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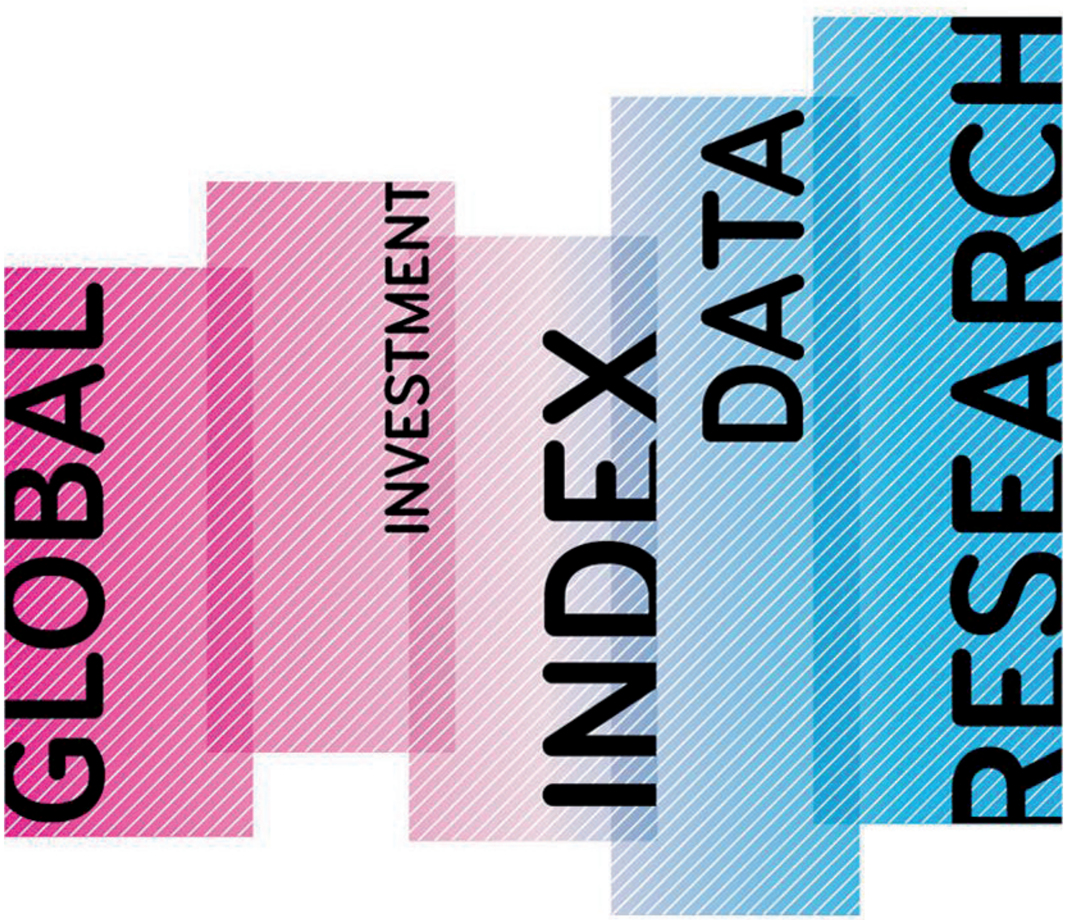
STOXX® ESG-X INDICES

Anand Venkataraman, Head of Product Management and Ladi Williams, Product Manager, STOXX Ltd.



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INTRODUCTION

In our paper on the STOXX Europe 600 ESG-X Index, which was published in December 2018, we mentioned ESG surveys pointing to the increasing adoption of sustainable investing, the challenges associated with environmental, social and governance (ESG) investment considerations, and increasing regulatory and legislative pressure not only to invest along sustainable principles, but also to improve transparency and standardization in ESG reporting. Many of these subtopics were also discussed by prominent panelists at STOXX's Innovate2Invest annual conference, which was held in London on May 21, 2019.

Solutions above and beyond traditional market capitalization-weighted indices are becoming the de facto choice for benchmarks as asset owners continue to discharge their fiduciary role of investing responsibly against the backdrop of increasing investor awareness and an evolving legislative landscape for sustainability. Typically, implementing sustainability or ESG considerations during investment decision-making is likely to result in portfolios that deviate from standard market value-weighted benchmarks. The unintended exposures – and hence risks – lead to divergent characteristics and performance, tracking errors and additional management costs. In our paper on the STOXX Europe 600 ESG-X Index, we concluded that the latter delivers a risk-return performance profile that does not differ significantly in statistical terms from the STOXX Europe 600 Index while also complying with typical exclusion-based sustainability approaches. In this paper, we extend the analysis to other flagship ESG-X benchmarks (including the STOXX Europe 600 ESG-X) that cover both regional and global indices that were launched in May of this year.

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SUSTAINABLE AND RESPONSIBLE INVESTING IN PRACTICE

According to the Global Sustainable Investment Alliance (GSIA), roughly USD 31 trillion is managed professionally under sustainable investment strategies throughout the world. The GSIA defines sustainable investing as an investment approach that takes environmental, social and governance (ESG) factors into account during portfolio selection and management. Sustainable investing – which we define as also covering related terms such as responsible investing and socially responsible investing – grew globally by an annual rate of 15% between 2012 and 2018. Europe is at the forefront of this trend, accounting for nearly half of total global assets managed under this investment approach.

FIGURE 1: Growth of sustainable investing assets by region, 2012– 2016

Region	2012 (USD bn)	2014 (USD bn)	2016 (USD bn)	2018 (USD bn)	CAGR
Europe	8,758	10,775	12,040	14,075	8.2%
United States	3,740	6,572	8,723	11,995	21.4%
Canada	589	729	1,086	1,699	19.3%
Australia/New Zealand	134	148	516	734	32.8%
Japan (incl. Asia)	40	52	526	2180	94.7%
Total	**13,261**	**18,276**	**22,890**	**30,683**	**15.0%**

Source: Global Sustainable Investment Review 2018, 2016 and 2014

According to the GSIA, sustainable investing encompasses the following approaches[1]:

1. **Negative/exclusionary screening:** the exclusion from a fund or portfolio of certain sectors, companies or practices based on specific ESG criteria;
2. **Positive/best-in-class screening:** investment in sectors, companies or projects selected for positive ESG performance relative to industry peers;
3. **Norms-based screening:** screening of investments against minimum standards of business practice based on international norms such as those issued by the OECD, the ILO, the UN and UNICEF;
4. **ESG integration:** the systematic and explicit inclusion by investment managers of environmental, social and governance factors in their financial analysis;
5. **Sustainability themed investing:** investment in themes or assets specifically related to sustainability (e.g., clean energy, green technology or sustainable agriculture);
6. **Impact/community investing:** targeted investments aimed at solving social or environmental problems; these include community investing, where capital is specifically directed to traditionally underserved individuals or communities, as well as financing that is provided to businesses with a clear social or environmental purpose; and
7. **Corporate engagement and shareholder action:** the use of shareholder power to influence corporate behavior, including through direct corporate engagement (i.e., communicating with senior management and/or boards of companies), filing or co-filing shareholder proposals and proxy voting on the basis of comprehensive ESG guidelines.

All seven approaches aim to increase portfolio sustainability. However, they differ substantially with regard to their intentions. While negative and positive screening and norms-based investing only aim to increase sustainability, community investing and corporate engagement approaches aim to improve the status quo as well.

[1] Global Sustainable Investment Review 2018.

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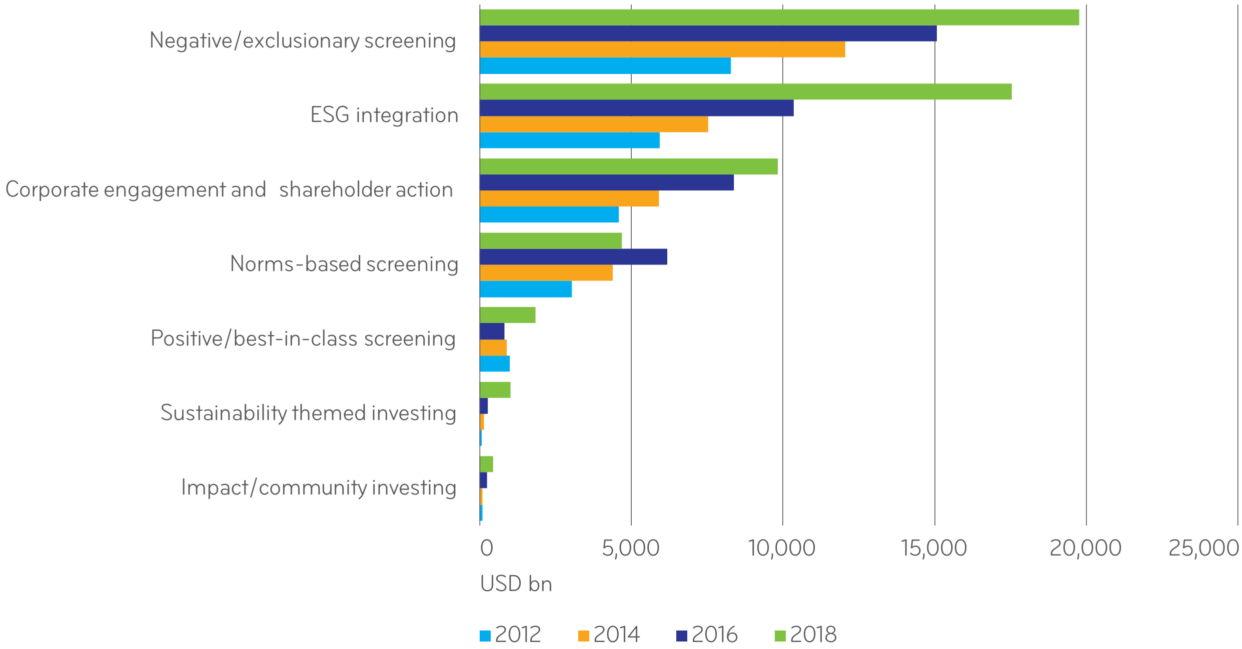
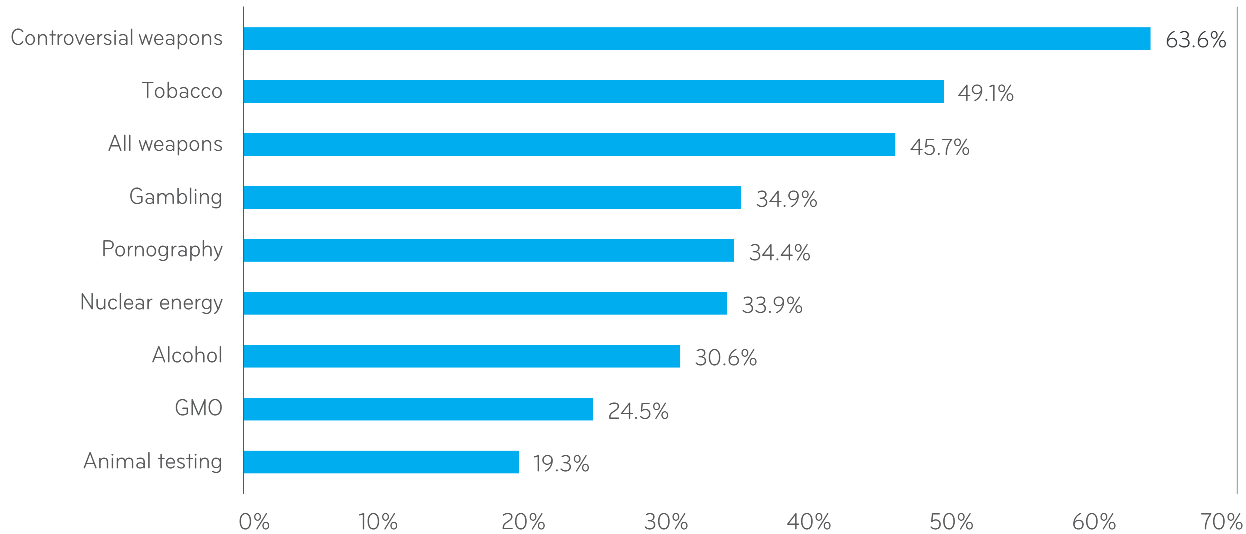
According to the GSIA, negative/exclusionary approaches have not only accumulated the most sustainable investing assets over the years, but have also grown more rapidly than other sustainable investing approaches. Negative/exclusionary screening is perhaps one of the oldest sustainable investing approaches, due to the simplicity and transparency of carving out entire countries, sectors or individual companies from an investor's portfolio. The top exclusion criterion seems to be controversial weapons, with tobacco following in second place and certain other criteria also gaining in prominence.

FIGURE 2: Growth of sustainable investing approaches 2012–2018



Source: Global Sustainable Investment Review 2018, 2016 and 2014

FIGURE 3: Top exclusion criteria



Source: Eurosif European SRI (Sustainable and Responsible Investment) Study 2018

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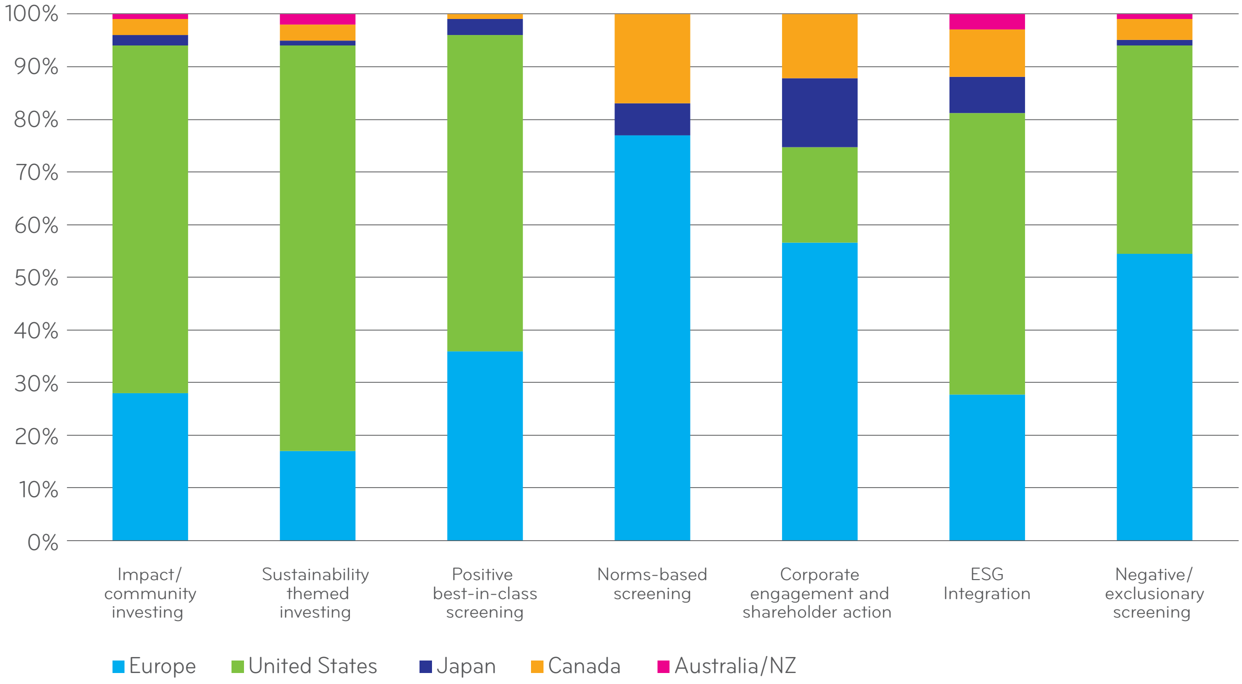
Although such exclusionary approaches are easy to explain to the end investor – and hence eliminate or reduce the subjectivity surrounding sustainable investing concerns – they frequently introduce unforeseen biases that pose practical challenges. Negative/exclusionary screening may also result in performance and diversification sacrifices.

FIGURE 4: Top exclusion criteria by region



Source: Global Sustainable Investment Review 2018

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THE STOXX ESG-X INDEX FAMILY

OVERVIEW

The market consultations with European buy-side market participants (pension funds, insurance companies and asset managers) revealed the need for liquid, low-cost benchmarks with standardized exclusions that are aligned with participants' responsible investing policies. STOXX launched the STOXX® Europe 600 ESG-X Index in Q4 2018 to serve the requirements of the negative/exclusionary sustainable investing asset base in Europe. This index is a version of Europe's popular benchmark, the STOXX Europe 600, that excludes companies using norms- and product-based screening, and hence complies with investors' sustainable investing policies.

The launch of the STOXX Europe 600 ESG-X Index and the subsequent listing of Eurex futures tracking it in Q1 2019 was followed in May by the introduction of a fully-fledged family of ESG-X benchmarks covering prominent global, regional and country options. The ESG-X family now includes a total of 43 indices, including the EURO STOXX 50® ESG-X Index, the STOXX® USA 500 ESG-X Index, the STOXX Global 1800 Index and the STOXX Global 3000 Index, among others.

METHODOLOGY

All indices in the ESG-X family are built from an initial universe of stocks that comprises the relevant market value-weighted benchmarks with the exception of constituents involved in business activities that:

- are in breach of any of the United Nations Global Compact (UNGC) Principles covering (human rights, labor, the environment and anti-corruption)
- produce or distribute controversial weapons, or
- involve tobacco manufacturing, or
- extract or consume thermal coal

The ESG-X indices share the same rules, sector composition and methodology – including the same transparent free-float market cap weighting scheme – as their respective benchmark indices (broad indices comprising the largest and most frequently traded equities). A fast exit rule in the new index ensures a swift response can be made to any ESG breaches by quickly removing offenders, hence limiting investor risk.

EXCLUSION CRITERIA

A set of exclusion criteria that builds on the UN Global Compact Principles is applied to the initial universe of stocks, along with definitions for controversial weapons, tobacco and coal. The sections below provide more detail on the exclusions.

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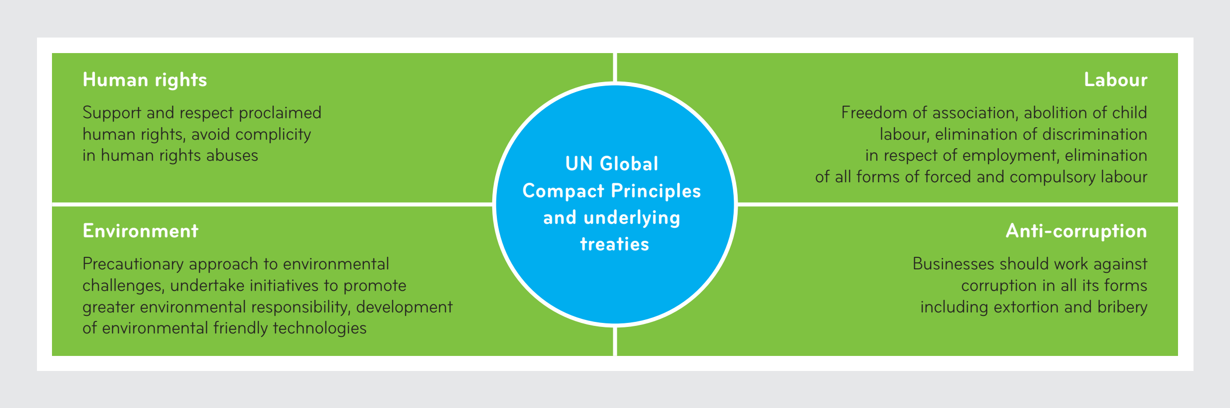
UN Global Compact Principles

FIGURE 5: UN Global Compact Principles



Note: The Ten Principles are based on conventions such as the UN Universal Declaration of Human Rights, the International Labour Organization's Declaration on Fundamental Principles and Rights at Work, the Rio Declaration on Environment and Development, and the UN Convention against Corruption.

Source: Sustainalytics research, 2019

The STOXX ESG-X indices exclude companies that Sustainalytics considers to be non-compliant with the UN Global Compact Ten Principles. Sustainalytics has defined five ESG risk levels ranging from 1 (low risk) to 5 (very high risk); level 5 companies are considered to be non-compliant with the Global Compact Principles.

Controversial weapons

The STOXX ESG-X indices exclude companies that Sustainalytics identifies as being involved with controversial weapons. The latter comprise anti-personnel mines, biological and chemical weapons, cluster weapons, depleted uranium, nuclear weapons and white phosphorus weapons.

The criteria for determining involvement are:
» Internal production or sale of controversial weapons
» The ultimate holding company owns more than 10% of the voting rights of an involved company
» More than 10% of the voting rights of a company are owned by an involved company

Tobacco

The STOXX ESG-X indices exclude companies that Sustainalytics identifies as being tobacco producers, with a 0% revenue threshold. In other words, companies deriving any revenue at all from tobacco production are excluded.

Thermal coal

The STOXX ESG-X indices exclude companies that Sustainalytics identifies as deriving:
» more than 25% of their revenues from thermal coal extraction (including thermal coal mining and exploration)
» more than 25% of their power generation capacity from coal-fired electricity, heat or steam generation capacity/thermal coal electricity production (including utilities that own/operate coal-fired power plants).

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THE FAST EXIT RULE

The ESG-X Index rules include a fast exit rule that ensures a swift response can be made to any ESG breaches by quickly removing offenders, hence limiting investor risk. If a company's ESG risk is increased to level 5 by Sustainalytics, the index constituent concerned is deleted from the index two trading days after the announcement[2]. The constituent's weight is then distributed pro rata among the remaining index constituents. However, there is no fast entry rule.

FIGURE 6: Controversy risk screening

Low	Moderate	Significant	High	Severe	Qualitative assessmnent
The controversy has a low impact on the environment and society, posing negligible risks to the company.	The controversy has a moderate impact on the environment and society, posing minimal risks to the company.	The controversy has a significant impact on the environment and society, posing significant risks to the company.	The controversy has a high impact on the environment and society, posing high risks to the company. This category often reflects strucural problems in the company.	The controversy has a severe impact on the environment and society, posing serious risks to the company. This category represents the most severe corporate conduct.	
1	2	3	4	5	Controversy and event rating

Source: Sustainalytics research, 2019

[2] See appendix A for a real-life example of how this rule was implemented in practice.

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INDEX PROFILES AND PERFORMANCE

STOXX EUROPE 600 ESG-X INDEX

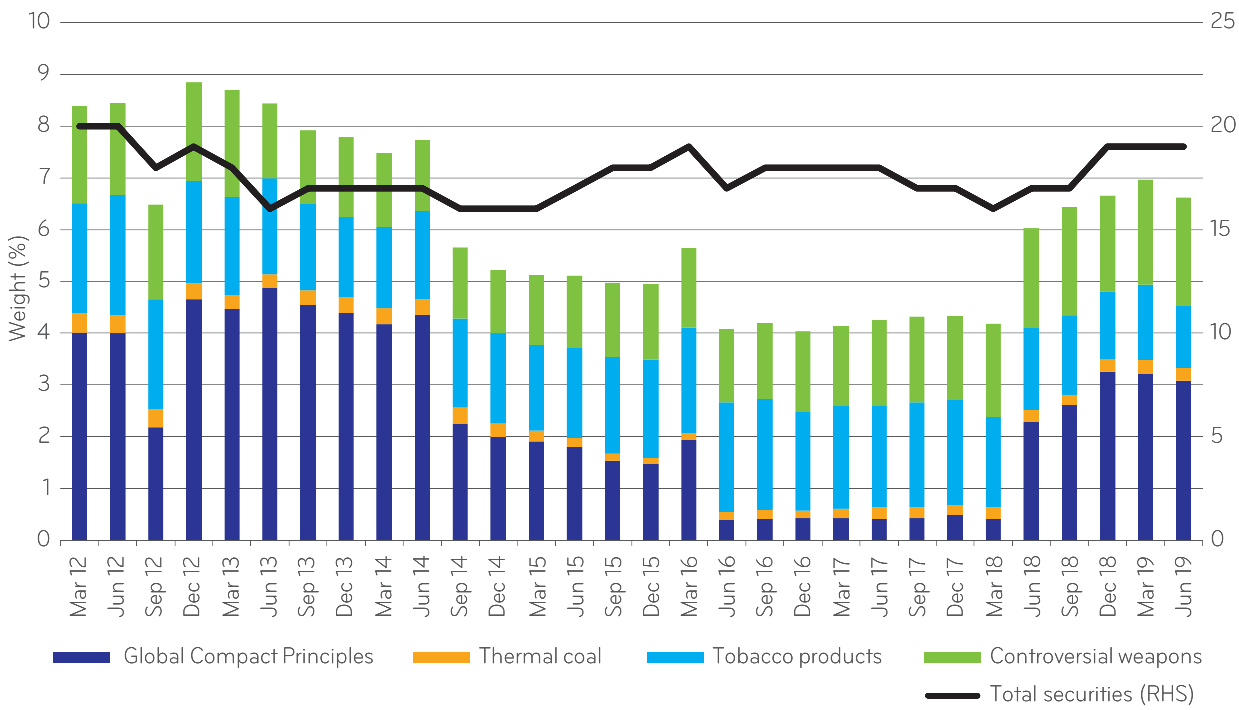
Index profile

The various exclusions resulted in an average of around 18 securities being eliminated from the benchmark (the number ranges between 16 and 20 since inception). On average, these account for a weight of 6.1% (range of between 4.0% and 8.8%) of the overall benchmark.

Since the exclusions are norms-based and product-based, they have had a variable impact on the ICB supersectors in the past, with significant underweights to the Personal & Household Goods (from tobacco exclusions) and Industrial Goods & Services (mainly from controversial weapons exclusions) sectors. Noticeably, the largest proportion of exclusions (accounting for almost half of the total) occurred within the Retail sector at index inception, but these have since dwindled to almost zero. The single largest exclusion at any point in time was 2.6% in December 2012 from the Banks sector, and was due to failure to comply with the Global Compact Principles; this represented almost 30% of the overall excluded weight for that period.

Other exclusions resulted in underweights to Banks, Health Care, Automobiles & Parts and other sectors, as can be seen from Figure 8.

FIGURE 7: Excluded securities weight by reason for exclusion



Source: STOXX Ltd.

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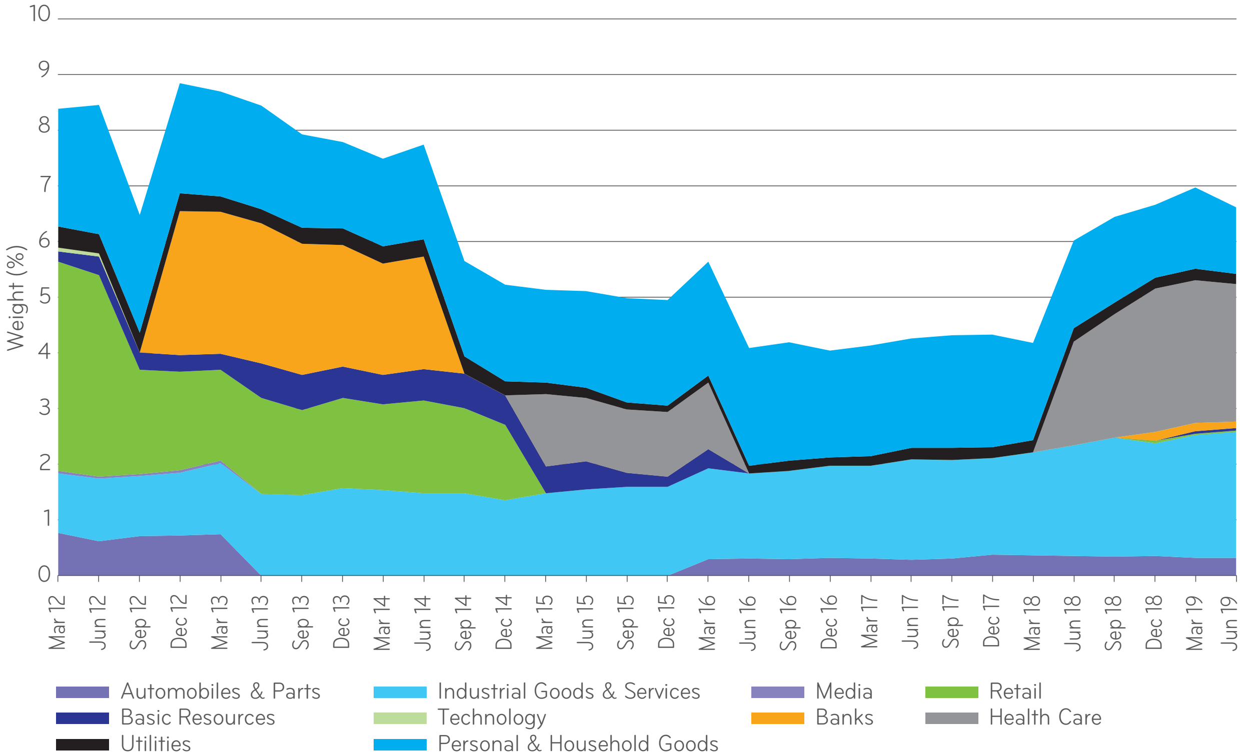
FIGURE 8: Impact of exclusions on ICB sector weights



Source: STOXX Ltd.

Impact of exclusions and overall index performance

Overall, the exclusions added 2.13 percentage points in cumulative returns to the ESG-X Index over the benchmark since inception, corresponding to 17 bp in annualized returns, while increasing the annualized volatility by 0.07 percentage points. However, the returns from the STOXX Europe 600 ESG-X Index trailed the benchmark over the most recent 1-year, 3-year and 5-year periods.

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FIGURE 9: Cumulative impact of exclusions on total returns

Source: STOXX Ltd.

However, not all the individual exclusions contributed to the incremental return, as can be seen from Figure 9[3]. The exclusion of securities relating to controversial weapons resulted in a drag on the index, whereas the other three exclusions resulted in a positive contribution over the benchmark. Interestingly, controversial weapons-based exclusions resulted in a marginal reduction in the volatility of the index (as measured by the standard deviation), though this was not enough to improve the Sharpe ratio since inception.

[3] Please note that the analyses are based on simulated portfolios that incorporate each exclusion separately and are not currently available as official indices.

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FIGURE 10: Performance analysis for the period from 16 March 2012 to 28 June 2019

STOXX Europe 600	Benchmark (BM)	ESG-X	BM ex UNGC	BM ex CW	BM ex tobacco	BM ex coal
Cumulative return since inception*	83.46%	85.59%	85.34%	82.81%	85.92%	84.52%
Return since inception	8.83%	9.00%	8.98%	8.77%	9.03%	8.92%
5y return	5.98%	5.92%	5.95%	5.93%	6.20%	6.08%
3y return	10.55%	10.53%	10.35%	10.46%	11.18%	10.65%
1y return	5.89%	5.41%	5.29%	6.03%	6.71%	6.17%
Volatility since inception	14.88%	14.95%	14.89%	14.86%	14.96%	14.88%
5y volatility	15.61%	15.65%	15.60%	15.59%	15.67%	15.61%
3y volatility	11.16%	11.19%	11.17%	11.12%	11.21%	11.16%
1y volatility	11.97%	12.05%	12.03%	11.90%	12.03%	11.97%
Sharpe ratio since inception	0.64	0.65	0.65	0.64	0.65	0.65
5y Sharpe ratio	0.45	0.45	0.45	0.45	0.46	0.46
Max. drawdown since inception	−24.93%	−25.05%	−24.70%	−24.89%	−25.26%	−24.84%
5y max. drawdown	−24.93%	−25.05%	−24.70%	−24.89%	−25.26%	−24.84%
Tracking error (TE)	-	0.50%	0.33%	0.23%	0.34%	0.13%

*All returns and volatilities are annualized, except where indicated.

Source: STOXX Ltd., data calculated using gross returns in EUR as of 28 June 2019.

A factor-based performance attribution for the STOXX Europe 600 ESG-X Index as the portfolio versus the STOXX Europe 600 Index as the benchmark reveals that the overall active return (the portfolio return less the benchmark return) of 0.18% is statistically not significant at a 95% confidence level (t-stat of 1.01). No statistically significant contribution to the active return is made by the specific return of 0.06%, the overall factor contribution of 0.12% or any of the individual factors (style, country, industry, currency and market)[4]. It is therefore reasonable to conclude that the exclusions have not resulted in any unintended biases in the STOXX Europe 600 ESG-X Index.

FIGURE 11: Performance attribution for the period from 16 March 2012 to 28 June 2019

Source of return	Contribution	Risk	IR	T-stat
Portfolio	8.64%	14.55%		
Benchmark	8.46%	14.48%		
Active	0.18%	0.48%	0.37	1.01
Specific return	0.06%	0.38%	0.15	0.42
Factor contribution	0.12%	0.29%	0.40	1.10
Style	0.00%	0.08%	−0.04	−0.12
Country	0.06%	0.16%	0.37	1.01
Industry	0.09%	0.19%	0.45	1.24
Currency	−0.03%	0.21%	−0.12	−0.33
Market	0.00%	0.00%	0.24	0.66

Source: Axioma Portfolio Analytics, STOXX Ltd., returns in EUR

In other words, excluding stocks has not altered the performance of the ESG-X Index or its risk profile compared to its market value-weighted benchmark.

[4] The cumulative contribution of the various factors and subfactors over time is shown in appendix B.

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FIGURE 12: Performance chart for the period from 16 March 2012 to 28 June 2019

Source: STOXX Ltd.

STOXX USA 500 ESG-X INDEX

Index profile

The various exclusions resulted in an average of around 35 securities being eliminated from the benchmark (the number ranges between 28 and 40 since inception). On average, these accounted for a weight of 9.2% (range of between 7.4% and 11.8%) of the overall benchmark.

Since the exclusions are norms-based and product-based, they have had a variable impact on the ICB supersectors in the past, with significant yet relatively stable underweights to the Personal & Household Goods (from tobacco exclusions), Industrial Goods & Services (from controversial weapons exclusions) and Utilities (from coal exclusions) sectors. Other noticeable exclusions have resulted in underweights to the Banks and Health Care sectors due to breaches of the Global Compact Principles; these were not represented prior to 2015, as can be seen from Figure 14. The single largest exclusion at any point in time was 1.77% for the Health Care sector in June 2016 and was attributable to the Global Compact Principles.

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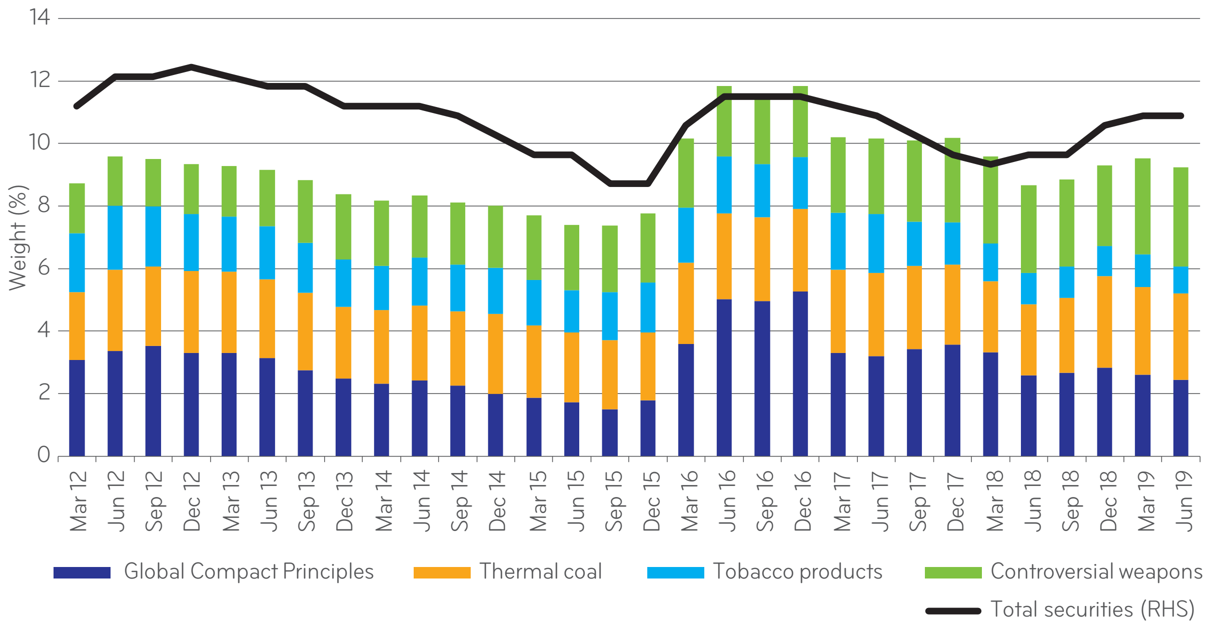
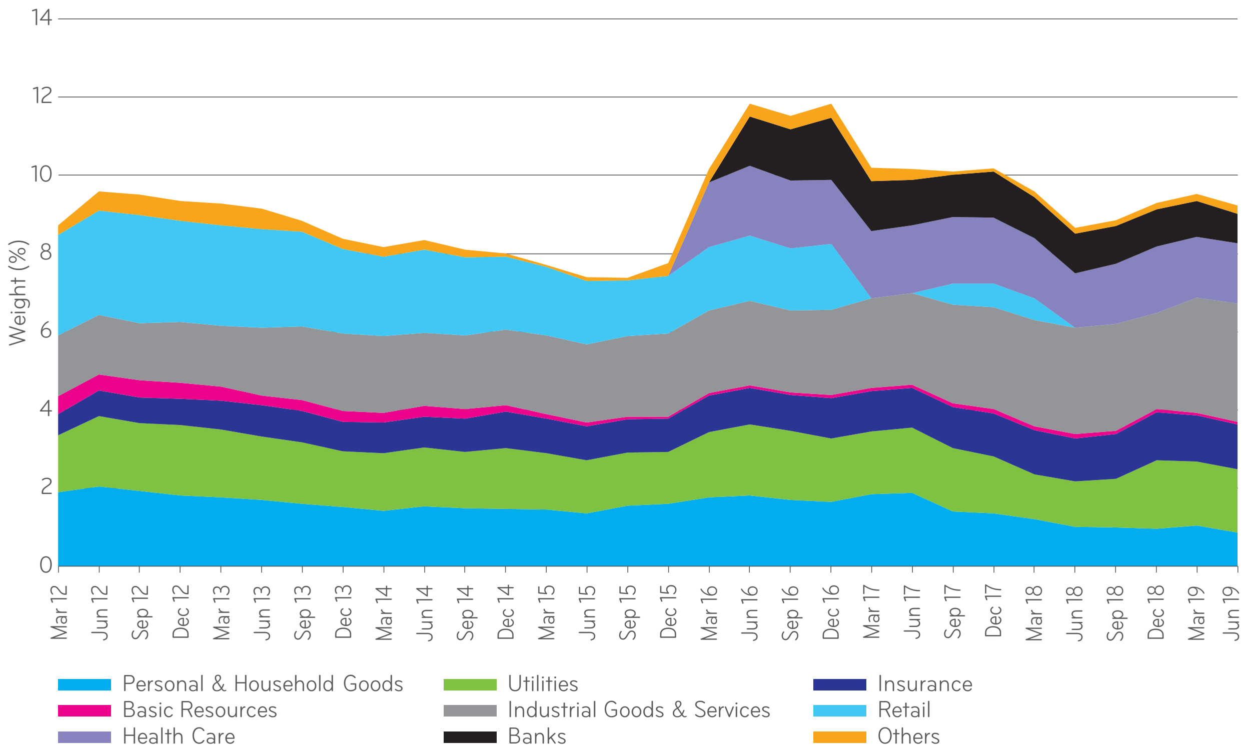
FIGURE 13: Excluded securities weight by reason for exclusion



Source: STOXX Ltd.

FIGURE 14: Impact of exclusions on ICB sector weights



Source: STOXX Ltd., data as of 28 June 2019. Factor-based performance attribution.

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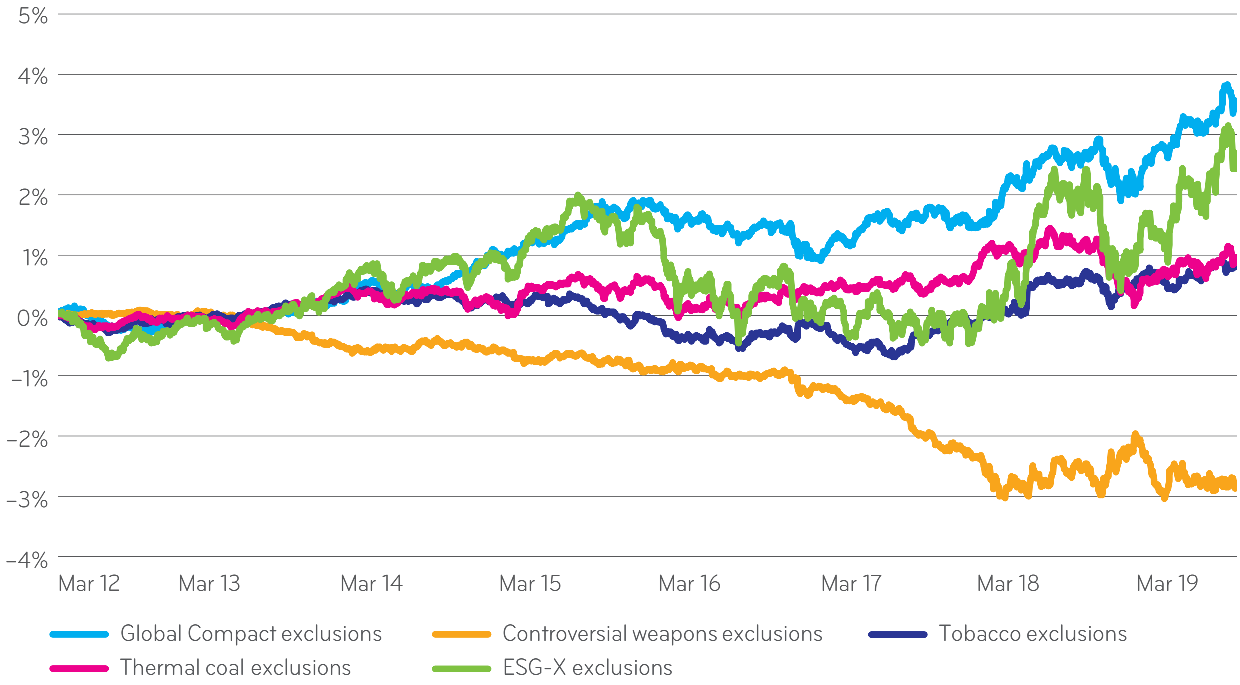
Impact of exclusions and overall index performance

Overall, the exclusions added 1.29 percentage points in cumulative returns over the STOXX USA 500 Index since inception, corresponding to 8 bp in annualized returns, while increasing the annualized volatility by 0.35 percentage points. The STOXX USA 500 ESG-X Index returns have led its benchmark even in the most recent 1-year, 3-year and 5-year periods.

FIGURE 15: Cumulative impact of exclusions on total returns



Source: STOXX Ltd., data as of 28 June 2019

However, not all the individual exclusions contributed to incremental returns, as can be seen from Figure 15[5]. The exclusion of securities relating to controversial weapons resulted in a drag on the index whereas the other three exclusions resulted in a positive contribution over the benchmark. However, all four types of exclusions resulted in an increase in the volatility (as measured by the standard deviation) of the resulting portfolio.

[5] Please note that the analyses are based on simulated portfolios that incorporate each exclusion separately and are not currently available as official indices.

STOXX® ESG-X INDICES

FIGURE 16: Performance analysis for the period from 16 March 2012 to 28 June 2019

STOXX USA 500	Benchmark (BM)	ESG-X	ex UNGC	ex CW	ex tobacco	ex coal
Cumulative return since inception*	140.32%	142.73%	143.65%	137.49%	141.21%	141.19%
Return since inception	12.90%	13.06%	13.11%	12.71%	12.96%	12.96%
5y return	10.84%	10.95%	11.07%	10.65%	10.87%	10.87%
3y return	15.58%	16.05%	15.81%	15.36%	15.85%	15.72%
1y return	10.84%	10.90%	11.03%	10.76%	11.00%	10.65%
Volatility since inception	12.99%	13.27%	13.03%	13.00%	13.07%	13.12%
5y volatility	13.42%	13.72%	13.46%	13.44%	13.50%	13.56%
3y volatility	12.40%	12.72%	12.48%	12.42%	12.47%	12.54%
1y volatility	15.49%	15.97%	15.63%	15.50%	15.59%	15.70%
Sharpe ratio since inception	99.92%	99.15%	101.10%	98.61%	99.81%	99.47%
5y Sharpe ratio	83.39%	82.64%	84.76%	82.01%	83.21%	82.91%
Max. drawdown since inception	−19.58%	−19.90%	−19.66%	−19.49%	−19.58%	−19.90%
5y max. drawdown	−19.58%	−19.90%	−19.66%	−19.49%	−19.58%	−19.90%
Tracking error (TE)	-	0.62%	0.29%	0.25%	0.23%	0.27%

*All returns and volatilities are annualized, except where indicated.

Source: STOXX Ltd., data calculated using gross returns in USD as of 28 June 2019.

A factor-based performance attribution for the STOXX USA 500 ESG-X Index as the portfolio versus the STOXX USA 500 Index as the benchmark reveals that the overall active return (the portfolio return less the benchmark return) of 0.12%[6] is statistically not significant at a 95% confidence level (t-stat of 0.53). Neither the specific return of 0.03% nor the overall factor contribution of 0.09% makes a statistically significant contribution to the active return[7].

FIGURE 17: Performance attribution for the period from 16 March 2012 to 28 June 2019

Source of return	Contribution	Risk	IR	T-stat
Portfolio	12.65%	12.95%		
Benchmark	12.53%	12.68%		
Active	0.12%	0.60%	0.20	0.53
Specific return	0.03%	0.40%	0.06	0.18
Factor contribution	0.09%	0.34%	0.27	0.73
Style	−0.13%	0.16%	−0.83	−2.28
Country	0.00%	0.01%	0.40	1.09
Industry	0.22%	0.26%	0.85	2.33
Currency	0.00%	0.01%	0.14	0.38
Market	0.00%	0.00%	−0.30	−0.82

Source: Axioma Portfolio Analytics, STOXX Ltd.

6 Factor-based performance attribution performed using Axioma Portfolio Analytics. The annualized active returns (the difference between the ESG-X Index return and the benchmark return in each case) obtained from Axioma differ slightly from those derived from the actual index returns. We believe that this return differential may be the result of a difference in the treatment of corporate actions at Axioma compared to the official STOXX methodology. In line with this, we consider the difference and its likely impact to be minimal for the performance of the attribution.

7 The cumulative contribution of the various factors and subfactors over time is shown in appendix B.

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The exclusions resulted in an overweight/underweight to industries resulting in statistically significant contribution to the active return. However, they also had an impact on style that offsets most of the contribution from the industry factor, resulting in an overall impact on the factor contribution that is statistically not significant. In other words, excluding stocks has not significantly altered the overall performance of the ESG-X Index or its risk profile as compared to its market value-weighted benchmark, despite the small biases that were introduced.

FIGURE 18: Performance chart for the period from 16 March 2012 to 28 June 2019

Source: STOXX Ltd.

STOXX GLOBAL 1800 ESG-X INDEX

Index profile

The various exclusions resulted in an average of around 79 securities being eliminated from the benchmark (the number ranges between 70 and 91 since inception). On average, these accounted for a weight of 7.3% (range of between 6.0% and 8.5%) of the overall benchmark.

Since the exclusions are norms-based and product-based, they have had a variable impact on ICB supersectors in the past, with significant underweights to the Personal & Household Goods (from tobacco exclusions), Industrial Goods & Services (mainly from controversial weapons exclusions) and Utilities (mainly from coal exclusions) sectors. Other exclusions resulted in underweights to the Banks, Insurance and Health Care sectors, as can be seen from Figure 20. Although it accounted for the largest proportion of exclusions at inception with a weight of 2.2%, the Oil & Gas sector now reflects the same composition as its benchmark as of the most recent review. The single largest exclusion at any point in time was 1% for the Health Care sector in June 2016 and was attributable to the Global Compact Principles.

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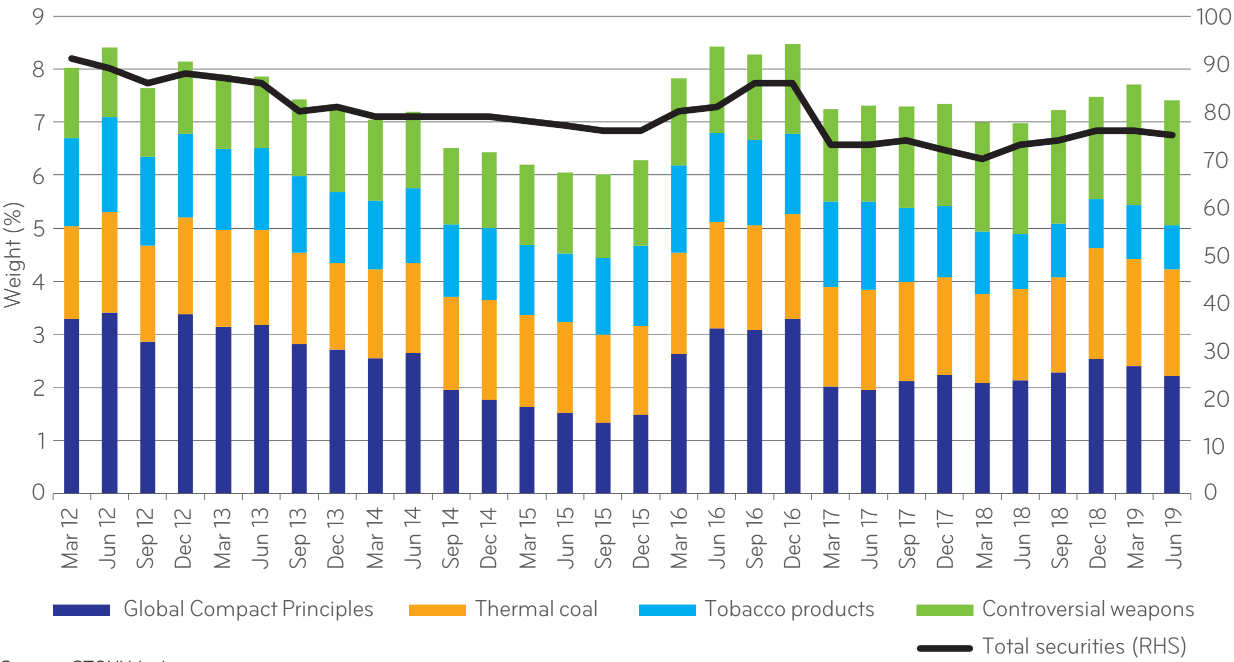
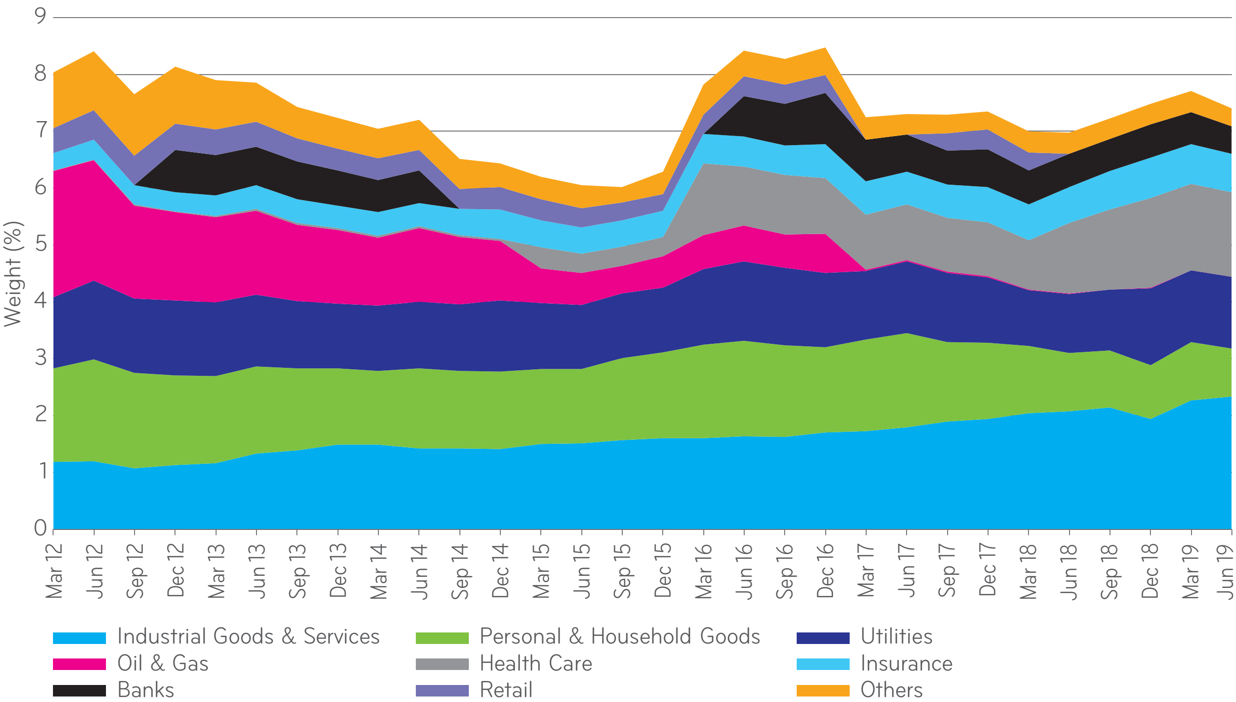
FIGURE 19: Excluded securities weight by reason for exclusion



Source: STOXX Ltd.

FIGURE 20: Impact of exclusions on ICB sector weights



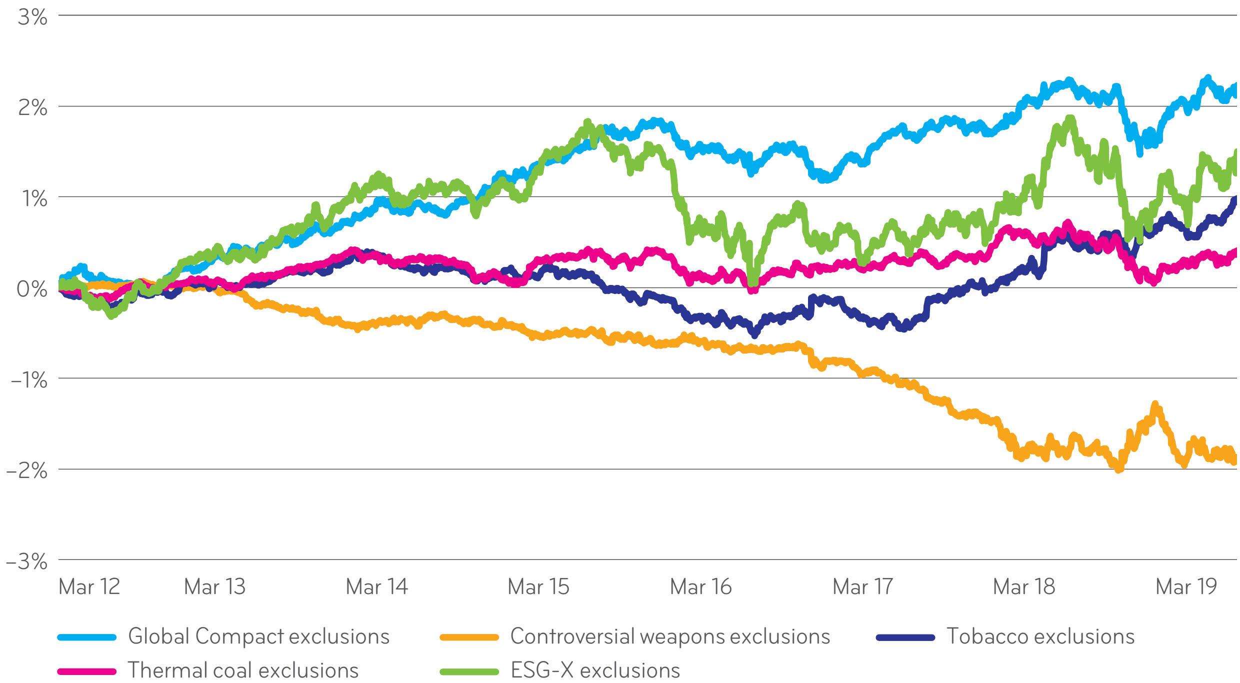
Source: STOXX Ltd., data as of 28 June 2019

STOXX® ESG-X INDICES

Impact of exclusions and overall index performance

Overall, the exclusions added 1.50 percentage points in cumulative returns to the ESG-X Index over the benchmark since inception, corresponding to 12 bp in annualized returns, while increasing the annualized volatility by 0.13 percentage points. However, the returns from the STOXX Global 1800 ESG-X Index trailed its benchmark over the most recent 1-year and 5-year periods, whereas returns over the most recent 3-year period led it.

FIGURE 21: Cumulative impact of exclusions on total returns



Source: STOXX Ltd., data as of 28 June 2019

However, not all the individual exclusions contributed to the incremental return, as can be seen from Figure 21[8]. The exclusion of securities relating to controversial weapons resulted in a drag on the index, whereas the other three exclusions resulted in a positive contribution over the benchmark. Interestingly, controversial weapons-based exclusion resulted in a marginal reduction in the volatility of the simulated portfolio (as measured by the standard deviation), though this was not enough to improve the Sharpe ratio since inception.

[8] Please note that the analyses are based on simulated portfolios that incorporate each exclusion separately and are not currently available as official indices.

STOXX® ESG-X INDICES

FIGURE 22: Performance analysis for the period from 16 March 2012 to 28 June 2019

STOXX Global 1800	Benchmark	ESG-X	ex UNGC	ex CW	ex tobacco	ex coal
Cumulative return since inception*	98.27%	99.77%	100.50%	96.40%	99.26%	98.68%
Return since inception	10.01%	10.13%	10.18%	9.87%	10.09%	10.04%
5y return	7.30%	7.29%	7.40%	7.14%	7.37%	7.30%
3y return	13.75%	14.01%	13.82%	13.58%	14.08%	13.84%
1y return	7.42%	7.27%	7.34%	7.35%	7.70%	7.32%
Volatility since inception	11.15%	11.28%	11.17%	11.13%	11.20%	11.22%
5y volatility	11.23%	11.35%	11.24%	11.21%	11.27%	11.30%
3y volatility	9.74%	9.86%	9.77%	9.71%	9.78%	9.80%
1y volatility	12.07%	12.26%	12.15%	12.01%	12.13%	12.17%
Sharpe ratio since inception	0.91	0.91	0.92	0.90	0.91	0.91
5y Sharpe ratio	0.68	0.68	0.69	0.67	0.69	0.68
Max. drawdown since inception	−18.08%	−18.03%	−18.06%	−18.03%	−17.81%	−18.31%
5y max. drawdown	−18.08%	−18.03%	−18.06%	−18.03%	−17.81%	−18.31%
Tracking error (TE)	-	0.40%	0.21%	0.17%	0.18%	0.17%

*All returns and volatilities are annualized, except where indicated.

Source: STOXX Ltd., data calculated using gross returns in USD as of 28 June 2019.

A factor-based performance attribution for the STOXX Global 1800 ESG-X Index as the portfolio versus the STOXX Global 1800 Index as the benchmark reveals that the overall active return (the portfolio return less the benchmark return) of 0.11% is statistically not significant at a 95% confidence level (t-stat of 0.78). Neither the specific return of 0.08% nor the overall factor contribution of 0.03% make a statistically significant contribution to the active return[9].

FIGURE 23: Performance attribution for the period from 16 March 2012 to 28 June 2019

Source of return	Contribution	Risk	IR	T-stat
Portfolio	9.77%	10.98%		
Benchmark	9.66%	10.85%		
Active	**0.11%**	**0.38%**	**0.29**	**0.78**
Specific return	**0.08%**	**0.24%**	**0.32**	**0.88**
Factor contribution	**0.03%**	**0.27%**	**0.12**	**0.33**
Style	−0.07%	0.11%	−0.69	−1.90
Country	0.02%	0.16%	0.15	0.41
Industry	0.14%	0.19%	0.71	1.94
Currency	−0.05%	0.10%	−0.49	−1.36
Market	0.00%	0.00%	−0.12	−0.33

Source: Axioma Portfolio Analytics, STOXX Ltd.

The exclusions resulted in an overweight/underweight to industries that made a small contribution to the active return, though style offsets some of this already small industry contribution, resulting in an overall impact on the factor contribution that is statistically not significant. It is therefore reasonable to conclude that the exclusions have not resulted in any unintended biases in the STOXX Global 1800 ESG-X Index.

[9] The cumulative contribution of the various factors and subfactors over time is shown in appendix B.

STOXX® ESG-X INDICES

Exclusion of stocks has not significantly altered the overall performance of the ESG-X Index or its risk profile as compared to its market value-weighted benchmark.

FIGURE 24: Performance chart for the period from 16 March 2012 to 28 June 2019

Source: STOXX Ltd.

STOXX GLOBAL 3000 ESG-X INDEX

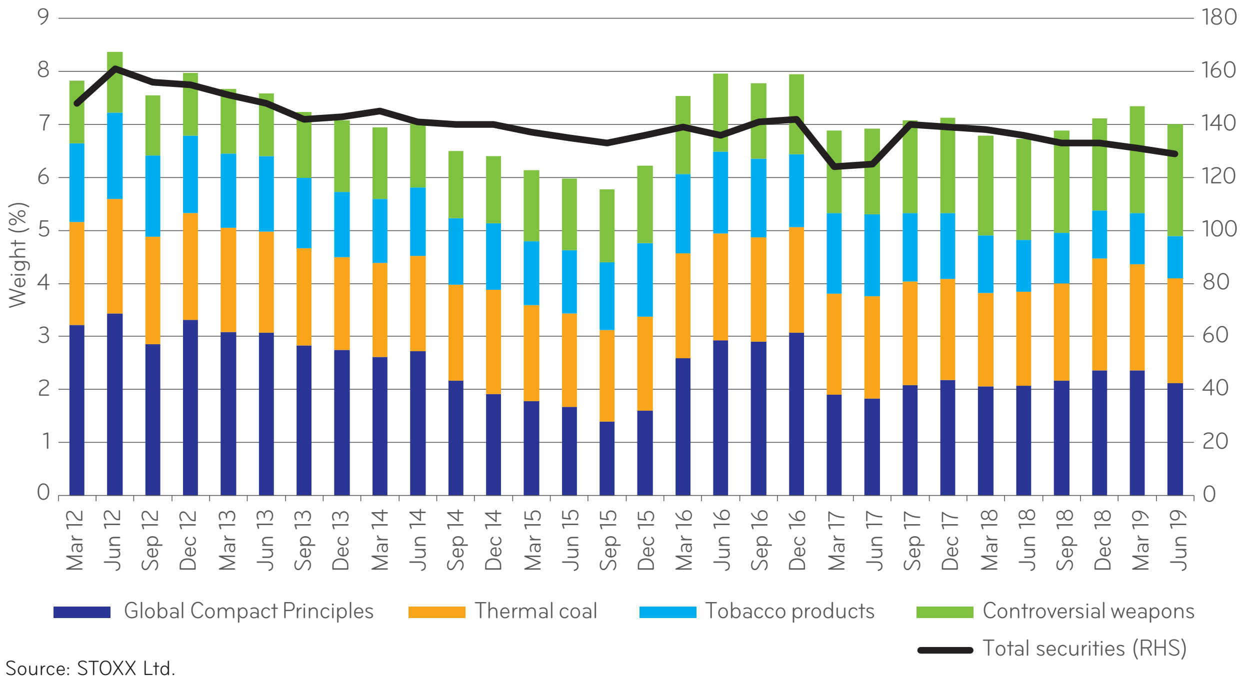
Index profile

The various exclusions resulted in an average of around 140 securities being eliminated from the benchmark (the number ranges between 124 and 161 since inception). On average, these accounted for a weight of 7.1% (range of between 5.8% and 8.4%) of the overall benchmark.

Since the exclusions are norms-based and product-based, they have had a variable impact on ICB supersectors in the past, with significant underweights to the Personal & Household Goods (from tobacco exclusions), Industrial Goods & Services (mainly from controversial weapons exclusions) and Utilities (mainly from coal exclusions) sectors. Other exclusions have resulted in underweights to the Banks, Insurance, Basic Resources, Health Care and other sectors, as can be seen from Figure 26. The single largest exclusion at any point in time was 0.84% for the Health Care sector in June 2016 and was attributable to the Global Compact Principles.

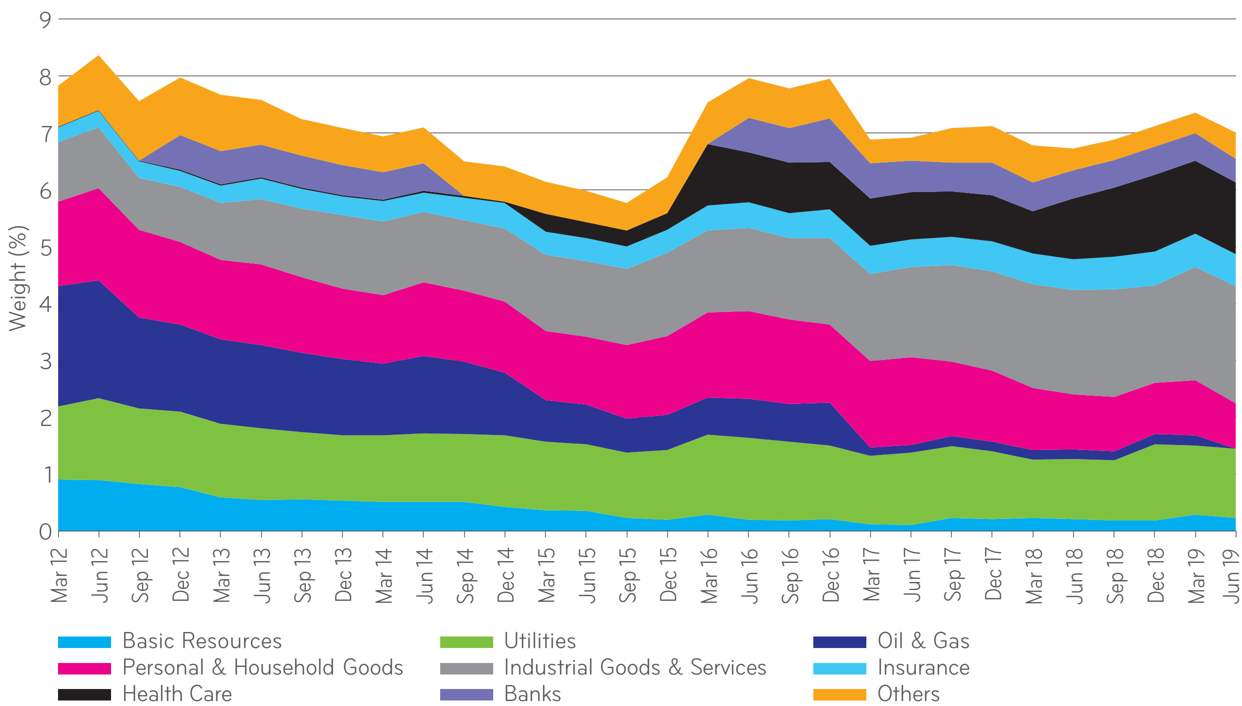
STOXX® ESG-X INDICES

FIGURE 25: Excluded securities weight by reason for exclusion



Source: STOXX Ltd.

FIGURE 26: Impact of exclusions on ICB sector weights



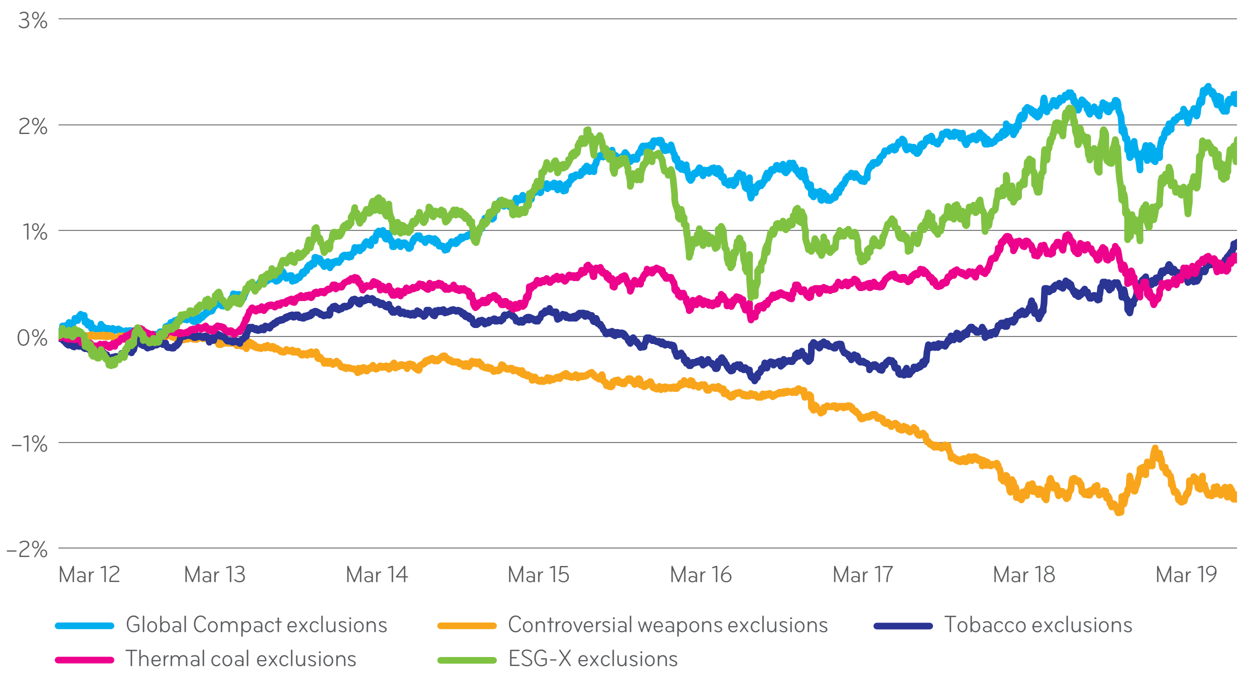
STOXX Ltd., data as of 28 June 2019. Factor-based performance attribution.

STOXX® ESG-X INDICES

Impact of exclusions and overall index performance

Overall, the exclusions added 1.86 percentage points in cumulative returns to the ESG-X Index over the benchmark since inception, corresponding to 15 bp in annualized returns, while increasing the annualized volatility by 0.11 percentage points. STOXX Global 3000 ESG-X Index returns over the most-recent 3-year and 5-year periods led the benchmark, whereas the return over the most recent 1-year period trailed it.

FIGURE 27: Cumulative impact of exclusions on total returns



Source: STOXX Ltd., data as of 28 June 2019

Not all the individual exclusions contributed to the incremental return, however, as can be seen from Figure 27[10]. The exclusion of securities relating to controversial weapons resulted in a drag on the index, whereas the other three exclusions resulted in a positive contribution over the benchmark. Interestingly, controversial weapons-based exclusions resulted in a marginal reduction in the volatility of the index (as measured by the standard deviation), though this was not enough to improve the Sharpe ratio since inception.

[10] Please note that the analyses are based on simulated portfolios that incorporate each exclusion separately and are not currently available as official indices.

STOXX® ESG-X INDICES

FIGURE 28: Performance analysis for the period from 16 March 2012 to 28 June 2019

STOXX Global 3000	Benchmark	ESG-X	ex UNGC	ex CW	ex tobacco	ex coal
Cumulative return since inception*	88.64%	90.50%	90.93%	87.14%	89.53%	89.40%
Return since inception	9.25%	9.40%	9.44%	9.13%	9.32%	9.31%
5y return	6.82%	6.85%	6.94%	6.69%	6.89%	6.84%
3y return	13.45%	13.70%	13.52%	13.30%	13.74%	13.55%
1y return	7.10%	6.97%	7.05%	7.06%	7.37%	7.04%
Volatility since inception	11.01%	11.12%	11.01%	10.99%	11.05%	11.08%
5y volatility	11.07%	11.19%	11.08%	11.06%	11.12%	11.15%
3y volatility	9.56%	9.68%	9.58%	9.54%	9.60%	9.63%
1y volatility	11.80%	11.99%	11.87%	11.75%	11.86%	11.90%
Sharpe ratio since inception	0.86	0.86	0.87	0.85	0.86	0.86
5y Sharpe ratio	0.65	0.65	0.66	0.64	0.65	0.65
Max. drawdown since inception	−18.81%	−19.23%	−18.63%	−18.88%	−19.10%	−18.96%
5y max. drawdown	−18.81%	−19.23%	−18.63%	−18.88%	−19.10%	−18.96%
Tracking error (TE)	-	0.36%	0.18%	0.15%	0.16%	0.16%

*All returns and volatilities are annualized, except where indicated.

Source: STOXX Ltd., data calculated using gross returns in USD as of 28 June 2019.

A factor-based performance attribution for the STOXX Global 3000 ESG-X Index as the portfolio versus the STOXX Global 3000 Index as the benchmark reveals that the overall active return (the portfolio return less the benchmark return) of 0.13% is statistically not significant at the 95% confidence level (t-stat of 1.05). No statistically significantly contribution to the active return is made by the specific return of 0.07%, the overall factor contribution of 0.06% or other factors (style, country, currency and market) with the exception of industry.[11]

FIGURE 29: Performance attribution for the period from 16 March 2012 to 28 June 2019

Source of return	Contribution	Risk	IR	T-stat
Portfolio	9.06%	10.84%		
Benchmark	8.93%	10.72%		
Active	0.13%	0.34%	0.38	1.05
Specific return	0.07%	0.20%	0.34	0.94
Factor contribution	0.06%	0.24%	0.25	0.68
Style	−0.06%	0.10%	−0.62	−1.69
Country	0.02%	0.12%	0.19	0.52
Industry	0.14%	0.18%	0.79	2.16
Currency	−0.05%	0.08%	−0.55	−1.51
Local	0.00%	0.00%	0.34	0.93
Market	0.00%	0.00%	0.09	0.25

Source: Axioma Portfolio Analytics, STOXX Ltd.

[11] The cumulative contribution of the various factors and subfactors over time is shown in appendix B.

STOXX® ESG-X INDICES

The exclusions resulted in an overweight/underweight to industries that led to a small but statistically significant contribution to the active return. However, the magnitude of such returns is relatively small (a maximum of 5.7 bp of the annualized return) since inception. Additionally, style offsets some of this already small contribution from industry, resulting in an overall impact on factor contribution that is statistically not significant.

In other words, excluding stocks has not significantly altered the performance of the overall ESG-X Index or its risk profile as compared to its market value-weighted benchmark, despite small industry biases.

FIGURE 30: Performance chart for the period from 16 March 2012 to 28 June 2019

Source: STOXX Ltd.

STOXX JAPAN 600 ESG-X INDEX

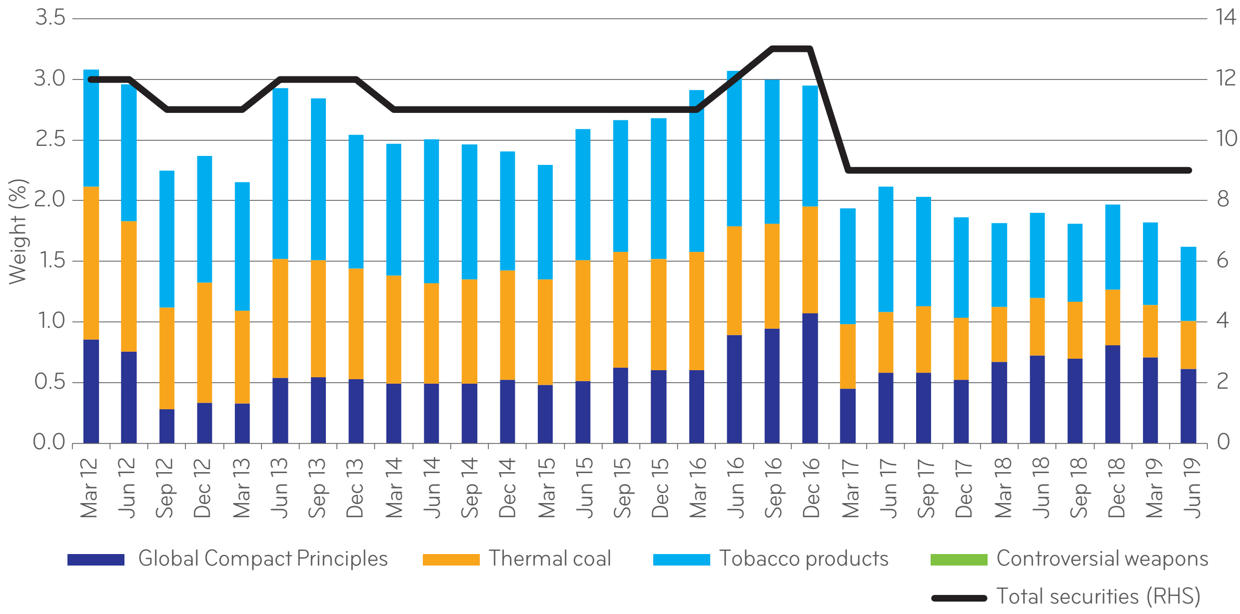
Index profile

The various exclusions resulted in an average of around 11 securities being eliminated from the benchmark (the count ranges between 9 and 13 since inception). On average, these accounted for a weight of 2.4% (range of between 1.6% and 3.1%) of the overall benchmark.

Since the exclusions are norms-based and product-based, they have had a variable impact on ICB super-sectors in the past, with significant underweights to the Personal & Household Goods (from tobacco exclusions), Chemicals and Utilities (mainly from coal exclusions) sectors. Additionally, exclusions resulted in underweights to other sectors such as Industrial Goods & Services, as can be seen from Figure 32. The single largest exclusion at any point in time was 1.4% from the Personal & Household Goods sector in June 2013 due to tobacco exclusion, which represented almost 50% of the weight of all excluded securities.

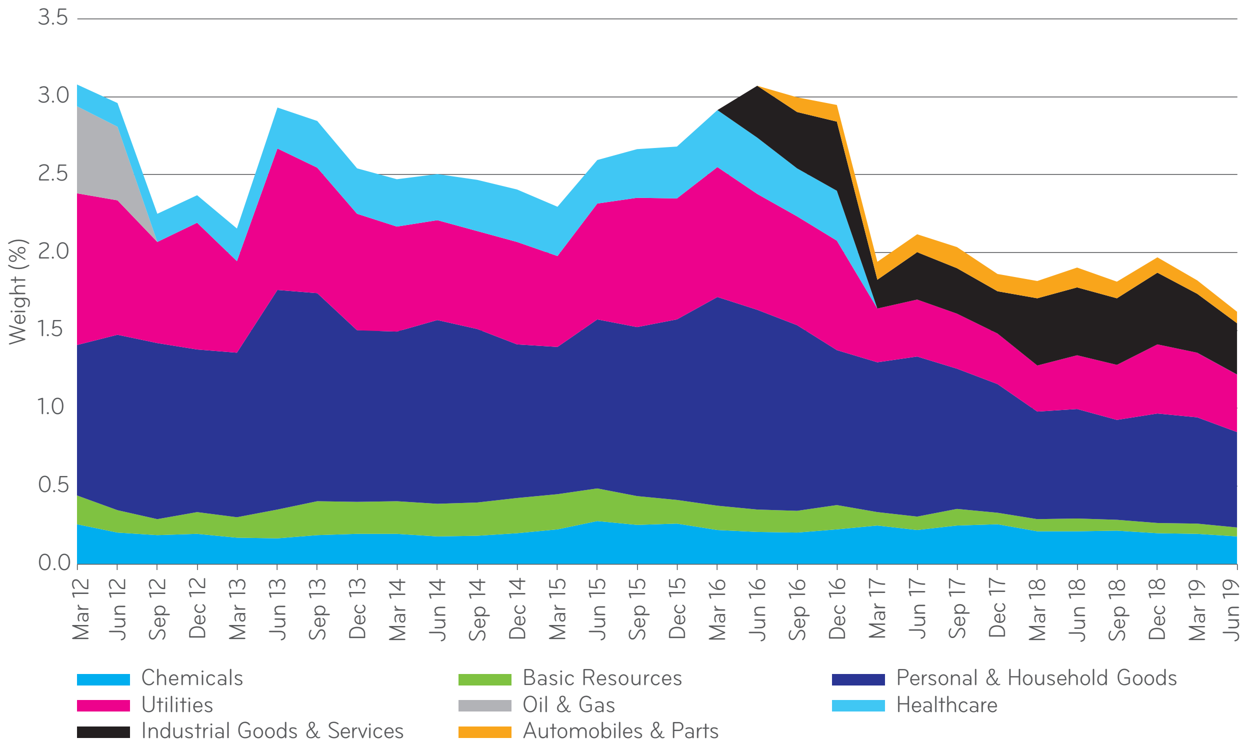
STOXX® ESG-X INDICES

FIGURE 31: Excluded securities weight by reason for exclusion



Source: STOXX Ltd.

FIGURE 32: Impact of exclusions on ICB sector weights



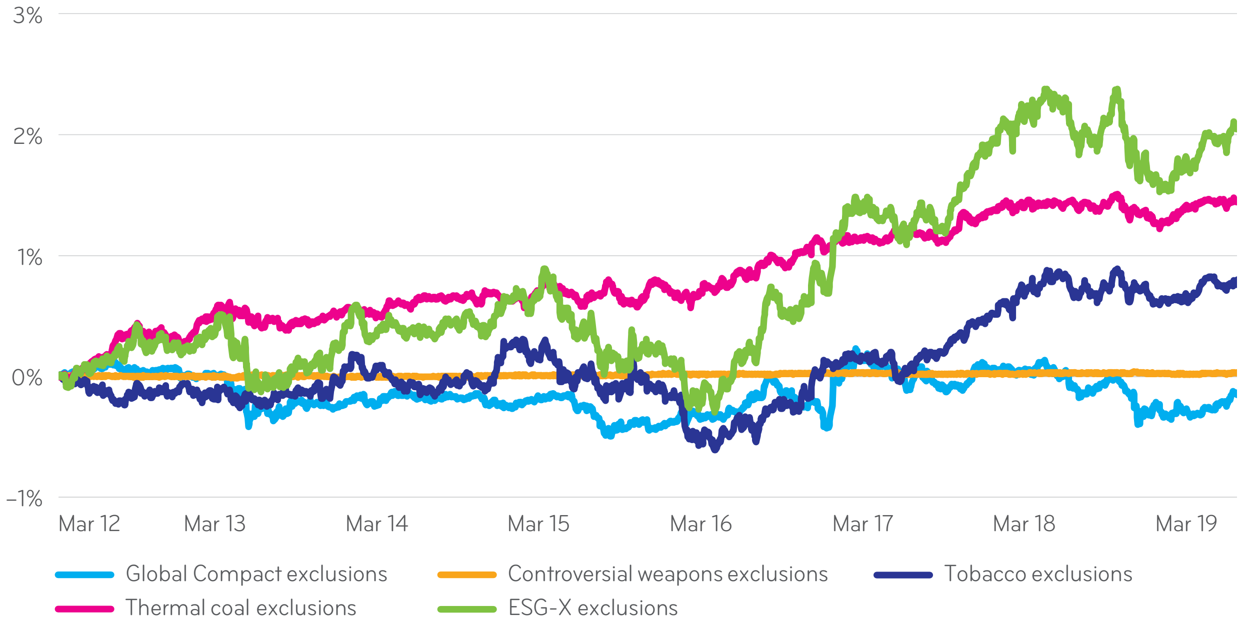
Source: STOXX Ltd., data as of 28 June 2019

STOXX® ESG-X INDICES

Impact of exclusions and overall index performance

Overall, the exclusions added 2.08 percentage points in cumulative returns to the ESG-X Index over the benchmark since inception, corresponding to 15 bp in annualized returns, while increasing the annualized volatility by 0.04 percentage points. However, the returns from the STOXX Japan 600 ESG-X Index led the benchmark even over the most recent 1-year, 3-year and 5-year periods.

FIGURE 33: Cumulative impact of exclusions on total returns



Source: STOXX Ltd., data as of 28 June 2019

However, not all the individual exclusions contributed to the incremental return, as can be seen from Figure 33[12]. The exclusion of securities relating to the UNGC Principles resulted in a drag on the index, whereas the other exclusions led to a positive contribution over the benchmark.

[12] Please note that the analyses are based on simulated portfolios that incorporate each exclusion separately and are not currently available as official indices.

STOXX® ESG-X INDICES

FIGURE 34: Performance analysis for the period from 16 March 2012 to 28 June 2019

STOXX Japan 600	Benchmark	ESG-X	ex UNGC	ex CW	ex tobacco	ex coal
Cumulative return since inception*	106.25%	108.33%	106.09%	106.25%	107.05%	107.70%
Return since inception	10.62%	10.77%	10.61%	10.62%	10.68%	10.73%
5y return	6.42%	6.59%	6.43%	6.42%	6.53%	6.48%
3y return	10.58%	10.91%	10.58%	10.58%	10.83%	10.64%
1y return	−7.04%	−6.94%	−7.06%	−7.04%	−6.97%	−6.98%
Volatility since inception	19.17%	19.21%	19.17%	19.17%	19.22%	19.17%
5y volatility	18.39%	18.43%	18.39%	18.39%	18.43%	18.39%
3y volatility	14.43%	14.49%	14.43%	14.43%	14.49%	14.42%
1y volatility	15.20%	15.27%	15.23%	15.20%	15.24%	15.20%
Sharpe ratio since inception	0.62	0.63	0.62	0.62	0.62	0.63
5y Sharpe ratio	0.43	0.44	0.43	0.43	0.44	0.43
Max. drawdown since inception	−28.40%	−28.58%	−28.39%	−28.40%	−28.57%	−28.40%
5y max. drawdown	−28.40%	−28.58%	−28.39%	−28.40%	−28.57%	−28.40%
Tracking error (TE)	-	0.32%	0.16%	0.00%	0.24%	0.15%

*All returns and volatilities are annualized, except where indicated.

Source: STOXX Ltd., data calculated using gross returns in JPY as of 28 June 2019.

A factor-based performance attribution for the STOXX Japan 600 ESG-X Index as the portfolio versus the STOXX Japan 600 Index as the benchmark reveals that the overall active return (the portfolio return less the benchmark return) of 0.15% is statistically not significant at a 95% confidence level (t-stat of 1.32). No statistically significant contribution to the active return is made by the specific return of 0.08%, the overall factor contribution of 0.07% or the other factors (country, industry, currency and market), with the exception of style.[13]

FIGURE 35: Performance attribution for the period from 16 March 2012 to 28 June 2019

Source of return	Contribution	Risk	IR	T-stat
Portfolio	10.63%	18.78%		
Benchmark	10.48%	18.75%		
Active	0.15%	0.31%	0.48	1.32
Specific return	0.08%	0.29%	0.28	0.77
Factor contribution	0.07%	0.11%	0.63	1.73
Style	0.05%	0.04%	1.10	3.00
Country	0.00%	0.00%	−0.40	−1.09
Industry	0.02%	0.11%	0.18	0.50
Market	0.00%	0.00%	0.64	1.76

Source: Axioma Portfolio Analytics, STOXX Ltd.

The exclusions resulted in exposure to styles (mainly momentum and growth) that led to an extremely small (maximum of 1.4 bp of the annualized return) but statistically significant annualized contribution to the active return. However, this does not have a material impact on the overall factor contribution, which itself is small and statistically not significant.

[13] The cumulative contribution of the various factors and subfactors over time is shown in appendix B.

STOXX® ESG-X INDICES

In other words, excluding stocks has not significantly altered the overall performance of the ESG-X Index or its risk profile as compared to the market value-weighted benchmark, despite small style biases.

FIGURE 36: Performance chart for the period from 16 March 2012 to 28 June 2019

Source: STOXX Ltd.

EURO STOXX 50 ESG-X INDEX

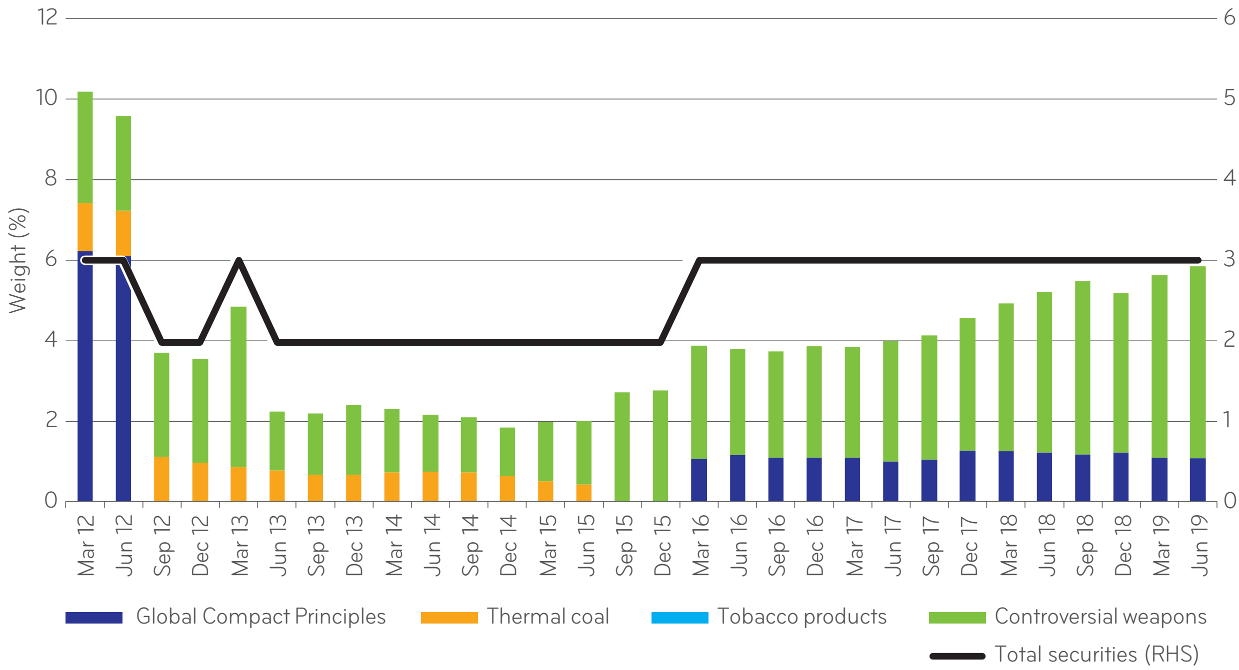
Index profile

The various exclusions resulted in an average of around 3 securities being eliminated from the benchmark (the number ranges between 2 and 3 since inception). On average, these accounted for a weight of 4.0% (range of between 1.8% and 10.2%) of the overall benchmark.

Since the exclusions are norms-based and product-based, they have had a variable impact on ICB supersectors in the past, with a significant underweight to the Industrial Goods & Services sector (from controversial weapons exclusions). This accounted for 80% of the total weight of exclusions as of the most recent review. Other exclusions resulted in underweights to the Automobiles & Parts, Utilities and Oil & Gas sectors over time, as can be seen from Figure 38.

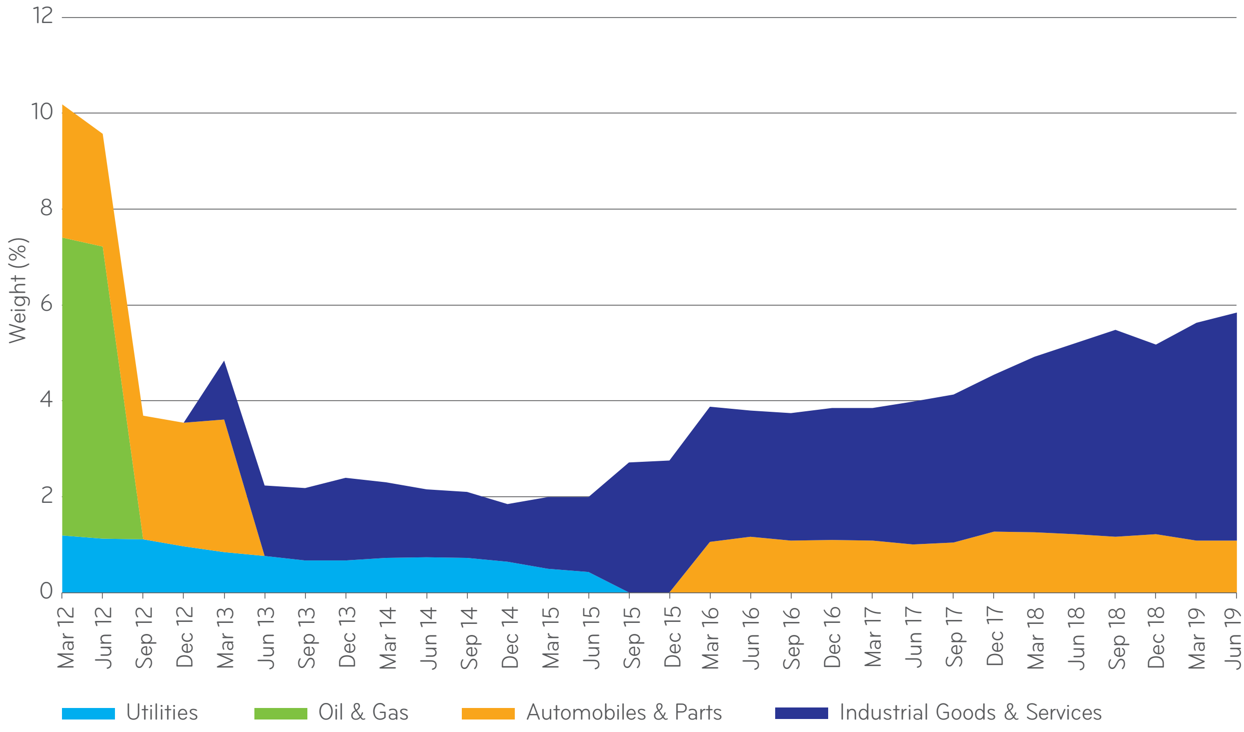
STOXX® ESG-X INDICES

FIGURE 37: Excluded securities weight by reason for exclusion



Source: STOXX Ltd.

FIGURE 38: Impact of exclusions on ICB sector weights



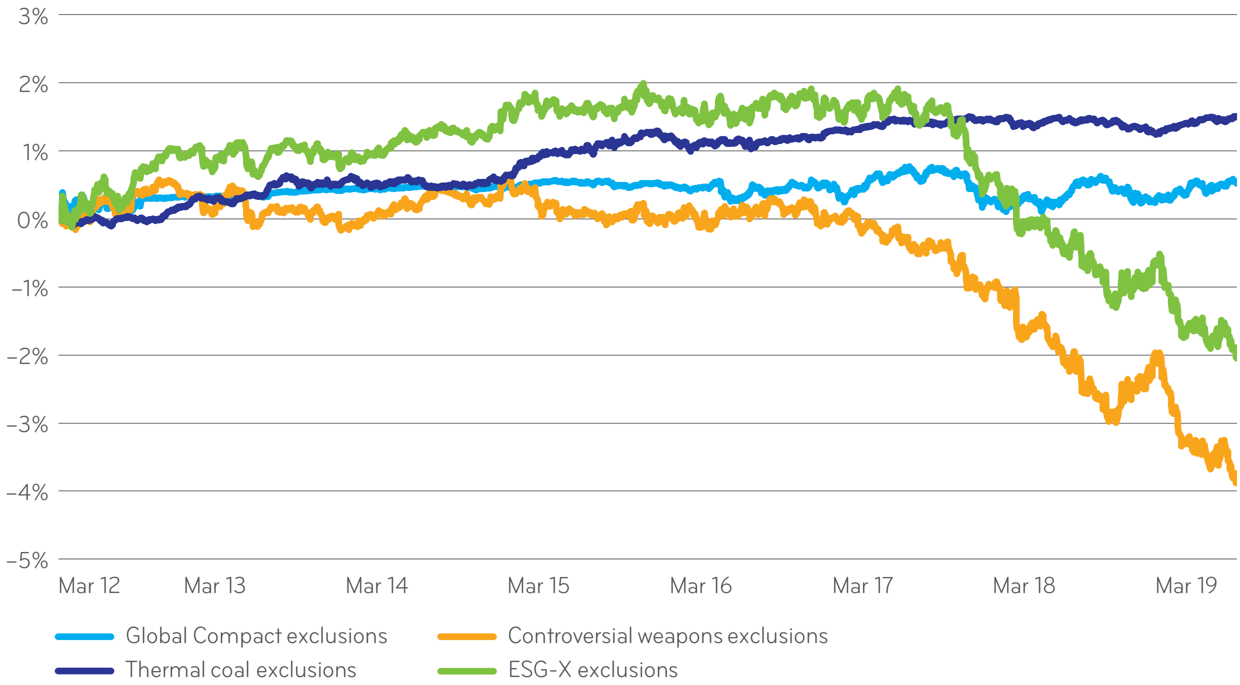
Source: STOXX Ltd., data as of 28 June 2019. Factor-based performance attribution.

STOXX® ESG-X INDICES

Impact of exclusions and overall index performance

Overall, the exclusions diminished the returns for the ESG-X Index by a cumulative 1.87 percentage points over the benchmark since inception, corresponding to 16 bp in annualized returns, while increasing the annualized volatility by 0.01 percentage points. The ESG-X Index returns also trailed the benchmark over the most recent 1-year, 3-year and 5-year periods.

FIGURE 39: Cumulative impact of exclusions on total returns



Source: STOXX Ltd., data as of 28 June 2019

Exclusions[14] based on the UNGC and coal contributed to the incremental return, whereas the other two exclusions resulted in a drag. However, the exclusions had very little impact on the volatility of the index (as measured by the standard deviation).

[14] Please note that the analyses are based on simulated portfolios that incorporate each exclusion separately and are not currently available as official indices.

STOXX® ESG-X INDICES

FIGURE 40: Performance analysis for the period from 16 March 2012 to 28 June 2019

EURO STOXX 50	Benchmark	ESG-X	ex UNGC	ex CW	ex coal
Cumulative return since inception*	77.95%	76.06%	78.49%	74.21%	79.46%
Return since inception	8.37%	8.21%	8.41%	8.05%	8.49%
5y return	5.22%	4.81%	5.21%	4.73%	5.33%
3y return	12.00%	11.15%	11.98%	11.19%	12.00%
1y return	7.10%	6.15%	7.10%	6.17%	7.10%
Volatility since inception	17.94%	17.95%	17.95%	17.93%	17.95%
5y volatility	17.93%	17.89%	17.91%	17.92%	17.93%
3y volatility	12.74%	12.66%	12.70%	12.70%	12.74%
1y volatility	13.28%	13.14%	13.24%	13.19%	13.28%
Sharpe ratio since inception	0.54	0.53	0.54	0.52	0.54
5y Sharpe ratio	0.37	0.35	0.37	0.35	0.38
Max. drawdown since inception	−27.82%	−27.64%	−27.82%	−27.81%	−27.66%
5y max. drawdown	−27.82%	−27.64%	−27.82%	−27.81%	−27.66%
Tracking error (TE)	-	0.58%	0.28%	0.49%	0.11%

*All returns and volatilities are annualized, except where indicated.

Source: STOXX Ltd., data calculated using gross returns in EUR as of 28 June 2019.

A factor-based performance attribution for the EURO STOXX 50 ESG-X Index as the portfolio versus the EURO STOXX 50 Index as the benchmark reveals that the overall active return (the portfolio return less the benchmark return) of -0.16% is not statistically significant at a 95% confidence level (t-stat of −0.80). No statistically significant contribution to the active return is made by the specific return of −0.08%, the overall factor contribution of -0.08% or any of the factors (style, country, industry and market).[15] It is therefore reasonable to conclude that the exclusions did not result in any unintended biases in the EURO STOXX 50 ESG-X Index. Additionally, the performance of the EURO STOXX 50 ESG-X Index is not significantly different from that of the EURO STOXX 50 Index.

FIGURE 41: Performance attribution for the period from 16 March 2012 to 28 June 2019

Source of return	Contribution	Risk	IR	T-stat
Portfolio	7.86%	17.46%		
Benchmark	8.03%	17.45%		
Active	**−0.16%**	**0.56%**	**−0.29**	**−0.80**
Specific return	**−0.08%**	**0.50%**	**−0.16**	**−0.44**
Factor contribution	**−0.08%**	**0.25%**	**−0.33**	**−0.90**
Style	−0.03%	0.08%	−0.35	−0.96
Country	−0.02%	0.10%	−0.18	−0.49
Industry	−0.03%	0.21%	−0.16	−0.45
Market	0.00%	0.00%	−0.44	−1.22

Source: Axioma Portfolio Analytics, STOXX Ltd.

In other words, excluding stocks has not altered the performance of the ESG-X Index or its risk profile as compared to its market value-weighted benchmark.

[15] The cumulative contribution of the various factors and subfactors over time is shown in appendix B.

STOXX® ESG-X INDICES

FIGURE 42: Performance chart for the period from 16 March 2012 to 28 June 2019

Source: STOXX Ltd.

STOXX® ESG-X INDICES

CONCLUSION

Sustainable investing has witnessed a steady increase in assets, with annual growth of almost 15% between 2012 and 2018. The exclusion-based approach is the oldest sustainable investment strategy with investment choices that are aligned to moral codes, as was noted by EuroSIF in its 2018 study. This study also notes that, over the years, the "exclusion trend" has evolved to include the avoidance of "sin stocks" such as companies involved in the production or sale of weapons, alcohol, tobacco and pornography.

The STOXX ESG-X index family, with its simple approach to index construction, includes product involvement screening for controversial weapons, tobacco and thermal coal as well as norm-based screening for the United Nations Global Compact principles of human rights, labor, the environment and anti-corruption. The STOXX ESG-X indices analyzed in this paper deliver a risk-return performance profile that is not significantly different in statistical terms to their respective benchmarks, while at the same time also complying with typical exclusion-based sustainable investing approaches. Although some of the ESG-X indices appear to have industry or style biases resulting from the exclusions, these have not resulted in material and/or significant alterations to their risk profile or performance.

On average, the largest number of exclusions across all the indices analyzed came from breaches of the Global Compact Principles. Controversial weapons is the only exclusion type that did not occur in every index at some period in time, due to the absence of any such security in the STOXX Japan 600. A recurring theme was the performance drag resulting from controversial weapons exclusions, which ranged from -0.71 to -3.88%. In most cases the other exclusions contributed to incremental returns, although their impact varied across the indices. At the sector level, most exclusions came from Industrial Goods & Services and from Personal & Household Goods.

The simplicity of the ESG-X Index family enables investors familiar with the standard market cap-weighted STOXX benchmarks to easily implement and adopt the relevant ESG-X indices as ESG-screened benchmarks. The similarity of the risk profile and performance to the benchmarks also mean that the ESG-X indices are suitable as underlying indices for derivatives, structured products and exchange-traded funds, as well as for typical asset owners' mandates.

STOXX® ESG-X INDICES

APPENDIX A

THE FAST EXIT RULE IN PRACTICE

STOXX used its fast exit rule to become the first index provider to remove Volkswagen (VW) from its ESG indices.

Timeline:

» Friday, Sep. 18, 2015: The United States Environmental Protection Agency (EPA) issued a Notice of Violation of the Clean Air Act to Volkswagen Group, after it was found that the automaker had intentionally programmed diesel engines to activate certain emissions controls only during laboratory emissions testing.

» Wednesday, Sep. 23, 2015: Sustainalytics changed the rating for Volkswagen and STOXX announced the company's removal from all STOXX ESG indices.

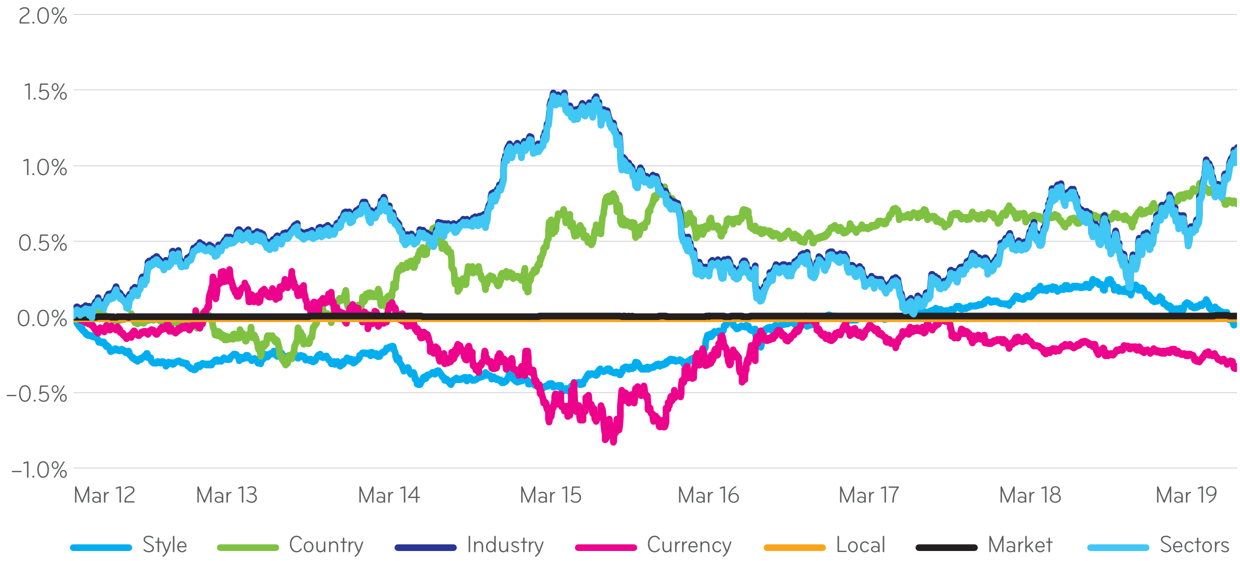
» Friday, Sep. 25, 2015: Volkswagen's removal from all STOXX ESG indices took effect.

STOXX® ESG-X INDICES

APPENDIX B

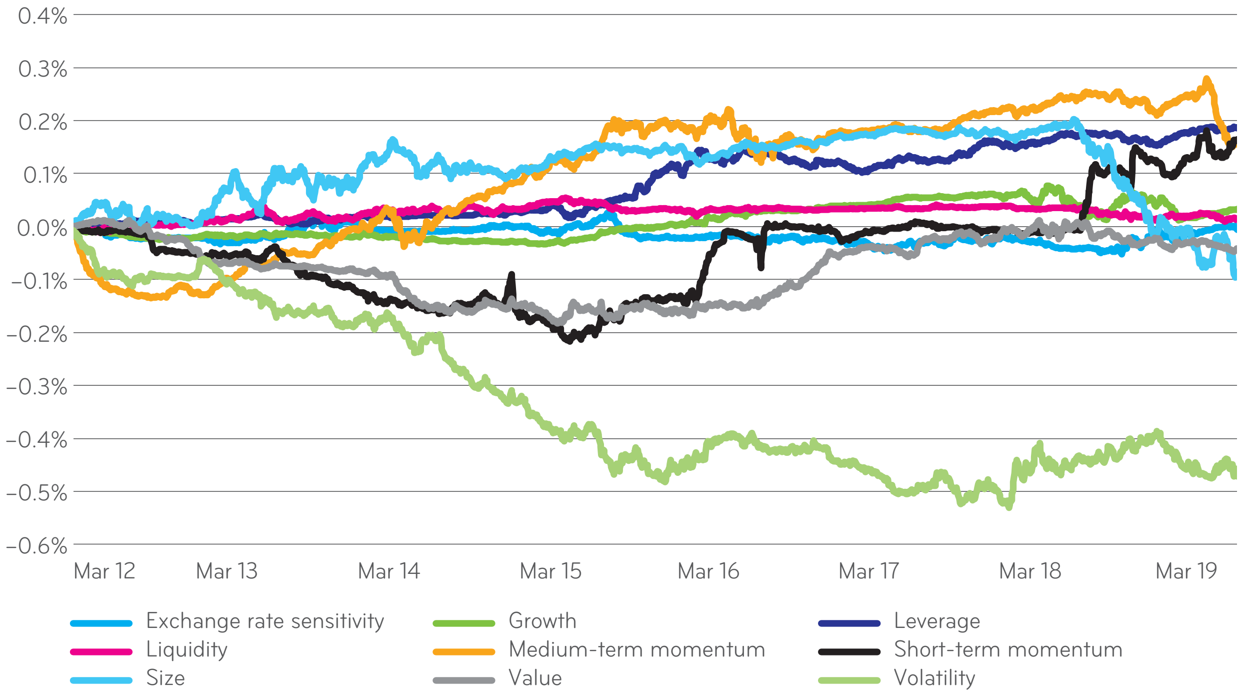
STOXX EUROPE 600 ESG-X INDEX

FIGURE 43: Cumulative factor contributions over time



Source: Axioma Portfolio Analytics, STOXX Ltd.

FIGURE 44: Cumulative subfactor contributions over time

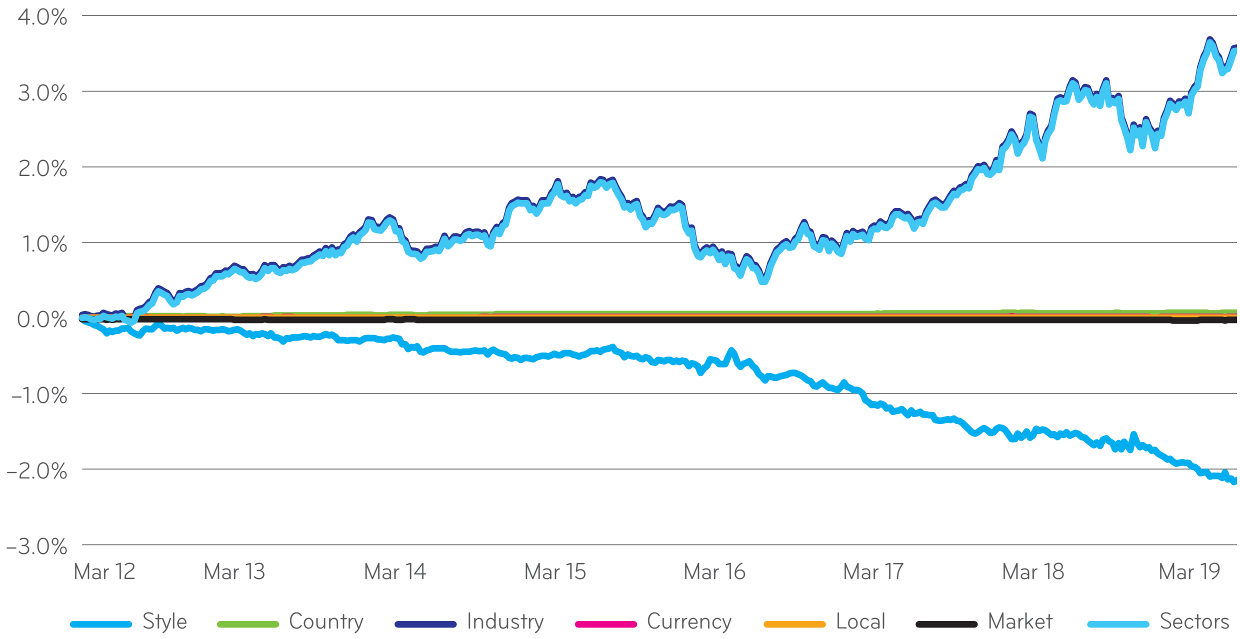


Source: Axioma Portfolio Analytics, STOXX Ltd.

STOXX® ESG-X INDICES

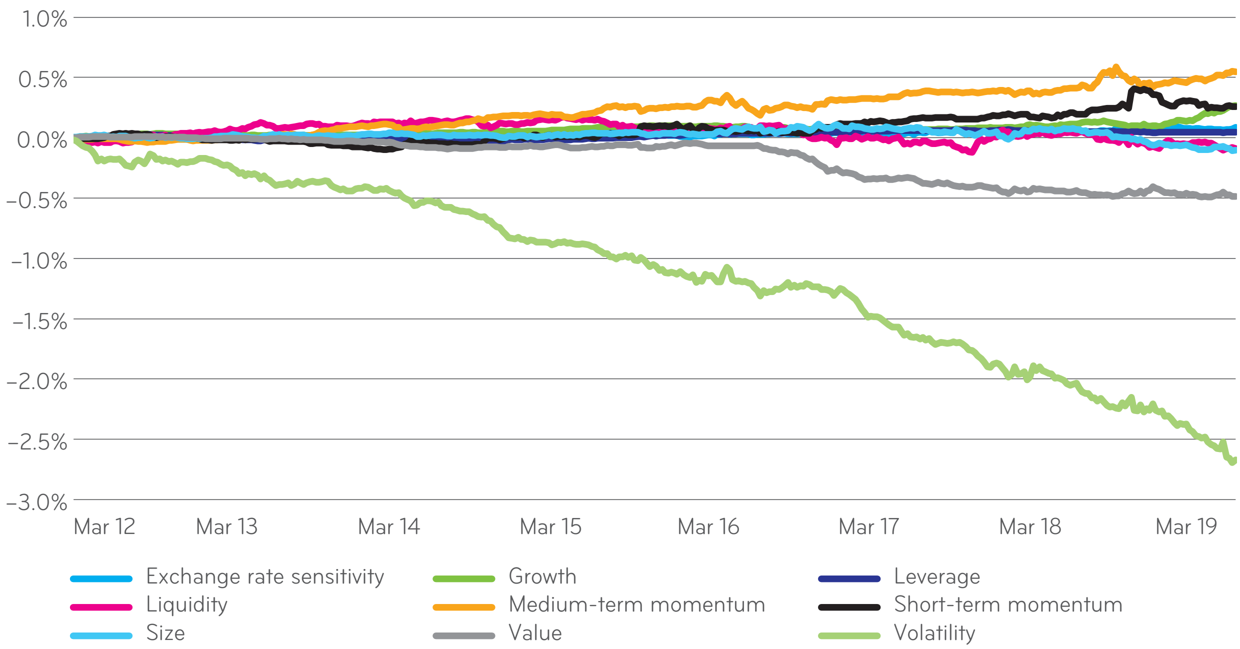
STOXX USA 500 ESG-X INDEX

FIGURE 45: Cumulative factor contributions over time



Source: Axioma Portfolio Analytics, STOXX Ltd.

FIGURE 46: Cumulative subfactor contributions over time

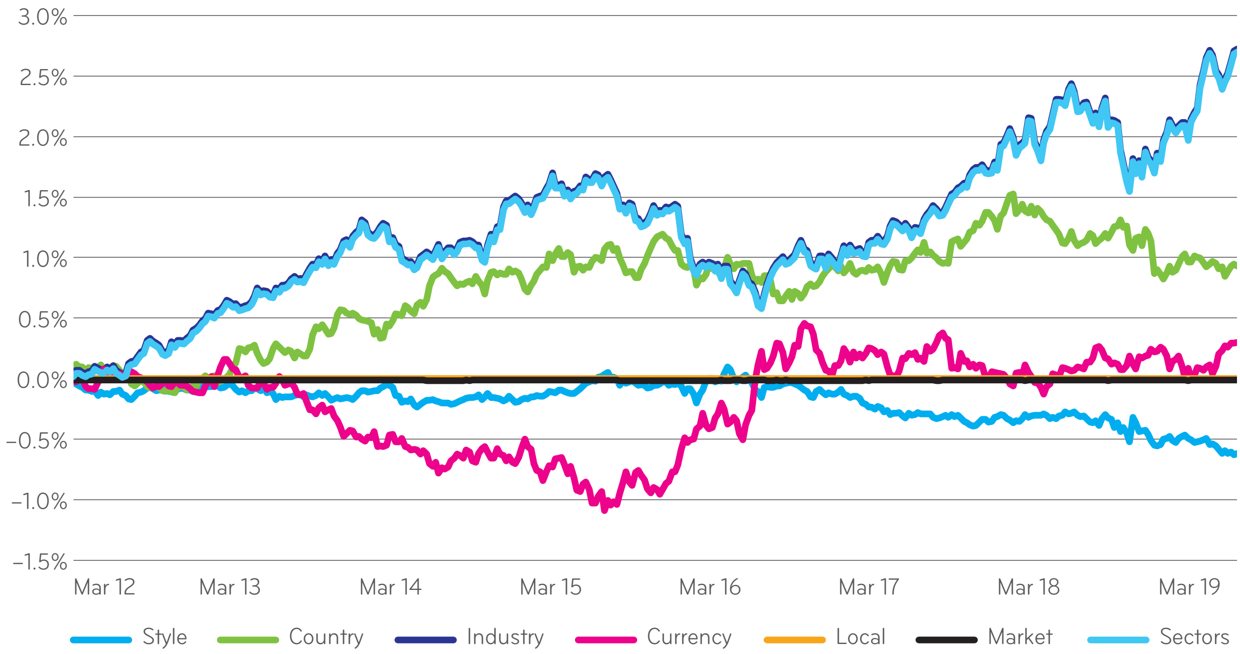


Source: Axioma Portfolio Analytics, STOXX Ltd.

STOXX® ESG-X INDICES

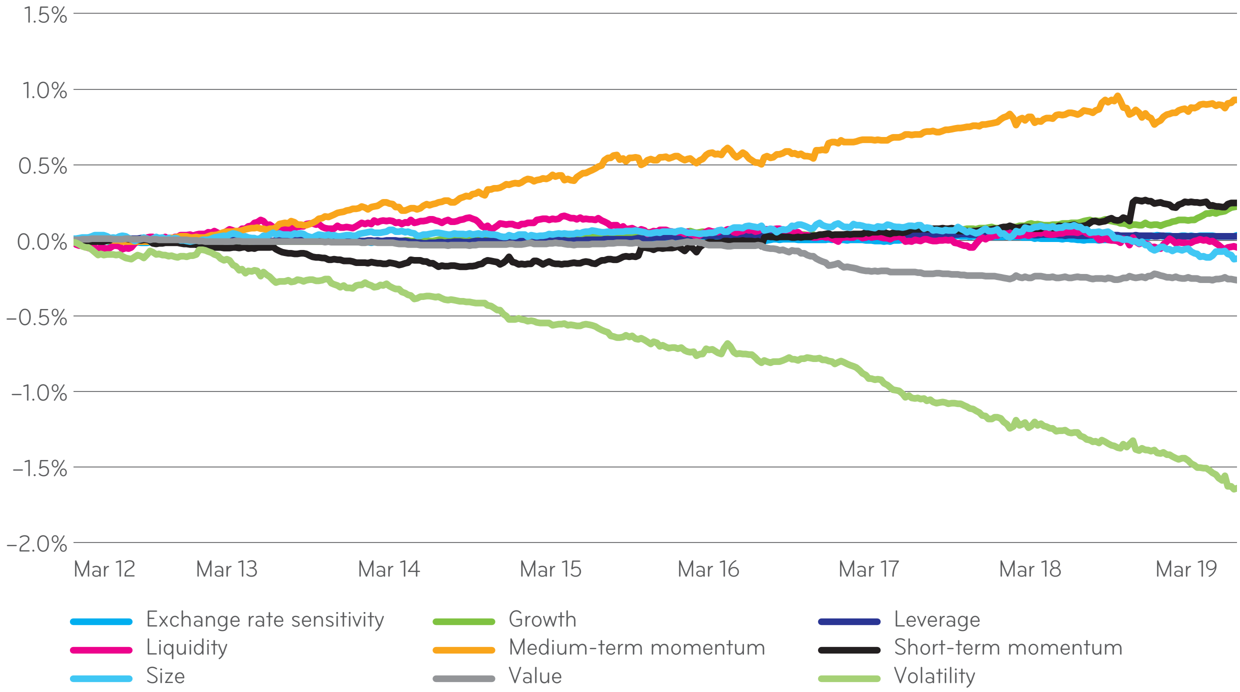
STOXX GLOBAL 1800 ESG-X INDEX

FIGURE 47: Cumulative factor contributions over time



Source: Axioma Portfolio Analytics, STOXX Ltd.

FIGURE 48: Cumulative subfactor contributions over time

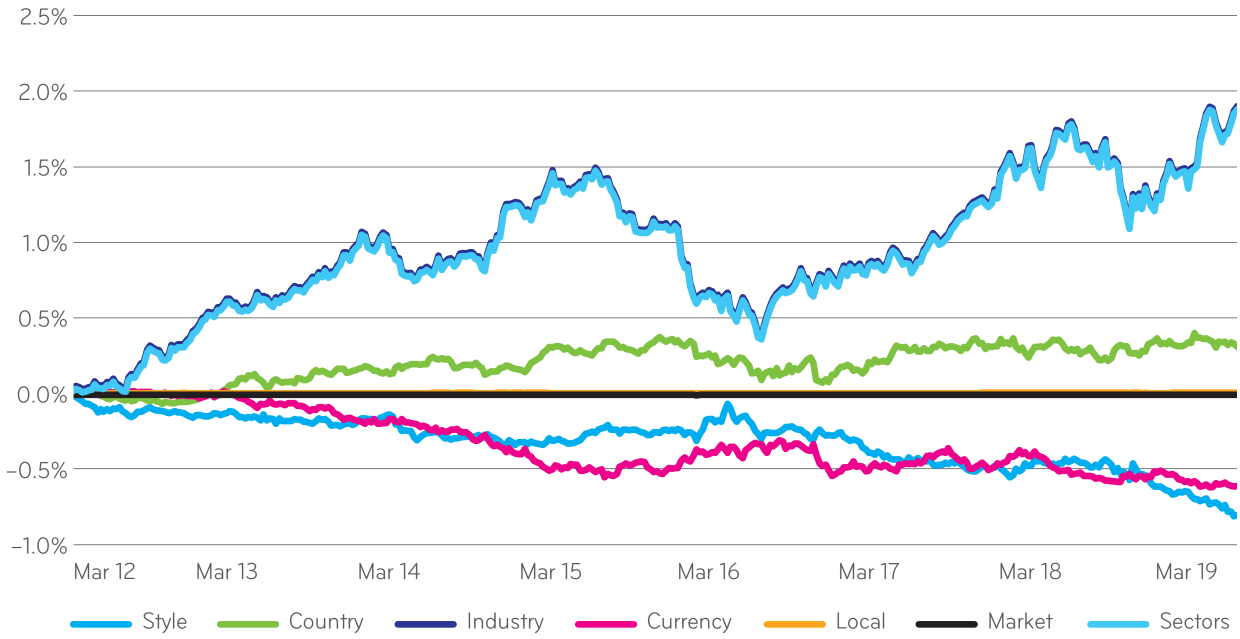


Source: Axioma Portfolio Analytics, STOXX Ltd.

STOXX® ESG-X INDICES

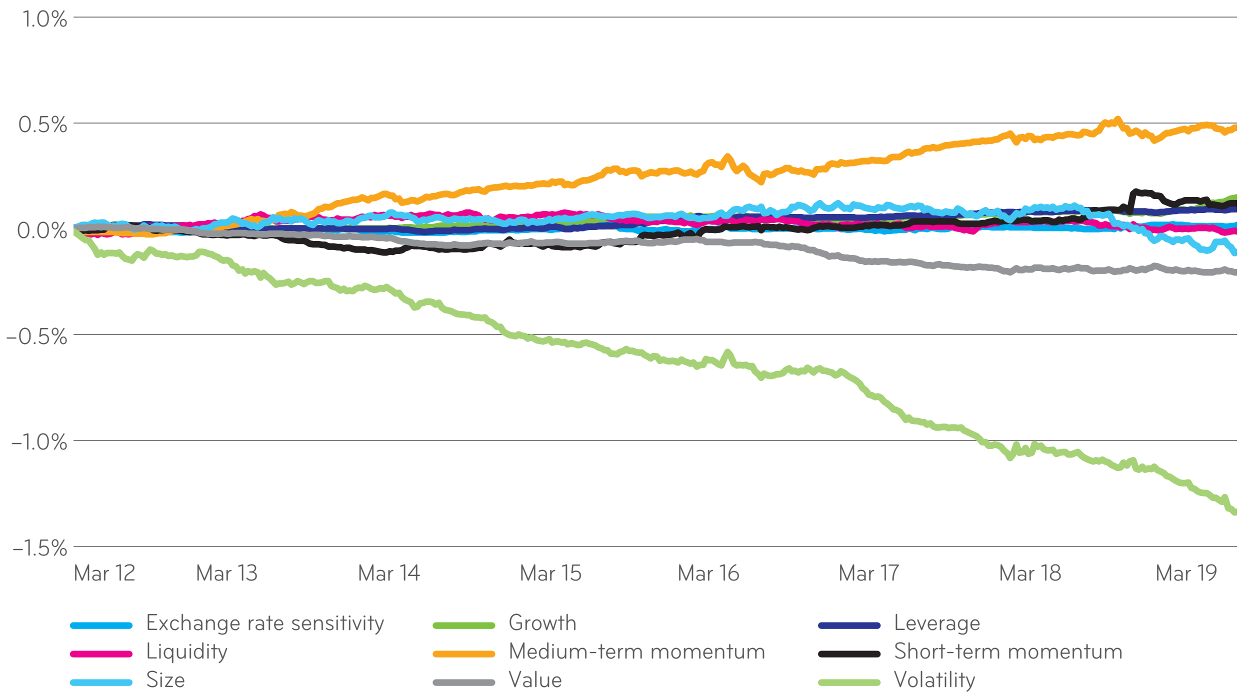
STOXX GLOBAL 3000 ESG-X INDEX

FIGURE 49: Cumulative factor contributions over time



Source: Axioma Portfolio Analytics, STOXX Ltd.

FIGURE 50: Cumulative subfactor contributions over time

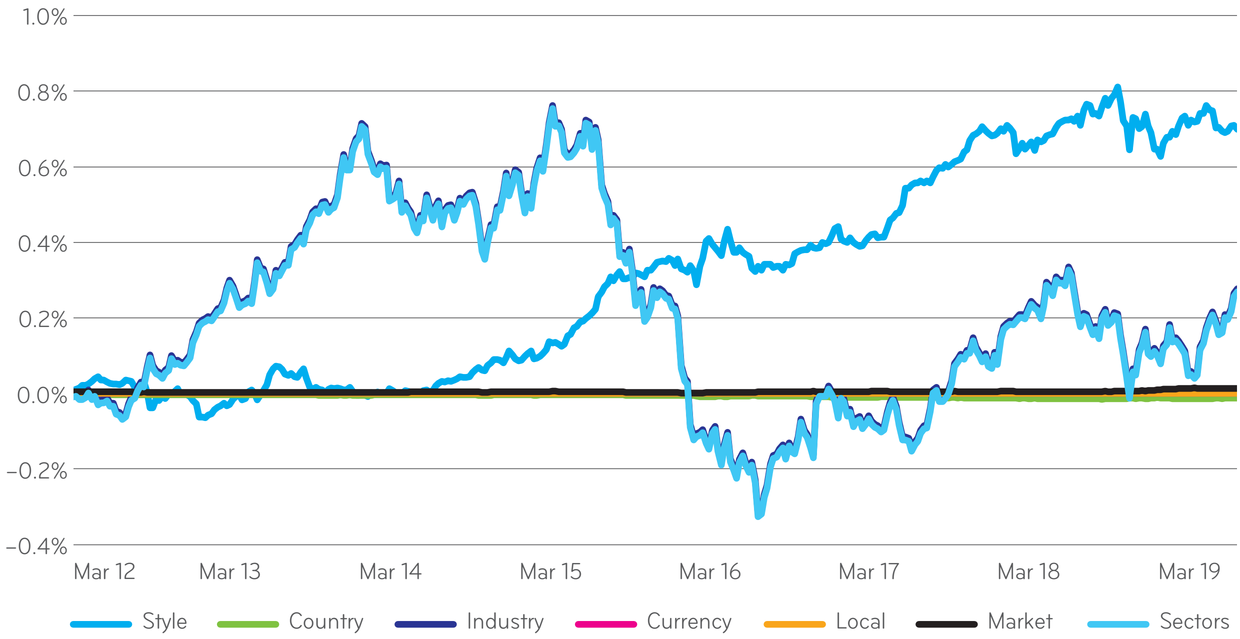


Source: Axioma Portfolio Analytics, STOXX Ltd.

STOXX® ESG-X INDICES

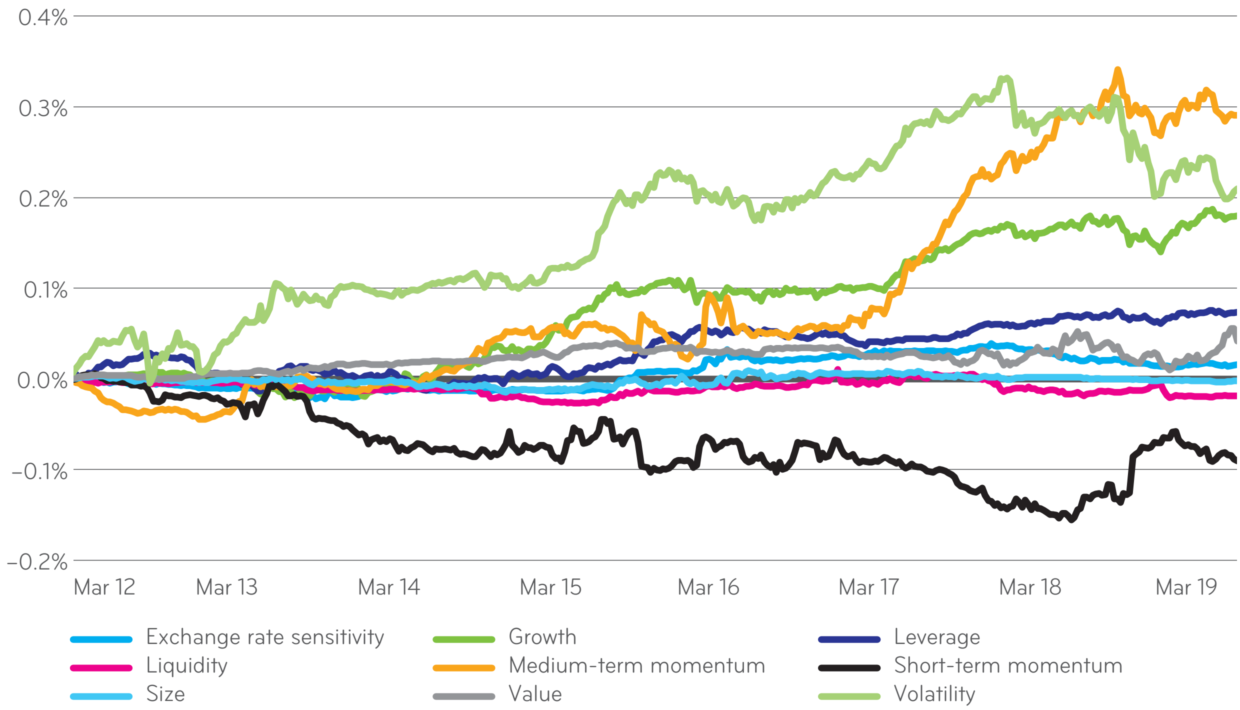
STOXX JAPAN 600 ESG-X INDEX

FIGURE 51: Cumulative factor contributions over time



Source: Axioma Portfolio Analytics, STOXX Ltd.

FIGURE 52: Cumulative subfactor contributions over time



Source: Axioma Portfolio Analytics, STOXX Ltd.

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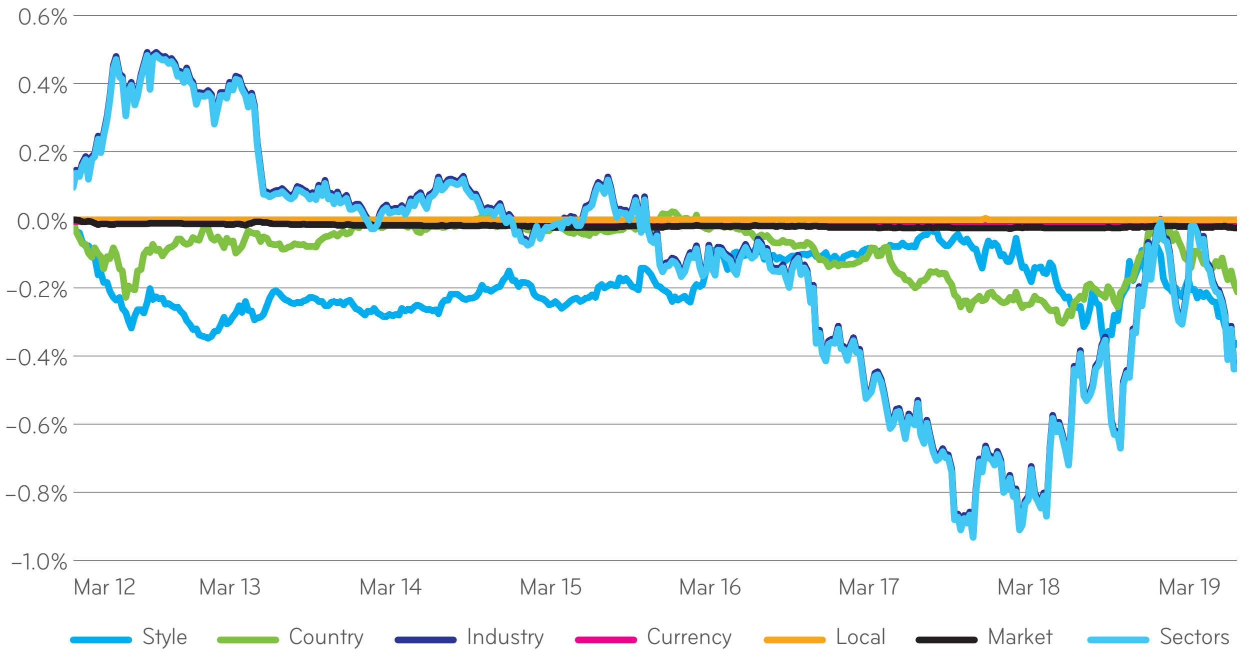
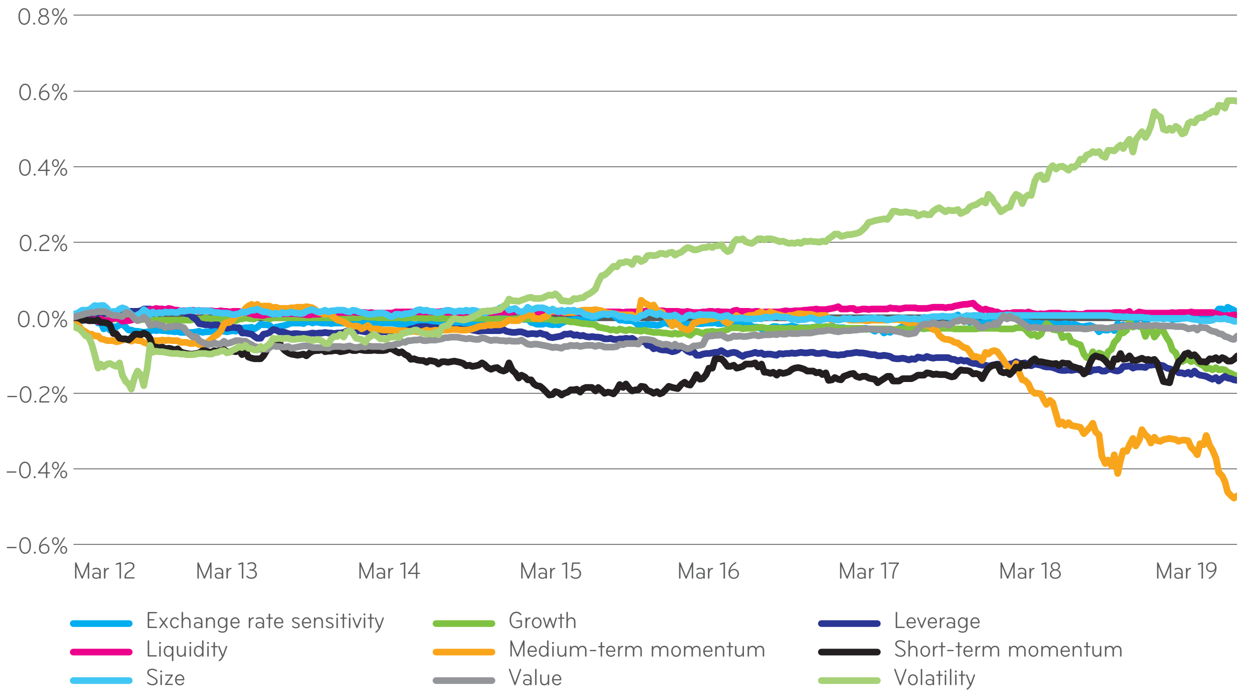
EURO STOXX 50 ESG-X INDEX

FIGURE 53: Cumulative factor contributions over time



Source: Axioma Portfolio Analytics, STOXX Ltd.

FIGURE 54: Cumulative subfactor contributions over time



Source: Axioma Portfolio Analytics, STOXX Ltd.

STOXX® ESG-X INDICES

About STOXX Ltd.

STOXX Ltd. is a global index provider, currently calculating a global, comprehensive index family of over 10,000 strictly rules-based and transparent indices. Best known for the leading European equity indices EURO STOXX 50, STOXX Europe 50 and STOXX Europe 600, STOXX Ltd. maintains and calculates the STOXX Global index family which consists of total market, broad and blue-chip indices for the Americas, Europe and Asia/Pacific regions and the Latin America and BRIC (Brazil, Russia, India and China) sub-regions, as well as global markets.

To provide market participants with optimal transparency, STOXX indices are classified into four categories. Regular "STOXX" indices include all standard, theme and strategy indices that are part of STOXX's integrated index family and follow a strict rules-based methodology. The "iSTOXX" brand typically comprises less standardized index concepts that are not integrated in the STOXX Global index family, but are nevertheless strictly rules-based. While indices that are branded "STOXX" and "iSTOXX" are developed by STOXX for a broad range of market participants, the "STOXX Customized" brand covers indices that are specifically developed for clients and do not carry the STOXX brand in the index name. Under the Omnient brand, STOXX offers custom indices from its existing index universe.

STOXX indices are licensed to more than 600 companies around the world as underlyings for exchange traded funds (ETFs), futures and options, structured products and passively managed investment funds. Three of the top ETFs in Europe and approximately 25% of all assets under management are based on STOXX indices. STOXX Ltd. holds Europe's number one and the world's number two position in the derivatives segment.

STOXX is part of Deutsche Boerse Group and also calculates, disseminates and markets the DAX indices.

www.stoxx.com

CONTACTS

Theilerstrasse 1a
CH-6300 Zug
P +41-(0)43 430 71 60
stoxx@stoxx.com
www.stoxx.com

Frankfurt: +49 (0) 69 211 0
Hong Kong: +852 2530 7862
London: +44 (0) 207 862 7680
New York: +1 646-876-2030
Tokyo: +81-3-4578-6688

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