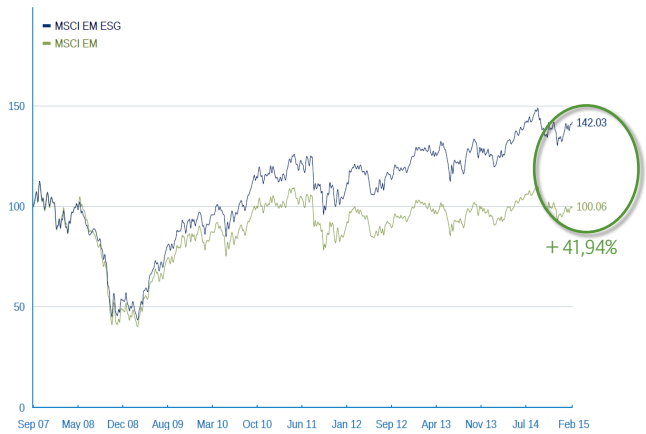



Figure 4: MSCI World ESG Index

Cumulative index performance – gross returns (Sep 2007 – Feb 2015) – USD


[3] MSCI ESG Research Intangible Value Assessment (IVA) provides research, ratings, and analysis of companies' risks and opportunities arising from environmental, social, and governance (ESG) factors. (Source: MSCI ESG Research, 2014: Intangible Value Assessment Methodology – Executive Summary).
[4] MSCI ESG Impact Monitor analyses and monitors company management strategies and their actual performance. MSCI ESG Impact Monitor allows institutional investors to analyse a company's significant social and environmental impacts and its ability to manage those impacts. (Source: MSCI ESG Research, 2014: MSCI ESG Impact Monitor).
[5] Sources: AllianzGI based on MSCI Index data, 2015.
Please note: Data gross of fees; calculation at the net asset value (BVI method) based on the assumption that distributions are reinvested and excludes initial charges. Individual costs such as fees, commissions and other charges have not been taken into consideration and would have a negative impact on the performance if they were included. Past performance is not a reliable indicator of future results. If the currency in which the past performance is displayed differs from the currency of the country in which the investor resides, then the investor should be aware that due to the exchange rate fluctuations the performance shown may be higher or lower if converted into the investor's local currency.

## Europe vs. USA[5]

### MSCI ESG indices performance

The European MSCI ESG Index outperformed its traditional counterpart by more than 2.5 percent, whereas the US MSCI ESG Index underperformed its traditional counterpart by more than four percent.

It is also interesting to note, that while the US ESG Index has been underperforming its traditional counterpart since August 2010, the performance of the Europe ESG Index relative to its traditional counterpart has changed: from slightly negative to slightly positive in 2012, right after the European debt crisis.

Figure 5: Cumulative index performance – gross returns (Sep 2007 – Feb 2015) – USD


Figure 6: Cumulative index performance – gross returns (Sep 2007 – Feb 2015) – USD


[5] Sources: AllianzGI based on MSCI Index data, 2015.

## 3. What is the optimal ESG Equity portfolio strategy?

### Optimal portfolio construction[6]

### Executive summary

**Objective**
The MSCI Study examines three different equity strategy concepts and aims to analyse optimal ESG tilts.

**Approach**
The 2013 MSCI ESG Research study explored three optimised strategies implementing an ESG tilt on the MSCI World Index based on IVA (Intangible Value Assessment) of the underlying benchmark constituents. IVA ratings evaluate sector specific, material ESG risks and opportunities on a 10-point scale. These scores are then converted into final letter grades of AAA to CCC. The benchmark is the MSCI World Index and the risk model is the Barra Global Equity Model (GEM3).

Three ESG strategy concepts were compared for a period between February 2008 and December 2012:

- ESG Worst-in-Class exclusion:
  - Exclusion of CCC- rated companies.
  - After applying the negative filter, overweighting of stocks with high current ESG ratings and underweighting those with low current ESG ratings.
- Simple ESG Tilt overweighting stocks with high current ratings and underweighting those with low current ratings.
- ESG Momentum overweighting stocks that have improved their ESG ratings during the preceding 12 months over the time series and underweighting stocks that have decreased their ESG ratings.

**1 ESG Worst-in-Class exclusion[7]**

Exclusion of companies with low current ESG ratings (CCC)[8]

**2 Simple ESG Tilt**

Overweighting stocks with high current ESG ratings, underweighting stocks with low current ESG ratings (while maintaining other exposures of the portfolio very close to the benchmark's exposures)

**3 ESG Momentum**

Overweighting stocks that have improved their ESG ratings during the preceding 12 months over the time series, underweighting stocks that have decreased their ESG ratings

**Results**
The main conclusion of MSCI's study is that asset managers can employ ESG factors to attain higher ESG portfolio scores with low active risk, and still achieve moderate benchmark outperformance over the time period investigated.

[6] MSCI, 2013: Optimising Environmental, Social and Governance Factors in Portfolio Construction: Analysis of three ESG-tilted strategies.
[7] Hereafter referred as ESG Exclusion.
[8] As IVA ratings reflect ESG risks of companies relative to their industry peers, excluded companies (7 percent of MSCI World stocks) are less likely to concentrate in specific industries. No industries are excluded entirely.

## All three strategies outperform the benchmark[9]

Figure 7: Comparison of ESG Strategies relative to MSCI World Index February 2008 – December 2012

| | ESG Exclusion | ESG Tilt | ESG Momentum | |
|---|---|---|---|---|
| Active return (annual, %) | 0.10 | 0.05 | 0.35 | All strategies achieved a positive active return. |
| Common factor contribution (annual, %) | 0.06 | 0.03 | 0.08 | |
| Asset specific contribution[10] (annual, %) | 0.05 | 0.01 | 0.27 | |
| Tracking error (ex-post, annual, %) | 0.45 | 0.46 | 0.36 | |
| Information ratio | 0.23 | 0.10 | 0.97 | |
| Average improvement in ESG score | 1.27 | 1.21 | 0.46 | All strategies led to a higher ESG rating. |
| Average relative improvement in ESG score (%) | 23 | 22 | 8 | |

### Key finding

Raising the ESG tilt of the MSCI World Index (from BBB to A) without harming portfolio performance in terms of active returns whilst maintaining a small tracking error would have been possible during the period investigated.

### MSCI 2015 Update: Can ESG add alpha?

Meanwhile, in June 2015, MSCI has updated its 2013 analysis with a focus on higher active risk, alpha seeking ESG Tilt and Momentum strategies. The back-test period has been extended and now spans February 2007 to March 2015. According to these latest MSCI back-test results, the ESG Tilt strategy achieved an outperformance over MSCI World of 1.1% p.a. and the ESG Momentum strategy of 2.2% p.a. respectively.[11]

[9] Source: MSCI, 2013: Optimising Environmental, Social and Governance Factors in Portfolio Construction: Analysis of three ESG-tilted strategies.
[10] Performance after other systematic contributions/residual factors were factored out.
[11] MSCI 2015: Can ESG Add Alpha? An analysis of ESG Tilt and Momentum Strategies.
Please note: Past performance is not a reliable indicator of future results. A performance of the strategy is not guaranteed and losses remain possible.

# Appendices

## APPENDIX 1: Details on ESG Equity studies investigated

## APPENDIX 2: Details on MSCI ESG vs. MSCI traditional index analysis

## APPENDIX 1: Details on equity studies investigated

### Overview: Studies examined[12]

The research studies we examined analysed ESG materiality for US/ North American, European and UK Equity universe.

The details of these studies are provided in the following slides. In total, we evaluated nine core studies and one meta-study that were carried out by academics and the asset management industry.

| | Study | Sample period | Region | Methodology | Data | Result |
|---|---|---|---|---|---|---|
| A | Morgan Stanley (2015) | 2007-2014 | US | Comparison of sustainable vs. traditional mutual funds and Separately Managed Accounts (SMAs) | 6,638 mutual funds (Morningstar) 2,874 SMAs (Informa PSD) | Positive |
| B | Khan, Serafeim, Yoon (2015) | 1991-2012 | US | Regression analysis: 5-factor model (excess return, size, book-to-market, momentum, liquidity) | 2,307 companies (KLD Investments) | Positive |
| C | Hermes Fund Managers (2013) | 2008-2013 | World | Analysis of ESG dimensions' impact on performance and regional patterns | MSCI World Index plus external/internal sources on ESG | Positive |
| D | Auer (2014) | 2004-2012 | Europe | Negative ESG screens are applied on stocks with available ESG ratings: At the end of each month, the stocks are separately ranked according to their environmental, social, and corporate governance scores respectively | 892 European stock (incl. in Stoxx600), thereof 520 with ESG ratings (by Sustainalytics) | Positive |
| E | MSCI (2013) | 2007–2012 | World | MSCI examines three possible implementations of ESG-tilt strategies based on its ESG Research Intangible Value Assessment (IVA) scores from February 2007 to December 2012 using the MSCI World Index as a benchmark and the Barra Global Equity Model (GEM3) as a risk model. IVA evaluates sector-specific ESG material risks and opportunities on a 10-point scale which are converted into final letter grades of AAA to CCC | MSCI indices; MSCI ESG ratings | Positive |
| F | MSCI (2015) | Feb 2007–Mar 2015 | World | Extends 2013 study with focus on ESG Tilt and Momentum strategies allowing for more active risk. Style factor analysis to explain ESG performance contribution. Extended backtest time-series. | MSCI Indices. MSCI ESG ratings. | Posetive |
| G | Mollet / Ziegler (2014) | 1998-2009 | Europe, US | Four-factor model according to Carhart (1997), which comprises market return, size, value, and momentum factors | Market portfolios; ESG data from ZKB | Neutral |
| H | Humphrey, Lee, Shen (2012) | 2002-2010 | UK | Portfolio construction: total return, total risk, risk/reward ratio, Sharpe ratio. Regression analysis: Capital Asset Pricing Model (CAPM), 4-factor model (excess return, size, book-to-market, momentum) | 256 companies (RobecoSAM) | Neutral |
| I | Lee, Faff, Rekker (2012) | 1998-2007 | US | Regression analysis: 4-factor model (excess return, size, book-to-market, momentum) augmented by industry factors | 46-68 companies p.a. (RobecoSAM) | Mixed |
| J | Clark, Feiner, Viehs (2014) | 2007-2014 | Various | Meta-Study (Oxford University / Arabesque Asset Management) | Sub-studies examined | Positive |

[12] Various sources. Please refer to previous source indications.

## A. Morgan Stanley: Sustainable vs. Traditional:

### Mutual Funds and SMAs[13]

**Morgan Stanley, 2015**

| | |
|---|---|
| Sample period | 2007 - 2014 |
| Region | US |
| Data | 6,638 equity mutual funds<br>2,874 equity SMAs |
| Portfolio construction | Comparison of returns and risks between sustainable and traditional equity strategies |

Investing focuses on the return and risk difference and dispersion between sustainable and traditional, actively managed, US based strategies. Performance data for 6,638 open-ended equity funds and 2,874 equity strategy SMAs between 2007 and 2014 was examined. Sustainable funds and SMAs performance data were sourced from metadata in Morningstar and Informa PSN databases. In the original analysis, the scope of mutual funds analysed was higher e.g. 10,228 and includes fixed income strategies.

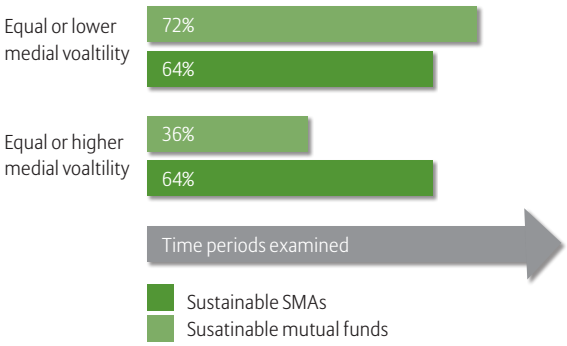
**Sustainability definition by Morgan Stanley**
"We define sustainability as a commitment to economic well-being for both the present and the future, balancing society's needs today with the demands of tomorrow. Sustainability encompasses behaviors, processes, tools and technologies that can be perpetuated and replicated in ways that achieve economic, social or environmental benefits. We see sustainable investing as the practice of mobilising capital to businesses that engage in these behaviors and practices."

**Main result**
Sustainable equity mutual funds had equal or higher median returns and equal or lower median volatility for 64% of the periods examined over the last seven years compared to their traditional strategy counterparts.

Sustainable equity SMAs, had equal or higher median returns for 36% of the periods examined and equal or lower median volatility for 72% of the periods. These results were examined over the last seven years compared to their traditional counterparts.

Sustainable mutual funds and SMAs had a tighter return and volatility dispersion than their traditional peers.

Figure 8:




[13] Source: Morgan Stanley – Institute for Sustainable Investing, 2015: Sustainable Reality: Understanding the Performance of Sustainable Investment Strategies. Please note: This is for guidance only and is not indicative of future results.

## Sustainable vs. Traditional Equity Mutual Fund performance[13]

Sustainable equity funds met or exceeded the median returns of traditional equity funds for 64% of the periods examined.

Across all styles excluding Large Value, 50% or more sustainable funds were represented in the top two quartiles of returns for their peer group for the majority of periods under consideration.

Sustainable funds met or fell below median volatility of traditional funds for 64% of the periods examined.

Across all styles excluding Mid-Cap Blend, 50% or more sustainable funds were represented in the bottom two quartiles of volatility for their peer group for the majority of periods under consideration.

Figure 9:

| Asset Class (Morningstar Category) | 2014 1/1/2014-12/31/2014 | 2013 1/1/2013-12/31/2013 | 2012 1/1/2012-12/31/2012 | 2011 1/1/2011-12/31/2011 | 2010 1/1/2010-12/31/2010 | 2009 1/1/2009-12/31/2009 | 2008 1/1/2008-12/31/2008 | 2007 1/1/2007-12/31/2007 | 3 yr Trail 1/1/2012-12/21/2014 | 5 yr Trail 1/1/2010-12/31/2014 | 7 yr Trail 1/1/2008-12/31/2014 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Large Value – 1337 funds; 7 sustainable** | | | | | | | | | | | |
| Returns - % Sustainable Funds exceeding 50th Percentile | 57% | 71% | 71% | 50% | 33% | 33% | 17% | 0% | 57% | 33% | 33% |
| Volatility - % Sustainable Funds below 50th Percentile | 57% | 71% | 57% | 50% | 67% | 17% | 33% | 40% | 71% | 67% | 17% |
| **Large Blend – 1622 funds; 21 sustainable** | | | | | | | | | | | |
| Returns - % Sustainable Funds exceeding 50th Percentile | 57% | 71% | 43% | 65% | 36% | 63% | 50% | 38% | 48% | 74% | 67% |
| Volatility - % Sustainable Funds below 50th Percentile | 38% | 52% | 57% | 55% | 47% | 42% | 56% | 50% | 48% | 47% | 56% |
| **Large Growth – 1760 funds; 19 sustainable** | | | | | | | | | | | |
| Returns - % Sustainable Funds exceeding 50th Percentile | 53% | 37% | 53% | 59% | 53% | 35% | 76% | 31% | 35% | 41% | 59% |
| Volatility - % Sustainable Funds below 50th Percentile | 58% | 79% | 59% | 59% | 65% | 47% | 53% | 81% | 71% | 59% | 65% |
| **Mid-Cap Blend – 375 funds; 7 sustainable** | | | | | | | | | | | |
| Returns - % Sustainable Funds exceeding 50th Percentile | 29% | 71% | 86% | 57% | 14% | 71% | 57% | 0% | 71% | 86% | 57% |
| Volatility - % Sustainable Funds below 50th Percentile | 57% | 43% | 29% | 43% | 29% | 29% | 14% | 60% | 57% | 43% | 43% |
| **Mid-Cap Growth – 766 funds; 9 sustainable** | | | | | | | | | | | |
| Returns - % Sustainable Funds exceeding 50th Percentile | 67% | 25% | 63% | 86% | 43% | 14% | 50% | 17% | 25% | 57% | 50% |
| Volatility - % Sustainable Funds below 50th Percentile | 44% | 50% | 50% | 43% | 43% | 100% | 67% | 50% | 63% | 43% | 83% |
| **Small Blend – 778 funds; 8 sustainable** | | | | | | | | | | | |
| Returns - % Sustainable Funds exceeding 50th Percentile | 63% | 63% | 50% | 57% | 71% | 43% | 50% | 33% | 63% | 86% | 67% |
| Volatility - % Sustainable Funds below 50th Percentile | 63% | 38% | 75% | 43% | 100% | 71% | 83% | 67% | 50% | 57% | 67% |

50% or more Sustainable Funds in Top 2 Quartiles* of Peer Group

Less than 50% of Sustainable Funds in Top 2 Quartiles* of Peer Group

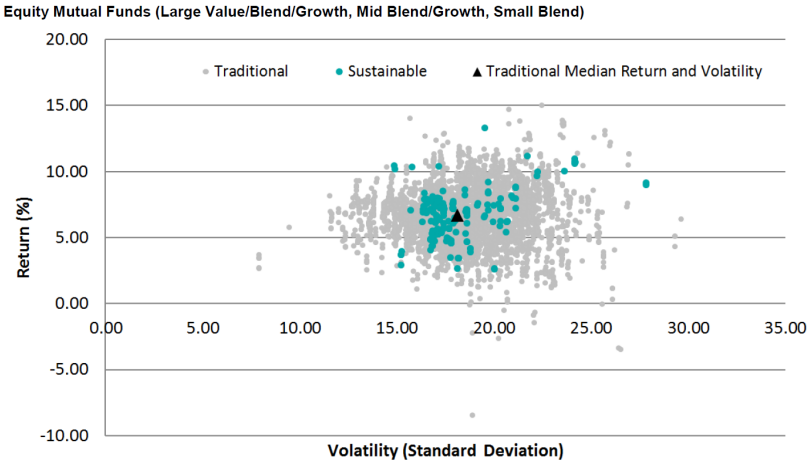
* Above 50th percentile returns, below 50th percentile volatility

## Sustainable vs. Traditional Risk vs. Return: Equity Mutual Funds[13]

Sustainable equity mutual funds had a tighter return and volatility dispersion than traditional equity mutual funds. Sustainable funds skewed toward lower volatility with the majority of sustainable funds having lower volatility than the median of traditional funds.

**Overall, sustainable equity funds performed favorably compared to their traditional counterparts.**

Figure 10: Equity Mutual Funds for the period 2007 - 2014 (Large Value/Blend/Growth, Mid Blend/Growth, Small Blend) Morningstar 2015.




[13] Source: Morgan Stanley – Institute for Sustainable Investing, 2015: Sustainable Reality: Understanding the Performance of Sustainable Investment Strategies. Please note: This is for guidance only and not indicative of future results. Past performance is not a reliable indicator of future results. A performance of the strategy is not guaranteed and losses remain possible.

## Sustainable vs. Traditional Equity SMA (Separately Managed Accounts) performance[13]

Sustainable funds met or exceeded the median returns of traditional funds for 36% of the periods examined.

The funds met or fell below median volatility of traditional funds for 72% of the periods examined.

On a risk-adjusted basis, sustainable SMAs performed in line with their traditional counterparts.

| | Large cap | Mid cap | Small cap |
|---|---|---|---|
| Top two quartiles of returns | Underrepresented (4/11) | Overrepresented (6/11) | Underrepresented (2/11) |
| Bottom two quartiles of volatility | Overrepresented (8/11) | Overrepresented (7/11) | Overrepresented (9/11) |

Figure 11:

| Asset Class | 2014 1/1/2014-12/31/2014 | 2013 1/1/2013-12/31/2013 | 2012 1/1/2012-12/31/2012 | 2011 1/1/2011-12/31/2011 | 2010 1/1/2010-12/31/2010 | 2009 1/1/2009-12/31/2009 | 2008 1/1/2008-12/31/2008 | 2007 1/1/2007-12/31/2007 | 3 yr Trail 1/1/2012-12/21/2014 | 5 yr Trail 1/1/2010-12/31/2014 | 7 yr Trail 1/1/2008-12/31/2014 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Large Cap – 1547 SMAs; 77 sustainable** | | | | | | | | | | | |
| Returns - % Sustainable Funds exceeding 50th Percentile | 40% | 47% | 43% | 34% | 50% | 59% | 56% | 55% | 38% | 47% | 46% |
| Volatility - % Sustainable Funds below 50th Percentile | 55% | 65% | 51% | 46% | 46% | 64% | 41% | 50% | 53% | 55% | 60% |
| **Mid Cap – 554 SMAs; 11 sustainable** | | | | | | | | | | | |
| Returns - % Sustainable Funds exceeding 50th Percentile | 25% | 27% | 36% | 64% | 50% | 60% | 50% | 60% | 25% | 43% | 57% |
| Volatility - % Sustainable Funds below 50th Percentile | 25% | 55% | 55% | 55% | 40% | 60% | 60% | 30% | 50% | 29% | 71% |
| **Small Cap – 773 SMAs; 12 sustainable** | | | | | | | | | | | |
| Returns - % Sustainable Funds exceeding 50th Percentile | 20% | 9% | 9% | 45% | 36% | 27% | 73% | 55% | 0% | 11% | 0% |
| Volatility - % Sustainable Funds below 50th Percentile | 70% | 73% | 82% | 64% | 45% | 64% | 45% | 64% | 67% | 56% | 56% |

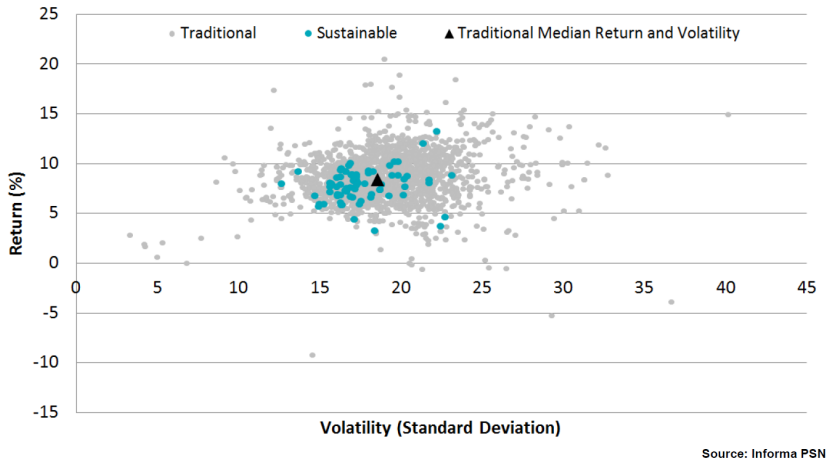
50% or more Sustainable SMAs in Top 2 Quartiles* of Peer Group
Less than 50% of Sustainable SMAs in Top 2 Quartiles* of Peer Group
* Above 50th percentile returns, below 50th percentile volatility

## Sustainable vs. Traditional Risk vs. Return: SMAs[13]

Traditional SMAs had a slightly higher return dispersion, but a significantly higher volatility dispersion. This suggests that sustainable SMAs exhibited favorable risk-adjusted performance over time.

Overall, sustainable SMAs performed favorably compared to their traditional counterparts with respect to volatility. They performed less favorably with respect to returns.

Figure 12: SMAs (Large, Mid, Small Cap) for the period 2007 - 2014




[13] Source: Morgan Stanley – Institute for Sustainable Investing, 2015: Sustainable Reality: Understanding the Performance of Sustainable Investment Strategies. Please note: This is for guidance only and not indicative of future results.

## B. Khan et al. (Harvard University)

### Outperformance of firms with strong material sustainability performance[14]

**Khan et al., 2015**

| | |
|---|---|
| Sample period | 1991 - 2012 |
| Region | US |
| Data | 2,307 companies (KLD) |
| Portfolio construction | Comparison between companies with high- and low-ranked ESG performance (material and immaterial) |

The 2015 study by Khan et al. analyses the materiality of ESG factors for a universe of approximately 2,300 US corporates. The materiality map methodology of the Sustainability Accounting Standards Board (SASB) are used as input. The SASB map covers 40+ ESG criteria and analyses their relevance for 80+ industry sectors. Following SASB, the three ESG dimensions can be split into five value dimensions: environment, social capital, human capital, business model and innovation as well as leadership and governance. The SASB materiality map found that materiality of ESG factors differs across industry sectors.

For example, environmental factors such as air quality and water management are more material for the non-renewable resources sector compared to the financials sectors.

As part of the research, Khan et al. constructed equal- and value-weighted equity portfolios using material and immaterial ESG factors. The resulting annual portfolio alphas were compared and defined as different between high- and low performance portfolios.

**Main result**

It was concluded that

- Portfolios that consist of firms scoring high on ESG materiality and low on immaterial factors perform best. In the research, the performance difference of portfolios with 'the right set of issuers' outperform portfolios where corporates score bad on material and immaterial ESG factors by approx. 8.9% p.a.
- Performance effects are better for corporate issuers that score well on material ESG factors only vs. such corporates that score well along material and immaterial ESG factors. In other words, corporates that understand the specific, material ESG factors for their industry sector best create most shareholder value.

### Investments in material ESG factors are value-enhancing for shareholders[14]

This table shows differences in portfolio alphas between top and bottom portfolios for both material and immaterial sustainability issues using a five-factor model as well as robustness tests.

The portfolios are constructed by assigning firms with top (bottom) quintile/quartile/decile materiality scores to the respective top (bottom) portfolios.

Figure 13:

| | | Outperformance (in %) (Difference in between high-performance and low-performance portfolios) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Material ESG Factors | | | | | | Immaterial ESG Factors | |
| | | Value-weighted portfolio | | | Equal-weighted portfolio | | | Value-weighted portfolio | Equal-weighted portfolio |
| | | Quartile | Quintile | Decile | Quartile | Quintile | Decile | Quintile | Quintile |
| Robustness test | 5-factor model<br>Market, SMB, HML, UMD, LIQ | 3.00 | 4.98 | 8.85 | 1.44 | 3.38 | 3.64 | 0.71* | -1.49* |
| | 4-factor model<br>Market, SMB, HML, UMD | | 4.68 | | | 2.84 | | 0.29* | -1.92* |
| | 3-factor model<br>Market, SMB, HML | | 4.70 | | | 3.67 | | -0.34* | -1.67* |
| | Exclusion of controversials[15] | | 5.58 | | | 3.83 | | 0.88* | -1.31* |

* not significant

[14] Source: Khan et al., 2015: Corporate Sustainability: First Evidence on Materiality.

**Discussion of empirical results**

- For material ESG factors, the resulting differences between top and bottom portfolios are positive and slightly higher for value-weighted portfolios than for equal-weighted portfolios.
- Further, stronger results are found for portfolios maximising the difference in material scores with the decile results producing a larger difference in alphas compared to the quartile/quintile portfolios.

## Investments in immaterial ESG factors might underperform[14]

**Discussion of empirical results**

- For immaterial ESG factors, a portfolio of firms scoring high on immaterial issues underperforms a portfolio of firms scoring low on a equal-weighted basis and outperforms on a value-weighted basis. These results are not statistically significant.

  This suggests that the immateriality index does not distinguish between firms and thereby is not able to predict future stock market performance.
- Results are not significantly different when using alternative factor models (robustness test).

Figure 14:

| | | Outperformance (in %) (Difference in between high-performance and low-performance portfolios) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Material ESG Factors | | | | | | Immaterial ESG Factors | |
| | | Value-weighted portfolio | | | Equal-weighted portfolio | | | Value-weighted portfolio | Equal-weighted portfolio |
| | | Quartile | Quintile | Decile | Quartile | Quintile | Decile | Quintile | Quintile |
| Robustness test | 5-factor model Market, SMB, HML, UMD, LIQ | 3.00 | 4.98 | 8.85 | 1.44 | 3.38 | 3.64 | 0.71* | -1.49* |
| | 4-factor model Market, SMB, HML, UMD | 4.68 | | | 2.84 | | | 0.29* | -1.92* |
| | 3-factor model Market, SMB, HML | 4.70 | | | 3.67 | | | -0.34* | -1.67* |
| | Exclusion of controversials[15] | 5.58 | | | 3.83 | | | 0.88* | -1.31* |

* not significant

## Investments in material ESG factors are value-enhancing for shareholders[14]

Figure 15: Performance on material and immaterial sustainability issues (annualised α-value in percent)

| | | Performance on immaterial issues | |
|---|---|---|---|
| | | High | Low |
| Performance on material issues | High | 1.96 | 6.01 |
| | Low | 0.60 | -2.90 |

+8,91%

- This table shows the resulting portfolio alphas of the five-factor model for value-weighted portfolios using quartile portfolios. (firms with top (bottom) quartile materiality scores are assigned to top (bottom) quartile portfolios.) The results are similar using equal-weighted portfolios.
- Grouping both material and immaterial investments together yields lower performance.
- Positive effects from investments in material sustainability factors are larger for firms that make investments only in material sustainability factors, versus firms that make investments on both material and immaterial issues.
- Firms with good performance on material ESG factors and concurrently poor performance on immaterial ESG factors perform best.

**Firms investing in material ESG factors outperform firms completely disregarding ESG factors by 8.91%.**

[14] Source: Khan et al., 2015: Corporate Sustainability: First Evidence on Materiality. Please note: Past performance is not a reliable indicator of future results.
[15] Firms with business involvement in controversial businesses (alcohol, firearms, gambling, military, tobacco) Market – market excess return; SMB – Fama and French (1993) size factor; HML – Fama and French (1993) book-to-market factor; UMD – Carhart (1997) momentum factor; LIQ – Pastor and Stambaugh (2003) liquidity factor.

## C. Hermes study

### Governance dimension appears as key ESG value driver

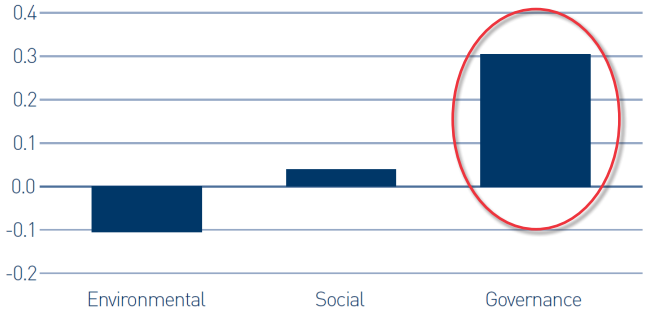
**Hermes Fund Managers, 2013**

| | |
|---|---|
| Sample period | 2008 - 2013 |
| Region | World |
| Data | MSCI World Index plus external/internal sources on ESG |
| Portfolio construction | Analysis of ESG dimensions' impact on performance and regional patterns |

Hermes Fund Managers analysed companies in the MSCI World Index from 31 December 2008 to 30 November 2013. Information on ESG performance was provided by internal as by external sources.

Hermes found that there was a strong link between ESG value and corporate governance. Further, it was concluded that there was no significant relationship between shareholder return and environmental or social factors (see figure 16).

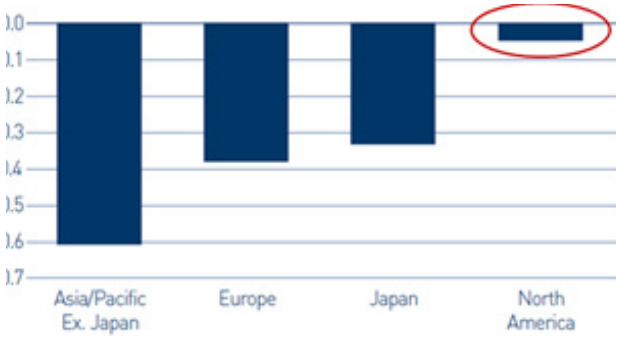
Figure 16: ESG value is driven by Corporate Governance (%)[15]




The average monthly return of stocks in the lowest governance decile to the return of companies in the MSCI world, from 31 December 2008 to 30 November 2013

In addition, Hermes found that there was a notable difference in governance score related returns across regions. The underperformance of poorly governed companies in North America (relative to the MSCI World Index) are comparably small. Whereas for companies in Asia/ Pacific (Ex Japan) the governance score performance impact are higher (see figure 17).

Figure 17: Relative returns of the most poorly governed companies by region (%)[15]




A possible reason might be that the US is subject to more robust and broadly established corporate governance regulation with generally higher corporate governance performance of companies.

[15] Source: Hermes Fund Managers. The average monthly return of stocks in the lowest governance decile relative to the return of companies in the MSCI World, from 31 December 2008 to 30 November 2013.

## D. Similar evidence for European Stocks

### Integration of Governance can lead to out-performance

**Auer, 2014**

| | |
|---|---|
| Sample period | 2004 - 2012 |
| Region | Europe |
| Data | 892 European stock (incl. in Stoxx600), thereof 520 with ESG ratings (by Sustainalytics) |
| Portfolio construction | Negative ESG screens are applied on stocks with available ESG ratings: At the end of each month, the stocks are separately ranked according to their environmental, social, and corporate governance scores respectively. |

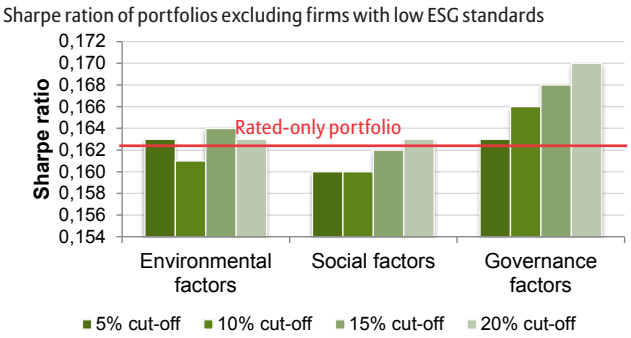
In his 2014 research[18], Auer comes to similar conclusions as Hermes. Auer's investment universe used for the analysis 892 European stocks that had between included in the STOXX 600 for at least 6 months between June 2004 and October 2012. For 520 of the companies investigated, ESG ratings provided by Sustainalytics were considered.

As part of the analysis, portfolios are created after applying negative ESG screens. Based on ESG scores, the worst 5, 10, 15, and 20 percent are excluded, forming an equally weighted portfolio of the remaining stocks. The performance measurement metric applied is the Sharpe ratio. The robustness of the results are analysed using alternative performance measures amongst others.

The research reveals that negative screens excluding unrated stocks, allow investors to outperform a passive investment in a diversified European stock benchmark portfolio. Additional negative screens based on environmental and social scores, neither add nor destroy portfolio value when cut-off rates are not too high.

On the corporate governance dimension, the Sharpe ratios of the cut-off portfolios are higher (and significantly different) than the benchmark and from the rated-only portfolio including those stocks with available ESG ratings (see figure 18).

Figure 18: Governance Screens significantly outperform the benchmark[16]




[16] Source: Auer, 2014: Do Socially Responsible Investment Policies Add or Destroy European Stock Portfolio Value?

## E. Details on MSCI optimal ESG Tilt analysis

**MSCI, 2013**

| | |
|---|---|
| Sample period | 2007 - 2012 |
| Region | World |
| Data | MSCI indices; MSCI ESG ratings |
| Portfolio construction | ESG Exclusion, ESG Tilt, ESG Momentum |

### Worst-in-Class exclusion does not significantly change performance[17]

Figure 19: Summary statistics of ESG Exclusion strategies, February 2007 – December 2012

| | ESG Exclusion 1 (exclusion of CCC-rated companies from investment universe) | ESG Exclusion 2a(risk aversion parameter: 1) | ESG Exclusion 2b(risk aversion parameter: 4) | ESG Exclusion 2c(risk aversion parameter: 6) |
|---|---|---|---|---|
| | | (Over-/underweighting in reduced investment universe) | | |
| Active return (annual, %) | -0.16 | 0.02 | -0.01 | -0.20 |
| Common factor contribution (annual, %) | -0.30 | 0.04 | 0.04 | 0.01 |
| Asset specific contribution[18] (annual, %) | 0.13 | -0.02 | -0.05 | -0.21 |
| Tracking error (ex-post, annual, %) | 0.66 | 0.42 | 0.52 | 1.02 |
| Information ratio | -0.24 | 0.05 | -0.02 | -0.19 |
| Average improvement in ESG score | 0.64 | 1.19 | 1.42 | 2.20 |
| Average relative improvement in ESG score (%) | 12 | 22 | 26 | 41 |
| Turnover (annual, %) | 4 | 20 | 20 | 20 |

Deviations to strategy comparison results are due to different time periods (starting 2007 or 2008).

The exclusion of CCC-rated companies led to a small negative active return.

The exclusion itself contributed positively, i.e. the elimination CCC-rated companies raised portfolio performance once other residual factors were factored out.

Exclusion Strategy 2a performed best in terms of active return (0.02) and tracking error (0.42

**Key finding:**
Worst-in-class ESG-rated stocks could potentially be eliminated without significantly changing risk and performance characteristics relative to MSCI World Index.

[17] Source: MSCI, 2013: Optimising Environmental, Social and Governance Factors in Portfolio Construction: Analysis of three ESG-tilted strategies.
[18] Sources: MSCI, 2015 – MSCI World ESG Index . MSCI, 2015 – MSCI Emerging Markets ESG Index.

## ESG Tilt strategy led to generally small and negative active Returns[17]

Figure 20: Comparison of statistics of ESG Tilt with ESG Exclusion strategies, February 2007 – December 2012

| | ESG Tilt 1 (risk aversion parameter: 1) | ESG Tilt 2 (risk aversion parameter: 1) | ESG Tilt 3 (risk aversion parameter: 1) | ESG Exclusion 2a (Over-/ underweighting in reduced invest-ment universe) |
|---|---|---|---|---|
| | (Over-/underweighting in reduced investment universe) | | | |
| Active return (annual, %) | -0.01 | -0.03 | -0.19 | 0.02 |
| Common factor contribution (annual, %) | 0.02 | 0.03 | 0.01 | 0.04 |
| Asset specific contribution (annual, %) | -0.03 | -0.06 | -0.20 | -0.02 |
| Tracking error (ex-post, annual, %) | 0.44 | 0.54 | 1.01 | 0.42 |
| Information ratio | -0.03 | -0.06 | -0.19 | 0.05 |
| Average improvement in ESG score | 1.10 | 1.37 | 2.15 | 1.19 |
| Average relative improvement in ESG score (%) | 20 | 25 | 40 | 22 |
| Turnover (annual, %) | 20 | 20 | 20 | 20 |

Deviations to strategy comparison results are due to different time periods (starting 2007 or 2008).

Allowing for larger tracking error did not lead to superior returns.

Exclusion Strategy 2a performed better than any Tilt Strategy

Figure 21: Comparison of statistics of ESG Momentum with ESG Tilt strategies, February 2008 – December 2012

| | ESG Tilt 1 (risk aversion parameter: 1) | ESG Tilt 2 (risk aversion parameter: 1) | ESG Tilt 3 (risk aversion parameter: 1) | ESG Exclusion 2a (Over-/ underweighting in reduced invest-ment universe) |
|---|---|---|---|---|
| | (Over-/underweighting in reduced investment universe) | | | |
| Active return (annual, %) | 0.35 | 0.40 | 0.29 | 0.05 |
| Common factor contribution (annual, %) | 0.08 | 0.10 | 0.09 | 0.03 |
| Asset specific contribution (annual, %) | 0.27 | 0.30 | 0.21 | 0.01 |
| Tracking error (ex-post, annual, %) | 0.36 | 0.43 | 0.84 | 0.46 |
| Information ratio | 0.97 | 0.92 | 0.35 | 0.10 |
| Average improvement in ESG score | 0.46 | 0.52 | 0.65 | 1.21 |
| Average relative improvement in ESG score (%) | 8 | 10 | 12 | 22 |
| Turnover (annual, %) | 20 | 20 | 20 | 20 |

Deviations to strategy comparison results are due to different time periods (starting 2007 or 2008).

Asset specific contributions were higher than in the simple ESG tilt strategies.

Low active-risk ESG momentum strategies performed better on a risk adjusted basis than the lowest-risk ESG tilt strategies.

The deviation of these results from the strategies comparison results can be explained by a cyclical behavior of cumulative return contributions (being 0 in 02/07, about -0.3 in 02/08 and about -0.1 in 12/12).

**Key finding**

Markets are more likely to react to news of companies showing improvement in ESG scores than to those who had already attained top ratings in their sectors.

[17] Source: MSCI, 2013: Optimising Environmental, Social and Governance Factors in Portfolio Construction: Analysis of three ESG-tilted strategies.

## F. ESG Momentum strategy with promising results[18]

**MSCI, 2015**

| | |
|---|---|
| Sample period | Feb 2007 - March 2015 |
| Region | World |
| Data | MSCI indices. MSCI ESG ratings. |
| Portfolio construction | Extends 2013 study with focus on ESG Tilt and Momentum strategies allowing for more active risk. Style factor analysis to explain ESG performance contribution. Extended back-test time-series. |

**Key finding**

ESG Tilt and ESG Momentum strategies outperformed the MSCI Global benchmark over the last eight years. The backtest results by MSCI revealed an active return of 1.1% p.a. and 2.2% p.a.

A significant part of the outperformance may have been attributable to ESG factors since it was not explained by style factors.

The ESG Tilt equity strategy assumes that ESG scores of corporates correlate with their future stock performance. Higher ESG ratings are expected to reveal a long-term financial benefit.

The ESG Momentum equity strategy is designed along ESG rating changes of corporate issuers. It is rather short term in nature and aims to capture ESG quality signals that are expected to be priced in by markets. It is not geared towards improving the overall ESG profile of the equity portfolio.

[18] Sources: MSCI 2015, Can ESG add Alpha? An Analysis of ESG Tilt and Momentum Strategies.

## G. Mollet et al.

### Sustainability leaders have a larger market value than the average[19]

**Mollet et al., 2014**

| | |
|---|---|
| Sample period | 1998 - 2009 |
| Region | Europe, US |
| Data | Market portfolios; ESG data from ZKB |
| Portfolio construction | Four-factor model according to Carhart (1997), which comprises market return, size, value, and momentum factors |

**Data**

The European and US equity market portfolios analysed (MSCI benchmarks) comprise more than 500 companies each. ZKB for ESG data.

**Methodology**

A four-factor regression analysis is applied with the following factors: excess return, size, book-to-market, momentum.

**Results**

Insignificant abnormal returns are the main result of the research for ESG on both the US and the European stock market.

This study supports the view that "ESG stocks" are correctly priced by market participants.

ESG is often exposed to a size tilt. Even within the benchmark of highly capitalised firms sustainability leaders have a distinctly higher average market value than less sustainable firms.

Figure 22: Development of average market value of investigated firms (US)


Figure 23: Development of average market value of investigated firms (US)


[19] Source: Mollet et al., 2014: Socially responsible investing and stock performance: New empirical evidence for the US and European stock markets. Please note: Past performance is not a reliable indicator of future results, due to the exchange rate fluctuations it may be higher or lower if converted into the investor's local currency.

## H. Humphrey et al.

### No significant out- or underperformance of high-ranked Corporate Social Performance portfolios[20]

**Humphrey et al., 2012**

| | |
|---|---|
| Sample period | 2002 - 2010 |
| Region | UK |
| Data | 256 companies (SAM) |
| Portfolio construction | Comparison between companies with high- and low-ranked Corporate Social Performance (material and immaterial) |

Humphrey et al. investigated whether firms' CSP (Corporate Social Performance) ratings impact their performance and risk examining. As input for the analysis 256 UK companies were sourced from the SAM's database (Sustainability Asset Management). The period analysed was 2002 to 2010.

SAM rates firms according to general and industry-specific ESG criteria. General criteria reflect CSP factors that are applicable to all industries. Industry-specific ESG criteria are incorporated to recognise that specific industries have particular nuances in their ESG opportunities/risks. The high-ranked (low-ranked) portfolios are formed from firms with CSP ratings above (below) the 50th percentile.

**Main result**

Humphrey et al. calculate alpha and beta values for high- and low-ranked CSP portfolios. The two main models are the Capital Asset Pricing Model (CAPM) and a Four-Factor Market Model.

- The results support the hypothesis that CSP does not have a systematic effect, neither positive or negative, on market-based financial performance.
- Neither high- nor low-ranked CSP portfolios significantly out- or underperform the market portfolio.
- There is some weak evidence of high- ranked CSP portfolios having lower betas than low-ranked CSP portfolios.

Figure 24: Difference in alphas/betas between high- and low-ranked CSP portfolios

| | | α | β |
|---|---|---|---|
| Panel A: CAPM | Total | -0.0005* | -0.15 |
| | General | -0.0009* | -0.06 |
| | Industry-specific | -0.0011* | -0.09 |
| Panel B: Four-factor market model * | Total | 0.0000* | -0.14 |
| | General | 0.0000* | -0.06 |
| | Industry-specific | 0.0002* | -0.14 |

*Factors: Market, SMB, HML, UMD (Momentum

[20] Source: Humphrey et al., 2012: Does it cost to be sustainable?

## I. Lee et al.

### No significant difference in risk-adjusted performance[21]

**Lee et al., 2012**

| | |
|---|---|
| Sample period | 2007 - 2014 |
| Region | US |
| Data | 46 - 68 companies p.a. (RobecoSAM) |
| Portfolio construction | Comparison between companies with high- and low-ranked CSP performance (material and immaterial) |

This research looks into whether portfolios comprising high-ranked corporate social performance (CSP) firms out-/underperform portfolios comprising low-ranked CSP firms.

In order to guarantee a distinct comparison, the effect of CSP on portfolio performance is investigated by creating leading and lagging CSP industry-ranked portfolios.

**Main result**

- No significant difference in the risk-adjusted performance is expected between high- and low-ranked CSP-formed portfolios.
- Little evidence was found that high- or low-ranked CSP-formed portfolios systematically differ with regard to performance, size, book-to-market or momentum factors.

After conditioning total returns for risk, the high-ranked CSP-formed portfolio within the leading industry-ranked portfolio group provided some signs of outperformance – thereby, highlighting the need to control for risk differences.

Figure 25:

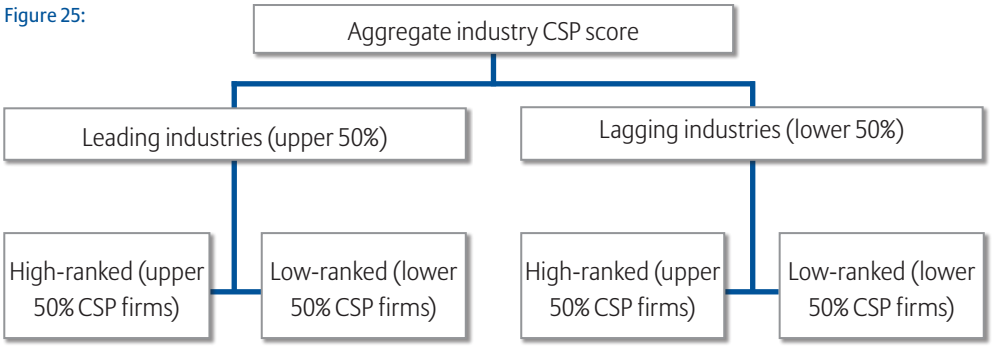



Figure 26: Descriptive statistics for sustainability-ranked portfolios

| | CSP rating | Mean return (in %) | β |
|---|---|---|---|
| All industries | Low-ranked | 0.69 | 1.09 |
| | High-ranked | 0.56 | 0.89 |
| Leading CSP industries | Low-ranked | 0.72 | 1.09 |
| | High-ranked | 0.60 | 0.58 |
| Lagging CSP industries | Low-ranked | 1.12 | 1.20 |
| | High-ranked | 0.51 | 1.13 |

Market – market excess return
SMB – Fama and French (1993) size factor
HML – Fama and French (1993) book-to-market factor
UMD – Carhart (1997) momentum factor

Figure 27: Empirical results based on four-factor model with industry controls (factors: Market, SMB, HML, UMD)

| | Outperformance (in%) Difference in α-value between high ranked and low-ranked portfolios | | |
|---|---|---|---|
| | All industries | Leading CSP industires | Lagging CSP industries |
| Panel A: Broad CSP portfolios | 0.003* | 0.003* | -0.005* |
| Panel B: High/low CSP conviction portfolios | -0.002* | 0.002* | -0.007* |
| Panel C: BOS/WOS CSP Portfolios [22] | 0.002* | 0.002* | 0.004* |

* not significant

[21] Source: Lee et al., 2012: Do high and low-ranked sustainability stocks perform differently?
[22] best of sector/worst of sector CSP portfolios

## J. Meta-studies on ESG performance effects

### Clark / Feiner / Viehs (Oxford University 2014)

| | |
|---|---|
| Sample period | 2007 - 2014 |
| Region | Various |
| Data | Analysis of over 190 sub-studies |
| Portfolio construction | Not applicable |

### More sustainable firms generally outperform less sustainable firms.

The 2014 report 'From the Stockholder to the Stakeholder: How Sustainability Can Drive Financial Outperformance' published by the University of Oxford and Arabesque Asset Management investigates over 190 academic studies on sustainability and its effect on cost of capital, operational performance and stock prices[23].

### ESG dimension view

- On the governance dimension, the literature shows that stocks from well-governed firms perform better than stocks from poorly-governed firms.
- On the environmental dimension, corporate eco-efficiency and environmentally responsible behavior are viewed as the most important factors leading to superior stock market performance.
- On the social dimension, the literature shows that good employee relations and employee satisfaction contribute to better stock market performance.

### ESG materiality results

- Superior sustainability quality as measured by aggregate sustainability scores of corporate issuers are valued by the stock market: More sustainable firms generally outperform less sustainable firms.
- There is evidence that exclusion from sustainability stock indices causes significant negative stock price reactions.
- Further evidence shows that sustainability quality provides insurance-like effects when negative events occur, helping to support the stock price upon the announcement of the negative event.
- Despite several studies showing no relationship, or a negative relationship, between sustainability scores and stock price performance. The majority of studies find a positive relationship where superior ESG quality translates into superior stock price performance, relative to firms with lower ESG quality.

**Stocks of sustainable companies tend to outperform their less sustainable counterparts.**

Figure 28:


[23] Source: Clark, Feiner, Viehs, 2014: From the Stockholder to the Stakeholder: How Sustainability Can Drive Financial Outperformance. Please note: This is for guidance only and not indicative of future results.

## Oxford Meta-Study: Studies investigated[23]

Studies partly include sub-studies: total number >190 high quality research studies

| Study authors | Time/period | ESG issue | Factor | Impact |
|---|---|---|---|---|
| 1. Aktas, de Bodt, Cousin (2011) | 1997-2007 | Intangible value assessment ratings | ESG | Positive |
| 2. Bebchuk, Cohen, Ferrell (2009) | 1990-2003 | Entrenchment index | G | Positive |
| 3. Bebchuk, Cohen, Wang (2013) | 2000-2008 | Governance quality/shareholder rights | G | No effect/no relation |
| 4. Borgers, Derwall, Koedijk, ter Horst (2013) | 1992-2009 | Stakeholder relations index | S | Mixed findings |
| 5. Brammer, Millington (2006) | 1990-1999 | Charitable giving | S | Mixed findings |
| 6. Brammer, Brooks, Pavelin (2006) | 2002-2005 | Composite CSR index | ES | Mixed findings |
| 7. Capelle-Blancard, Laguna (2010) | 1990-2005 | Environmental disasters (explosions) at chemical plants | E | Positive |
| 8. Cheung (2011) | 2002-2008 | Sustainability index inclusion/exclusion | ESG | Positive |
| 9. Core, Guay, Rusticus (2006) | 1990-1999 | Governance index/shareholder rights | G | Positive |
| 10. Core, Holthausen, Larcker (1999) | 1982-1984 | Excessive compensation | G | Positive |
| 11. Cormier, Magnan (1997) | 1986-1993 | Amount of pollution | E | Positive |
| 12. Cremers, Nair (2005) | 1990-2001 | Reversed governance index and block holder ownership | G | Positive |
| 13. Deng, Kang, Low (2013) | 1992-2007 | Composite CSR index | ESG | Positive |
| 14. Derwall, Guenster, Bauer, Koedijk (2005) | 1995-2003 | Corporate eco-efficiency | E | Positive |
| 15. Doh, Howton, Howton, Siegel (2010) | 2000-2005 | Sustainability index inclusion/exclusion | ESG | Mixed |
| 16. Eccles, Ioannou, Serafeim (2013) | 1991-2010 | Corporate sustainability index | ESG | Positive |
| 17. Edmans (2011) | 1984-2009 | Employee satisfaction | S | Positive |
| 18. Edmans (2012) | 1984-2011 | Employee satisfaction | S | Positive |
| 19. Edmans, Li, Zhang (2014) | 1984-2013 | Employee satisfaction | S | Positive |
| 20. Faleye, Trahan (2011) | 1998-2005 | Employee satisfaction | S | Positive |
| 21. Fisher-Vanden, Thorburn (2011) | 1993-2008 | Environmental performance initiative participation | E | Positive |
| 22. Flammer (2013a) | 1980-2005 | Corporate environmental footprint | E | Positive |
| 23. Flammer (2013b) | 1997-2011 | Shareholder-sponsored CSR proposals | ESG | Positive |
| 24. Giroud, Mueller (2010) | 1976-1995 | Industry concentration | G | Positive |
| 25. Giroud, Mueller (2011) | 1990-2006 | Governance index in highly concentrated industries | G | Positive |
| 26. Godfrey, Merrill, Hansen (2009) | 1991-2002 | Social initiative participation | ESG | Positive |
| 27. Gompers,arehii, Metrick (2003) | 1990-1998 | Shareholder rights | G | Positive |
| 28. Hamilton (1995) | 1989 | Volume of toxic releases | E | Positive |
| 29. Jacobs, Singhai, Subramanian (2010) | 2004-2006 | Environmental performance | E | Mixed findings |
| 30. Johnson, Moorman, Sorescu (2009) | 1990-1999 | Governance quality/shareholder rights | G | No effect/no relation |
| 31. Karpoff, Lott, Wehrly (2005) | 1980-2000 | Environmental regulation violations | ESG | Positive |
| 32. Karpoff, Lee, Martin (2008) | 1978-2002 | Financial misrepresentation | G | Positive |
| 33. Kaspereit, Lopatte (2013) | 2001-2011 | Corporate sustainability and GRI | ESG | Positive |
| 34. Klassen, McLaughlin (1996) | 1985-1991 | Environmental management awards | E | Positive |
| 35. Lee, Faff (2009) | 1998-2002 | Corporate sustainability quality | ESG | Negative |
| 36. Smithey Fulmer, Gerhart, Scott (2003) | 1998 | Employee wellbeing | S | Positive |
| 37. Statman, Glushkov (2009) | 1992-2007 | Composite CSR index | ES | Positive |
| 38. Yermack (1996) | 1984-1991 | Reductions in board size | G | Positive |

[23] Source: Clark, Feiner, Viehs, 2014: From the Stockholder to the Stakeholder: How Sustainability Can Drive Financial Outperformance.
Please note: This is for guidance only and not indicative of future results.

# APPENDIX 2: Details on MSCI ESG vs. MSCI traditional Index analysis

## MSCI benchmark analysis: Relatively vs. the Traditional MSCI Index, the MSCI Global Emerging markets index has performed strongly; for Global Developed Equity very little ESG difference[24]

Figure 29: Difference in Gross Return between MSCI ESG and Traditional Index

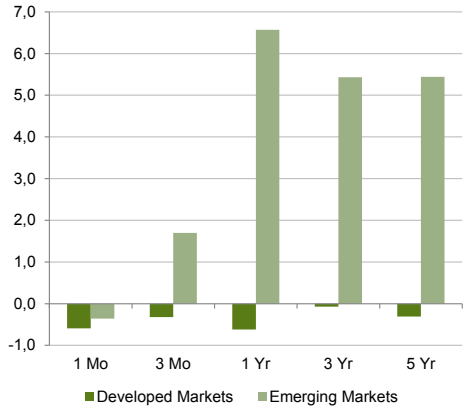



Figure 30: Difference in Sharpe Ration between MSCI ESG and Traditional Index

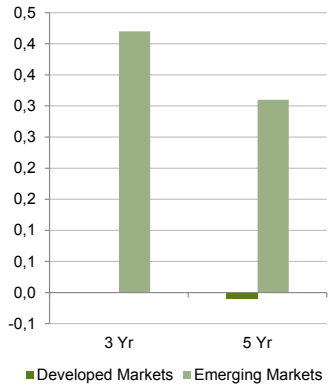
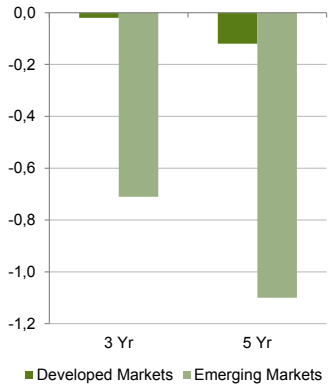



Figure 31: Difference in Standard Deviation between MSCI ESG and Traditional Index




## Within developed Equity, MSCI ESG benchmarks performed better vs. the Traditional Index unlike the US[24]

Figure 32: Difference in Gross Return between MSCI ESG and Traditional Index

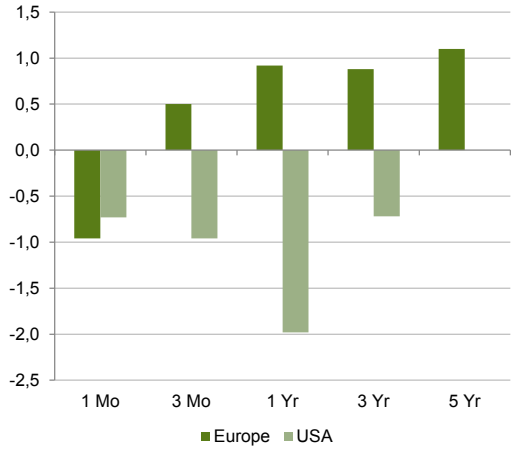



Figure 33: Difference in Sharpe Ration between MSCI ESG and Traditional Index

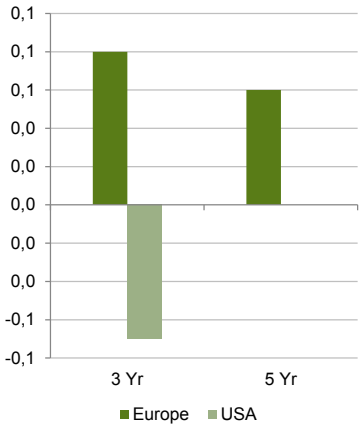
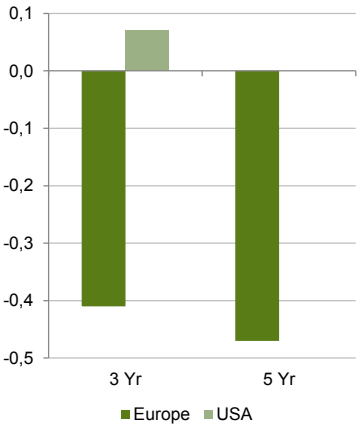



Figure 34: Difference in Standard Deviation between MSCI ESG and Traditional Index




In Europe, the impact of ESG integration on investment performance is directionally positive. In the US it is rather slightly negative according to this analysis.

[24] Sources: AllianzGI based on MSCI data, 2015.
Please note: the conclusions from the research studies analysed and summarised in this report do not necessarily reflect AllianzGI's – risklab's investment opinion. The research does not imply investment advice or investment performance related forecasts.

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