February 2020

STOXX® USA 500 ESG-X INDEX

Anand Venkataraman, CFA, Head of Product Management – Index, Qontigo
Ladi Williams, Product Manager – Index, Qontigo

STOXX® USA 500 ESG-X INDEX

TABLE OF CONTENTS

INTRODUCTION	**3**
THE STOXX ESG-X INDEX METHODOLOGY – A SUMMARY	**4**
EXCLUSION CRITERIA	4
FAST EXIT RULE	6
IMPACT OF EXCLUSIONS ON INDEX COMPOSITION	**7**
INDEX PERFORMANCE	**9**
CONCLUSION	**12**
APPENDIX A	**13**
THE FAST EXIT RULE IN PRACTICE	13
APPENDIX B	**14**
STOXX® USA 500 ESG-X INDEX	14

STOXX® USA 500 ESG-X INDEX

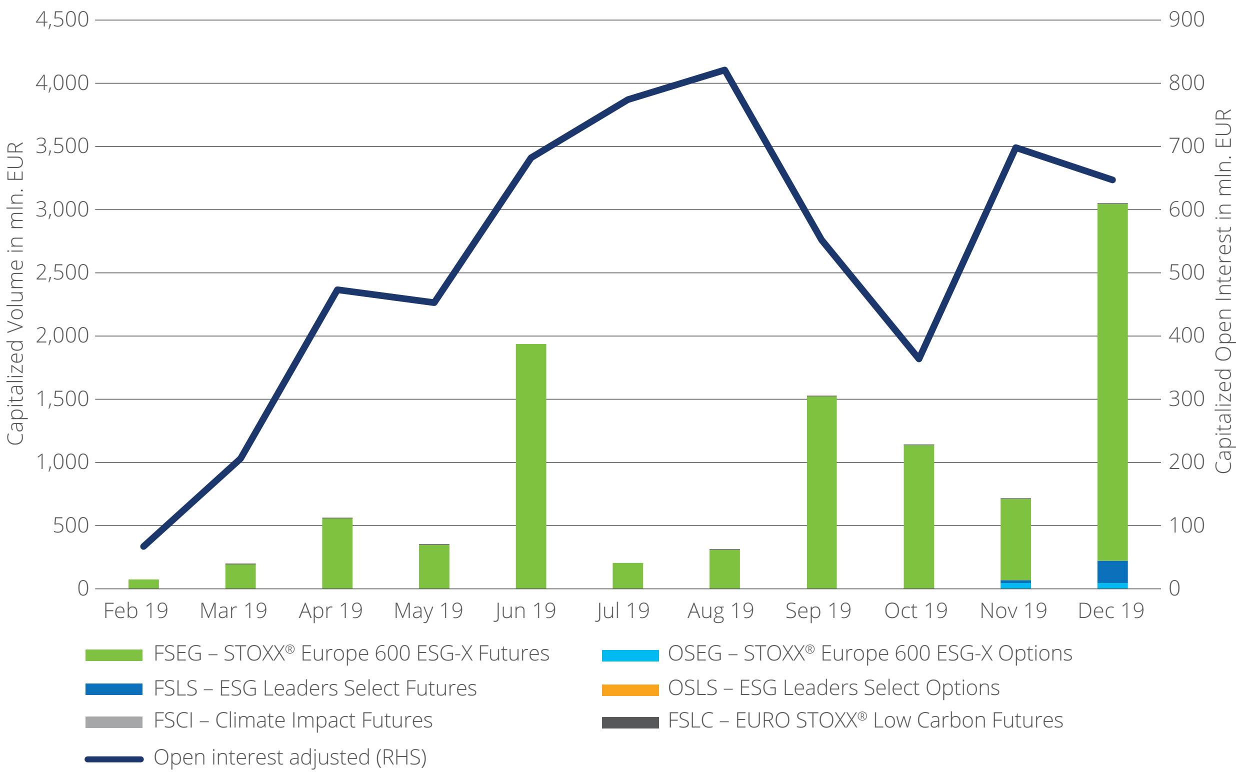
INTRODUCTION

In our paper on STOXX ESG-X Indices[1] published in August 2019, we performed a detailed analysis of prominent regional STOXX ESG-X Index variants. We concluded that the ESG-X indices had a risk-return profile that was not significantly different in statistical terms to their respective benchmarks, while at the same time also complying with typical exclusion-based sustainable investing approaches. These exclusions comprise product involvement screening for controversial weapons, tobacco and thermal coal in addition to norms-based screening for the United Nations Global Compact principles of human rights, labor, the environment and anti-corruption.

Given these characteristics, the STOXX ESG-X Index family has lent itself as a suitable underlying for exchange traded funds (ETFs), typical asset owners' mandates and the underlying for derivatives. Eurex, one of the leading global derivatives exchanges, selected the STOXX® Europe 600 ESG-X Index as the underlying for one of its listed sustainability futures in 2019. During the course of the year, Eurex became the first exchange to introduce a futures product suite based on highly liquid European STOXX benchmarks comprising ESG Exclusions, Low Carbon, Climate Impact and ESG Leaders. These derivatives support market participants globally in managing sustainable investing using liquid, low-cost instruments. Recently, Eurex extended its ESG derivatives suite by adding options to its lineup, and thereby becoming the first exchange to offer both sustainable futures and options on leading benchmarks.

FIGURE 1: Eurex ESG Futures – Volume distribution and Open Interest until December 31, 2019*

ESG Futures: 681,202 contracts traded	ESG Options: 6,000 contracts traded	Open Interest: EUR 744,000,000



*https://www.eurexchange.com/exchange-en/products/esg
Source: Eurex

[1] There are more than 40 indices available in the ESG-X family: https://www.stoxx.com/esg-x

STOXX® USA 500 ESG-X INDEX

Following on from these successful launches in 2019, STOXX Ltd. (now part of Qontigo) has recently licensed the STOXX® USA 500 ESG-X Index as an underlying for listed futures on Eurex. The STOXX® USA 500 ESG-X futures on Eurex are the first listed derivatives covering the US market to include screening for thermal coal mining and coal-fired power plants. The new futures have been available since February 10, 2020, expanding the ESG derivatives product suite to a global level.

Sustainable investing in the United States is continuing to expand. Total US-domiciled assets under management (AuM) using sustainable strategies grew from USD 8.7 trillion at the beginning of 2016 to USD 12.0 trillion at the start of 2018, an increase of 38 percent.[2] Assets managed using sustainable investing strategies now represent 26 percent of all investment assets under professional management in the United States.[3]

In this publication, we revisit some of the features of the STOXX® USA 500 ESG-X Index that make it a go-to benchmark for sustainable US-listed equities and analyze its compositional and performance characteristics.

THE STOXX ESG-X INDEX METHODOLOGY – A SUMMARY

The STOXX ESG-X index family comprises over 40 indices including the STOXX® USA 500 ESG-X Index, covering global, regional, country, sector and size characteristics and blue-chip securities. Each index in the ESG-X index family is built from an initial universe of stocks that comprises the relevant market value-weighted benchmarks screened for and excluding constituents involved in business activities that:

- » are in breach of any of the relevant United Nations Global Compact (UNGC) Principles (human rights, labor, the environment and anti-corruption)
- » produce or distribute controversial weapons
- » 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 capitalization weighting scheme – as their respective benchmark indices. The latter are broad indices comprising the largest and most frequently traded equities. A fast exit rule in the ESG-X indices ensures that a swift response can be made to any ESG breaches by quickly removing offenders, hence limiting investor risk.

EXCLUSION CRITERIA

The exclusions are based on individual company data and information sourced from Sustainalytics, a global leader in ESG and corporate governance research and ratings. Sustainalytics supports the world's foremost investors in incorporating ESG and corporate governance insights into their investment processes.

Sourcing data from an independent multi-award winning[4] ESG data provider such as Sustainalytics allows Qontigo to systematically apply objective rules for securities selection. It also maintains an appropriate level of separation and independence, avoiding any potential conflicts of interest. The following sections provide more detail on the individual exclusions.

[2] http://www.gsi-alliance.org/wp-content/uploads/2019/06/GSIR_Review2018F.pdf
[3] http://www.gsi-alliance.org/wp-content/uploads/2019/06/GSIR_Review2018F.pdf
[4] https://www.sustainalytics.com/about-us/#awards

STOXX® USA 500 ESG-X INDEX

UN Global Compact Principles

STOXX ESG-X indices exclude companies that Sustainalytics considers to be non-compliant with the UN Global Compact's 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.

FIGURE 2: 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

Controversial Weapons

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

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

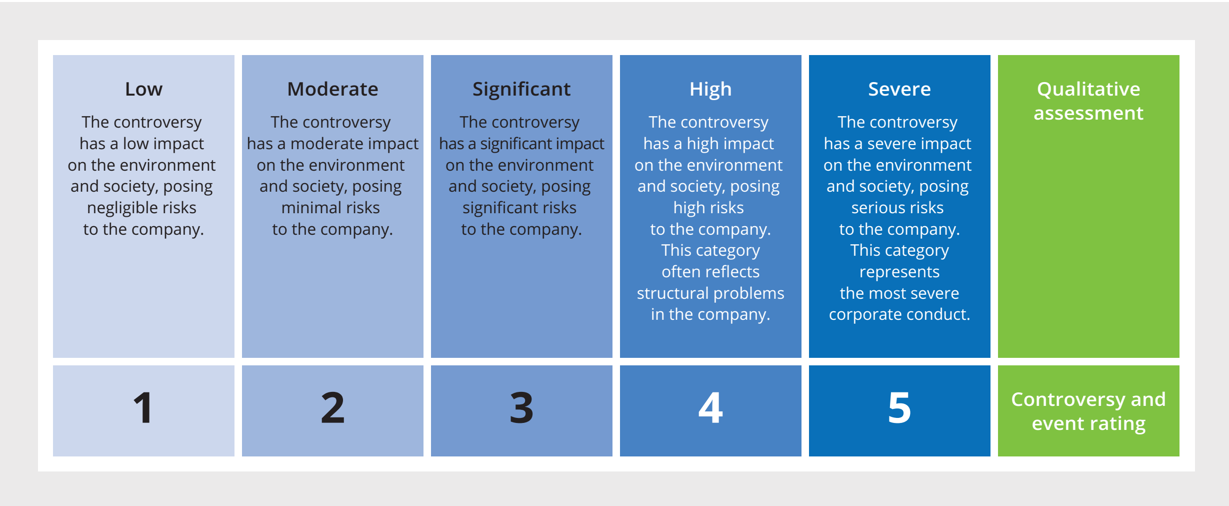
STOXX ESG-X indices exclude companies that Sustainalytics identifies as deriving:
» More than 25% of their revenues from thermal coal extraction (including thermal coal mining and exploration)
» More than 25% of their power generation capacity from coal-fired electricity, heat or steam generation capacity/thermal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

STOXX® USA 500 ESG-X INDEX

FAST EXIT RULE

STOXX ESG-X indices include a fast exit rule that ensures a swift response to any ESG breaches by quickly removing offenders from the index, hence limiting investor risk. If a company's ESG risk is increased to level 5 by Sustainalytics, it is deleted from the index two trading days after the announcement[5]. The constituent's weight is then distributed pro rata among the remaining index constituents.

FIGURE 3: Controversy risk screening



Source: Sustainalytics research, 2019

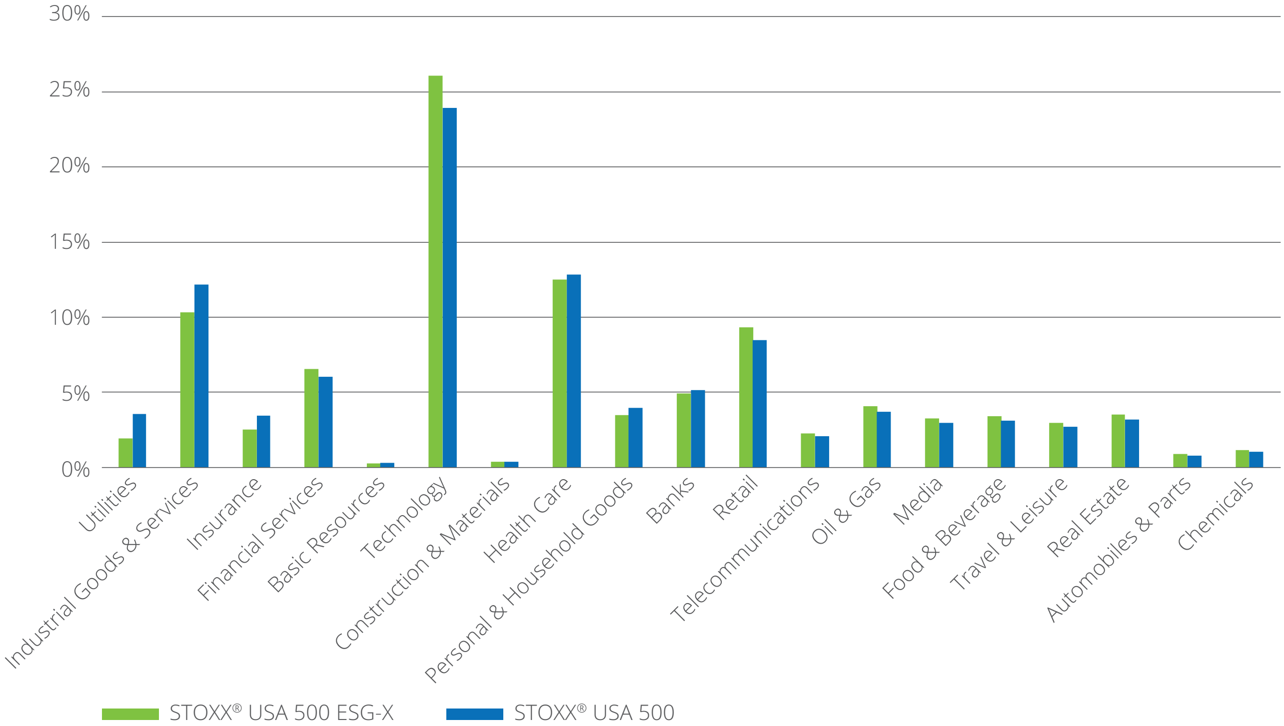
However, there is no fast entry rule.

[5] See appendix A for an example of how this rule was implemented in practice.

STOXX® USA 500 ESG-X INDEX

IMPACT OF EXCLUSIONS ON INDEX COMPOSITION

FIGURE 4: ICB supersector weights



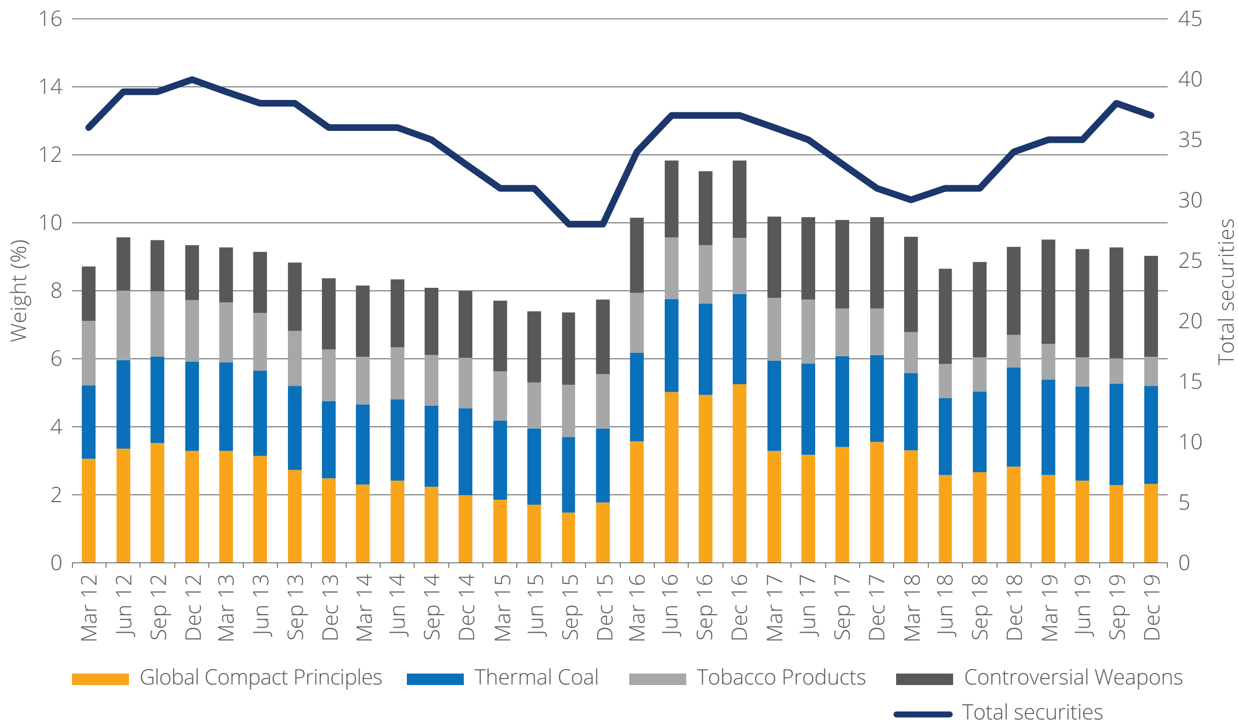
Source: Qontigo, data as of January 31, 2020

The various exclusions have resulted in an average of 35 securities (Figure 5) being excluded from the benchmark since the index inception date of March 16, 2012 (the precise number ranges between 28 and 40). On average, these accounted for a weight of 9.2% of the overall benchmark (ranging between 7.4% and 11.8%).

Since the exclusions are norms- and product-based, they have had a variable impact on the ICB supersectors over time. There have been significant yet relatively stable underweights to Personal & Household Goods (from tobacco exclusions), Industrial Goods & Services (from controversial weapons exclusions) and Utilities (from coal exclusions). Other notable exclusions have resulted in underweights to the Banks and Health Care sectors due to breaches of the Global Compact Principles; these were absent prior to 2015, as can be seen from Figure 6. 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. This also coincided with the largest total weight of exclusions from the benchmark (12%).

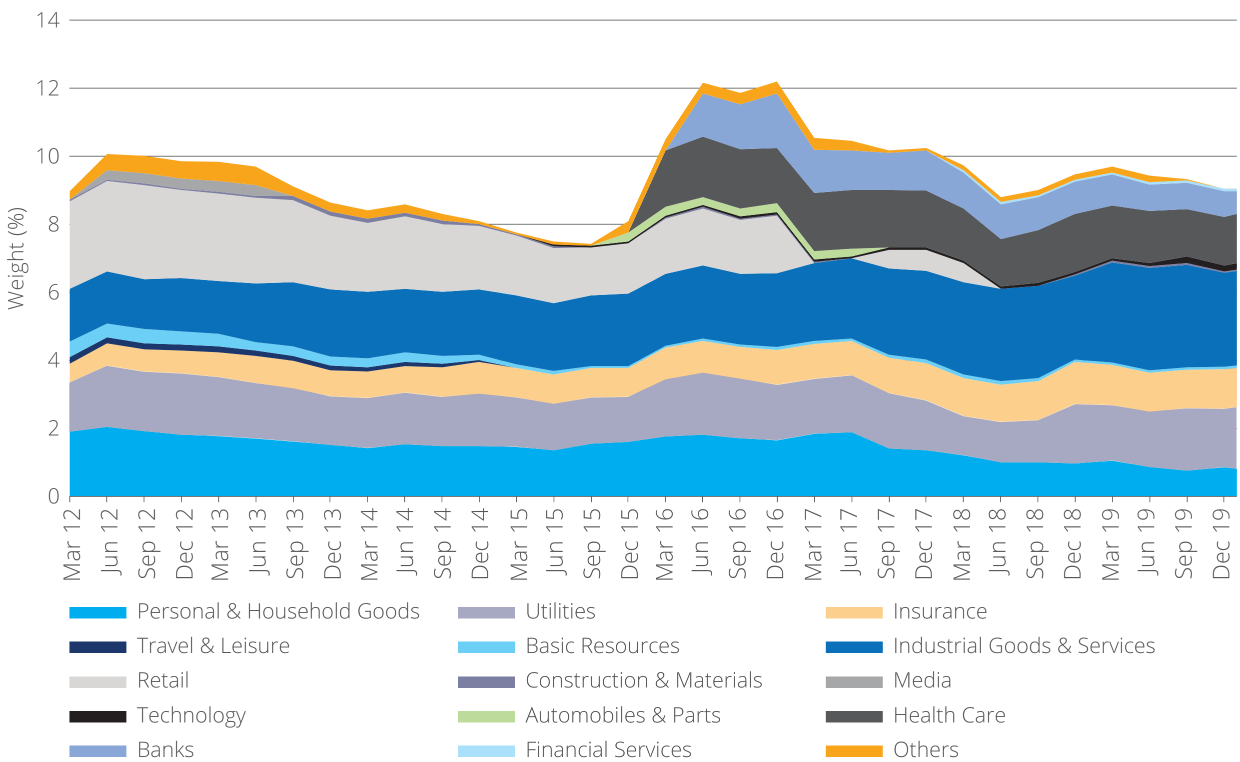
STOXX® USA 500 ESG-X INDEX

FIGURE 5: Excluded securities weight by reason for exclusion



Source: Qontigo, data as of December 2019

FIGURE 6: Impact of exclusions on ICB sector weights



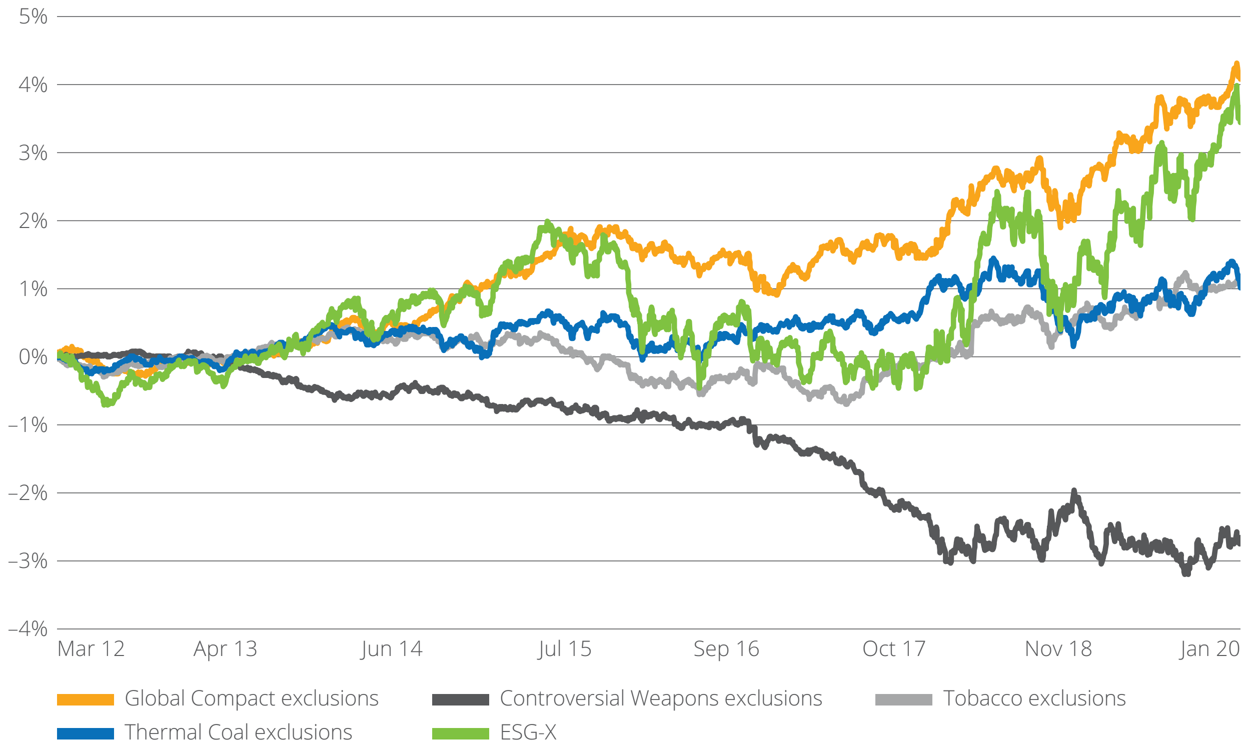
Source: Qontigo, data as of December 23, 2019. Factor-based performance attribution.

STOXX® USA 500 ESG-X INDEX

INDEX PERFORMANCE

The various exclusions have added 3.45 percentage points in cumulative returns over the STOXX® USA 500 Index since inception; this corresponds to an annualized return of 19 basis points. The STOXX® USA 500 ESG-X Index's returns also led its benchmark in the most recent 1-year, 3-year and 5-year periods.

FIGURE 7: STOXX® USA 500 ESG-X – Cumulative impact of exclusions on total returns



Source: Qontigo, data as of January 31, 2020

However, not all the individual exclusions contributed to incremental returns, as can be seen from Figure 7[6]. 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 compared to the benchmark. The biggest boost came from the Global Compact Principles, which added over 4 percentage points to returns.

The net impact of all the types of exclusions has been an increase in the volatility (as measured by the standard deviation of daily returns) of the resulting portfolio by 0.29 percentage points, with all types of exclusions contributing to the increase. Although this has caused a drag on performance of 16bps (Figure 10), it has been offset by other factors.

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

STOXX® USA 500 ESG-X INDEX

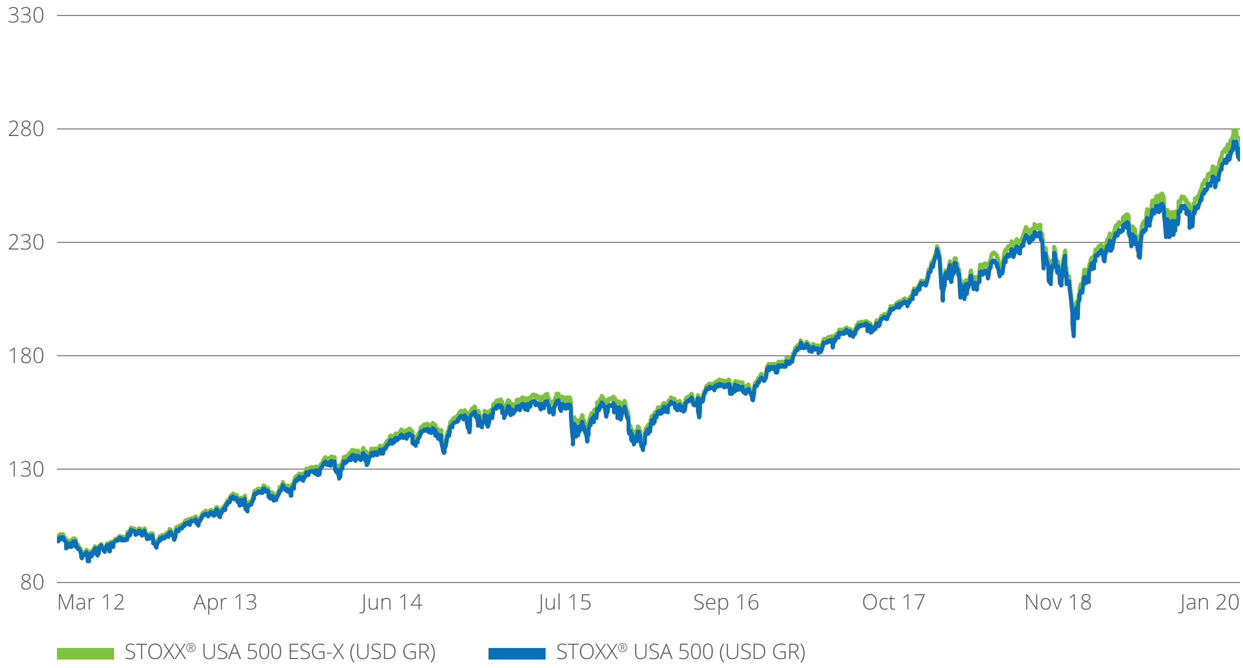
FIGURE 8: Performance analysis for the period from March 16, 2012 to January 31, 2020

STOXX® USA 500	Benchmark	ESG-X	ex UNGC	ex Controversial Weapons	ex Tobacco	ex Coal
Cumulative return since inception*	166.97%	170.42%	171.06%	164.32%	168.14%	167.99%
Return since inception	13.40%	13.58%	13.62%	13.25%	13.46%	13.45%
5y return	12.42%	12.61%	12.60%	12.30%	12.50%	12.50%
3y return	14.88%	15.33%	15.18%	14.76%	15.12%	14.93%
1y return	22.61%	23.38%	22.99%	22.84%	22.77%	22.75%
Volatility since inception	12.94%	13.23%	12.99%	12.95%	13.02%	13.07%
5y volatility	13.38%	13.70%	13.43%	13.40%	13.46%	13.52%
3y volatility	12.96%	13.31%	13.03%	12.98%	13.03%	13.11%
1y volatility	11.84%	12.21%	11.92%	11.88%	11.88%	12.01%
Sharpe ratio since inception	0.98	0.97	0.99	0.97	0.98	0.97
5y Sharpe ratio	0.86	0.85	0.87	0.85	0.86	0.86
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)	n/a	0.62%	0.29%	0.25%	0.23%	0.27%

*All returns and volatilities are annualized except where indicated.

Source: Qontigo, data calculated using gross returns in USD as of January 31, 2020.

FIGURE 9: Performance chart for the period from March 16, 2012 to January 31, 2020



Source: Qontigo

STOXX® USA 500 ESG-X INDEX

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 an active return of 0.15%[7] (calculated as the portfolio's annualized return less the benchmark's annualized return). This is statistically not significant at a 95% confidence level (t-stat of 0.72). Neither the specific return of 0.06% nor the overall factor contribution of 0.09% makes a statistically significant contribution to the active return[8].

FIGURE 10: Performance attribution for the period from March 16, 2012 to January 31, 2020

Source of return	Return	Risk	IR	T-stat
Portfolio	13.38%	12.90%		
Benchmark	13.23%	12.62%		
Active	**0.15%**	**0.60%**	**0.25**	**0.72**
Specific return	**0.06%**	**0.41%**	**0.14**	**0.41**
Factor contribution	**0.09%**	**0.34%**	**0.28**	**0.78**
Style	–0.11%	0.15%	–0.75	–2.12
Growth	0.02%	0.01%	1.73	4.94
Size	–0.01%	0.03%	–0.22	–0.64
Value	–0.03%	0.02%	–1.74	–4.95
Volatility	–0.16%	0.10%	–1.54	–4.38
Industry	0.21%	0.26%	0.80	2.27

Source: Qontigo, via Axioma Portfolio Analytics, STOXX® USA 500 and STOXX® USA 500 ESG-X

The exclusions produced a tilt to industries resulting in a 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. The contribution made by size (a subfactor of the style factor) to the active return is small and statistically insignificant. This is an important outcome to note and has its origins in the ESG data used for screening, which does not bias towards large companies.

Sustainalytics evaluates and performs independent research on companies, instead of relying entirely on a questionnaire-based approach that could potentially result in a bias towards large-cap securities (since such companies can be expected to have the resources needed to provide accurate responses to the questionnaire). This independent approach better avoids any size biases introduced by ESG data.

All in all, excluding stocks has not significantly altered the overall performance of the STOXX® USA 500 ESG-X Index or its risk profile as compared to its market value-weighted benchmark. This is despite the small but offsetting style and industry biases that were introduced.

[7] Factor-based performance attribution was 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 Qontigo's Analytics sources 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 Qontigo's Analytics business compared to the official methodology Qontigo's Index business. In line with this, we consider the difference and its likely impact on the performance of the attribution to be minimal.

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

STOXX® USA 500 ESG-X INDEX

CONCLUSION

Sustainable investing has witnessed a steady increase in allocated assets, with annual growth of almost 15%[9] between 2012 and 2018. Exclusion-based approaches continue to be the largest sustainable investment strategy globally, aligning investment choices with moral codes. 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® USA 500 ESG-X Index, with its straightforward approach to index construction, includes product involvement screening for controversial weapons, tobacco and thermal coal plus norms-based screening for four United Nations Global Compact principles: human rights, labor, the environment and anti-corruption. It delivers a risk-return performance profile that is not significantly different in statistical terms to its benchmark, while at the same time also complying with typical exclusion-based sustainable investing approaches.

The simplicity of the STOXX® USA 500 ESG-X Index enables investors familiar with the standard market cap-weighted STOXX® USA 500 benchmark to easily implement and adopt the relevant differences between the two. Additionally, the similarity of their risk profiles and performance means that the STOXX® USA 500 ESG-X Index is a suitable underlying for derivatives, structured products and exchange traded funds, as well as for typical asset owners’ mandates.

[9] STOXX® ESG-X indices

STOXX® USA 500 ESG-X INDEX

APPENDIX A

THE FAST EXIT RULE IN PRACTICE

Qontigo 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: Sustainalytics changed the rating for Volkswagen and STOXX, now part of Qontigo, announced the company's removal from all STOXX ESG indices.

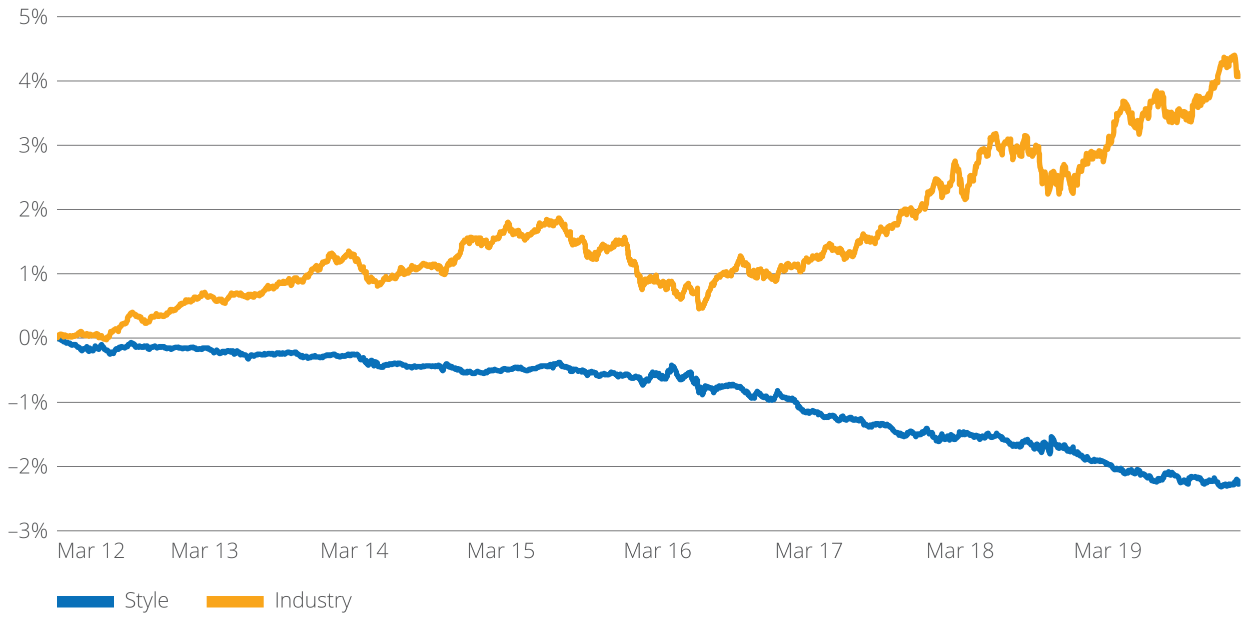
» Friday, Sep. 25: Volkswagen's removal from all STOXX ESG indices took effect.

STOXX® USA 500 ESG-X INDEX

APPENDIX B

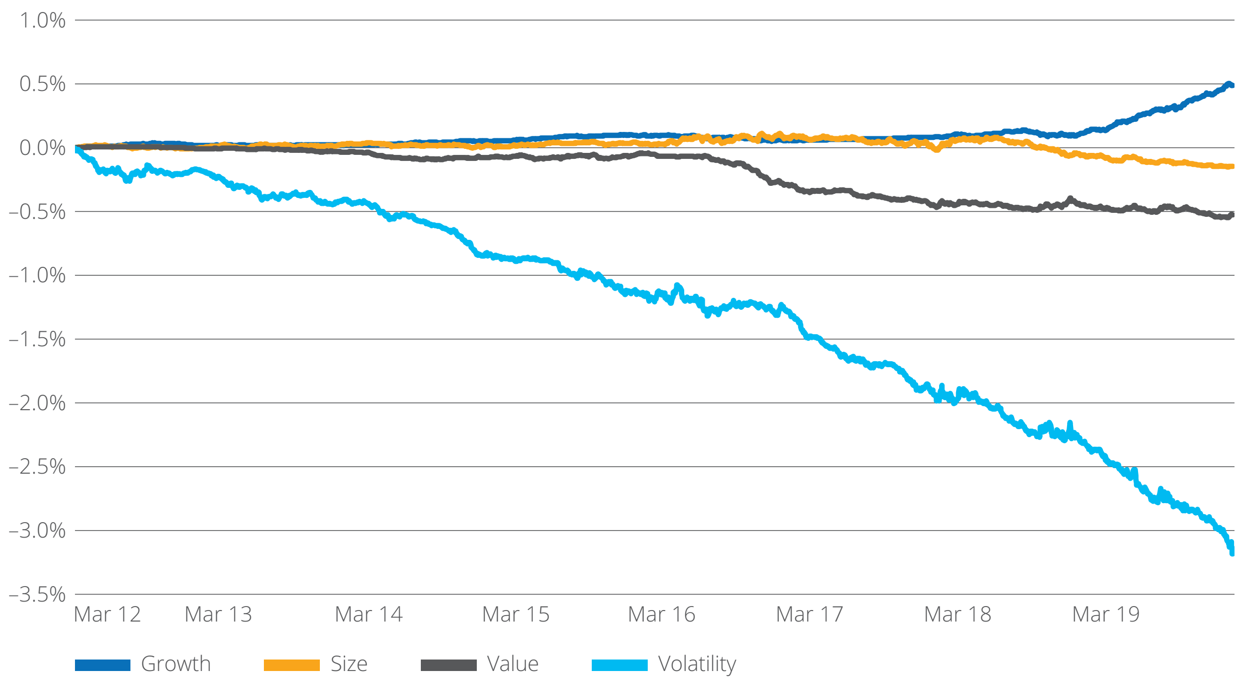
STOXX® USA 500 ESG-X INDEX

FIGURE 11: Cumulative factor contributions over time



Source: Axioma Portfolio Analytics, Qontigo, data as of March 16, 2012 to January 31, 2020

FIGURE 12: Cumulative subfactor contributions over time



Source: Axioma Portfolio Analytics, Qontigo, data as of March 16, 2012 to January 31, 2020

STOXX® USA 500 ESG-X INDEX

About Us

STOXX Ltd., now part of Qontigo, is a global index provide that currently calculates 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, Qontigo 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 “STOXX” and “iSTOXX” brand indices 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 include the STOXX brand in the index name. STOXX uses the Omnient brand to offer 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. Qontigo holds Europe's number one and the world's number two position in the derivatives segment.

Since September 2019 STOXX is part of Qontigo.

Qontigo is a financial intelligence innovator and a leader in the modernization of investment management, from risk to return. The combination of the company’s world-class indices and best-of-breed analytics, with its technological expertise and customer-driven innovation enables its clients to achieve competitive advantage in a rapidly changing marketplace. Qontigo’s global client base includes the world’s largest financial products issuers, capital owners and asset managers. Created in 2019 through the combination of STOXX, DAX and Axioma, Qontigo is part of Deutsche Börse Group, headquartered in Eschborn with key locations in New York, Zug and London.

Qontigo’s index provider STOXX is part of Deutsche Börse Group, and the administrator of the DAX indices under the European Benchmark Regulation.

www.stoxx.com

CONTACTS

Theilerstrasse 1a
CH-6300 Zug
info@qontigo.com
www.qontigo.com

Frankfurt: +49 (0) 69 211 0
Zug: +41 43 430 71 60
London: +44 (0) 20 7856 2424
New York: +1 212 991 4500

Atlanta: +1 678 672 5400
Buenos Aires: +54 11 5983 0320
Chicago: +1 224 324 4279
Geneva: +41 22 700 83 00
Hong Kong: +852 8203 2790
Paris: +33 (0) 1 55 27 38 38
San Francisco: +1 415 614 4170
Singapore: +852 8203 2790
Sidney: +61 (0) 2 8074 3104
Tokyo: +81 3 6870 7766