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Three Different Flavors of Sustainable Investing in the US

The STOXX® USA 500 ESG Broad Market, ESG Target, and ESG Target TE indices

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1. Introduction

Investors interested in sustainable index investing strategies in the US now have access to three new ESG variants on the STOXX® USA 500 Index[1]:

- STOXX® USA 500 ESG Broad Market ("ESG Broad Market")
- STOXX® USA 500 ESG Target TE ("ESG Target TE")
- STOXX® USA 500 ESG Target ("ESG Target") indices.

These aim to provide alternatives for index investors and product issuers who are looking to switch to more sustainable versions of traditional benchmarks.

While each of the three ESG indices provides better ESG performance (i.e., higher ESG scores[2]) than the parent benchmark STOXX® USA 500 Index, their characteristics differ. This allows investors to choose the ESG index that best aligns with their investment objectives. When comparing the three ESG variants, investors need to consider their desired trade-off between having a higher ESG score and the active risk versus the underlying benchmark.

2. The sustainable index framework

The ESG indices have different objectives and therefore vary in the way they are constructed. The ESG Broad Market Index belongs to Qontigo's "Exclude" sustainable index category, while the ESG Target and ESG Target TE indices belong to the "Enhance" category (Figure 1). These two groupings contain ESG indices that are designed to achieve different levels of sustainability penetration.

ESG Broad Market excludes 20% of the assets from the STOXX® USA 500 index by screening out companies that violate ESG norms-based and product involvement screening criteria, plus companies that do not meet a certain ESG score threshold. A free-float market cap weighting is applied, with a maximum weight cap of 10%. Qontigo's ESG Broad Market indices expand the "Exclude" family with a set of substantial exclusions that aim to align with some of the ESG ecolabel guidelines/stipulations noted by the French and German regulators.

The ESG Target and Target TE indices aim to "enhance" the ESG profile of the parent index and are built using the Axioma optimizer plus Axioma's US4 Fundamental Medium-Horizon risk model. They are optimized to manage the trade-off between the tracking error and the ESG score. ESG Target's objective is to *maximize* the portfolio's ESG score while at the same time maintaining a fixed level of active risk at rebalancing in order to mimic the STOXX® USA 500 Index's performance. ESG Target TE's objective is to *minimize* tracking error, while at the same time having the highest possible ESG score.

[1] Launched by Qontigo in April 2021.

[2] Qontigo uses the ESG ratings provided by Sustainalytics during construction of these ESG indices.

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Figure 1. Sustainability framework: Qontigo's Exclude & Enhance categories

Exclude	**Enhance**	
STOXX® USA 500 ESG Broad Market	**STOXX® USA 500 ESG Target TE**	**STOXX® USA 500 ESG Target**
> Excludes 20% of the assets from the STOXX® USA 500 index by screening out: • Companies that violate ESG norms-based and product involvement screening criteria • Companies that do not meet a certain ESG score threshold > A free-float market cap weighting is applied, with a maximum weight cap of 10%.	> Screening companies for involvement > Excluding ESG laggards > **Objective function:** Minimize tracking error to STOXX® USA 500 > **Constraints:** • ESG scores >=25% • One-way turnover • Country/Industry • Minimum weight • Maximum weight	> Screening companies for involvement > Excluding ESG laggards > **Objective function:** Maximize ESG score > **Constraints:** • Tracking error <=1% • One-way turnover • Country/Industry • Minimum weight • Maximum weight

Source: Qontigo

Although higher than that of the parent benchmark, ESG Broad Market's ESG score is the lowest among the three variants. However, it has the lowest tracking error, the highest realized information ratio, and the highest number of holdings.

The ESG Target TE Index, which is optimization based and aims to find the portfolio with the lowest active risk given a specific ESG target, falls somewhere in between ESG Target and ESG Broad Market with respect to most main characteristics of the index. However, the ESG Target TE and ESG Broad Market indices offer a similar tracking error. In other words, investors benefit from a higher ESG score than that of ESG Broad Market, while not diverging too much from the parent benchmark. Additionally, ESG Target TE offers the lowest level of concentration.

The ESG Target Index, which is optimized to maximize exposure to the ESG score for a given level of active risk, provides the highest ESG score among the three variants but also has the highest tracking error, lowest realized information ratio, fewest holdings, and highest stock concentration.

In this study we also compared other key characteristics across these ESG indices, such as sector weights and factor exposures, and sector and factor active return contributions. Figure 2 summarizes our comparison of the STOXX® USA 500 ESG Broad Market, ESG Target TE, and ESG Target sustainable indices.

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Figure 2. Summary of findings

Key characteristic	ESG Broad Market	ESG Target TE	ESG Target
ESG score	Lowest ESG score	Medium ESG score	Highest ESG score
Return	Highest annualized active return	Medium annualized active return	Lowest annualized active return
Tracking error	Joint lowest tracking error	Joint lowest tracking error	Highest tracking error
Information ratio	Highest realized information ratio	Medium realized information ratio	Lowest realized information ratio
Concentration	Medium concentration	Lowest concentration	Highest concentration
Active sector exposure	Highest: Information Technology Lowest: Industrials, Utilities	Most similar to the benchmark	Highest: Information Technology Lowest: Communication Services, Financials
Specific return	Positive	Positive	Negative
Active factor exposure	Highest: Market Sensitivity Lowest: Leverage	Most similar to the benchmark	Highest: Dividend Yield Lowest: Growth

Source: Qontigo

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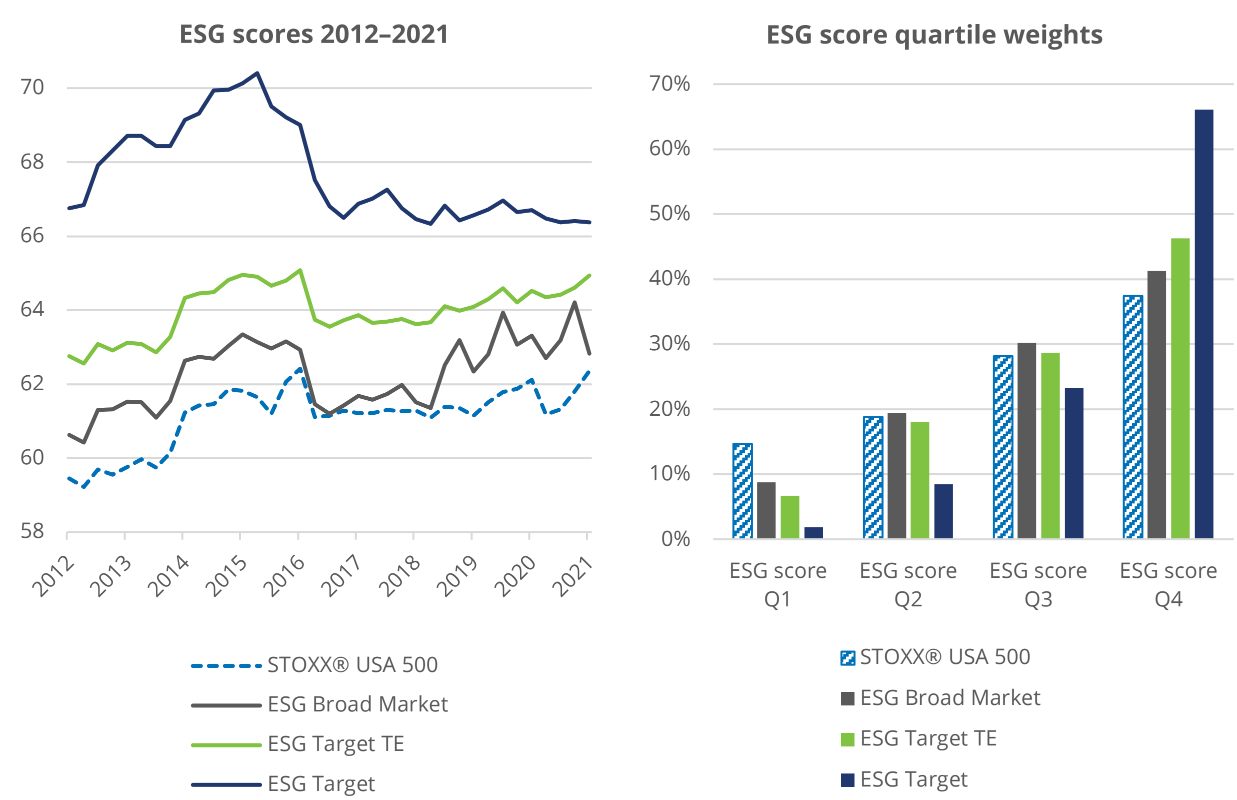
3. ESG scores in line with strategy

The rise of sustainable investing is driven both by a shift in global ESG regulatory environments and by a growing conviction among investors that they can have a positive social and environmental impact while not giving up a lot on financial gains.

The increasing ESG score for the STOXX® USA 500 Index over the past decade (Figure 3) shows how the tide in the United States is moving towards more sustainable investing. All three ESG variants saw higher ESG scores than the parent benchmark throughout this period, with ESG Target leading the way, followed by ESG Target TE and ESG Broad Market.

As expected, ESG Target has the highest weight in the fourth quartile (Q4) of ESG scores (over 60%), and much smaller weights in Q3, Q2, and Q1 compared with the parent benchmark and the other two ESG variants.

Figure 3. Historical ESG scores and ESG score quartile weights



Sources: Qontigo, Sustainalytics

4. Performance and risk similar to parent benchmark and across ESG variants

The performance of the STOXX® USA 500 and its ESG variants was similar between March 19, 2012, and May 17, 2021 (the period under study).[3] ESG Broad Market's cumulative return for this period was only slightly higher than that of the STOXX® USA 500, ESG Target TE was close to that of the parent benchmark, and ESG Target was slightly lower (Figure 4). Of course, past performance – whether absolute or by one ESG index relative to another – is no guarantee of future performance.

Figure 4. Cumulative returns since inception

Source: Qontigo

The ESG variants outperformed the benchmark in some years and underperformed it in others, which suggests that their performance patterns may vary across periods. No index stands out consistently (Figure 5).

[3] Many thanks to my colleagues Evangelos Papoutsis and Mary Zhang for their help in gathering the data used in this analysis.

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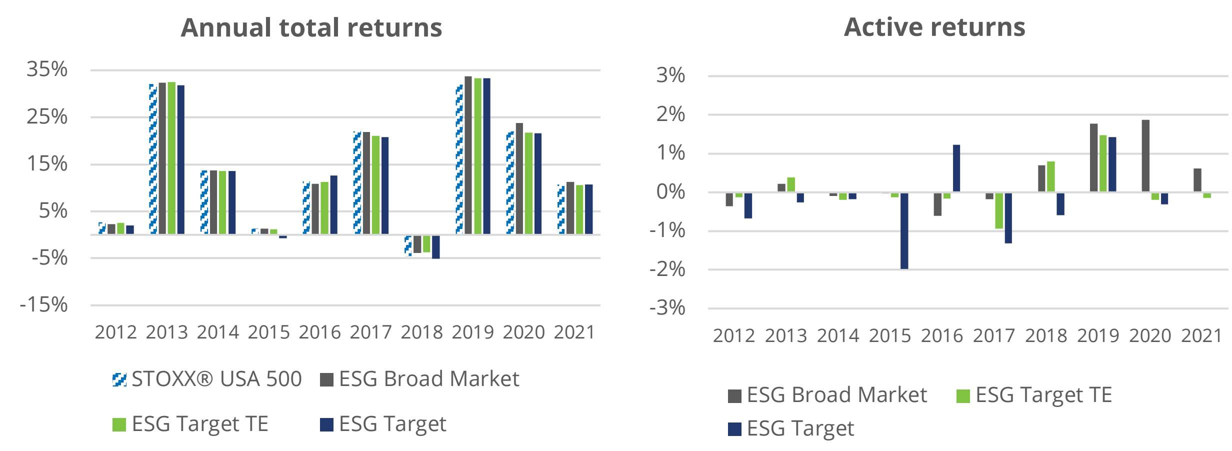
Figure 5. Annual total and active returns



Source: Qontigo

On an annualized basis, ESG Broad Market outperformed the benchmark by 0.42% over the period under review, while ESG Target TE's active return was close to zero and that of ESG Target was slightly negative. The realized total risk was similar across the ESG variants and the parent benchmark, at around 16.8% (Table 1).

Both ESG Broad Market and ESG Target TE tracked the underlying index very closely, with an overall tracking error of around 0.8%. However, it should be borne in mind that ESG Target TE has a higher ESG score than ESG Broad Market. In other words, investors received a greater ESG benefit for the same deviation from the benchmark with ESG Target TE.

ESG Broad Market and ESG Target TE had positive information ratios, while that of ESG Target was negative for the period under review. ESG Target had a higher realized tracking error by design than the other variants, and its full-period realized active risk was slightly above the 1% target. ESG Broad Market saw the highest information ratio, driven by both higher active return and lower-to-equal active risk.

Table 1. Risk and return overview

Since Inception[1,2]	STOXX® USA 500	ESG Broad Market	ESG Target TE	ESG Target
Return	15.0%	15.4%	15.0%	14.6%
Active return		0.42%	0.07%	-0.38%
Risk	16.75%	16.88%	16.77%	16.77%
Tracking error		0.8%	0.8%	1.3%
IR		0.5	0.1	-0.3

1. Daily data for the period from March 19, 2012 to May 17, 2021.
2. Annualized returns, annualized volatility (standard deviation). Relative figures calculated against the parent index.

Source: Qontigo

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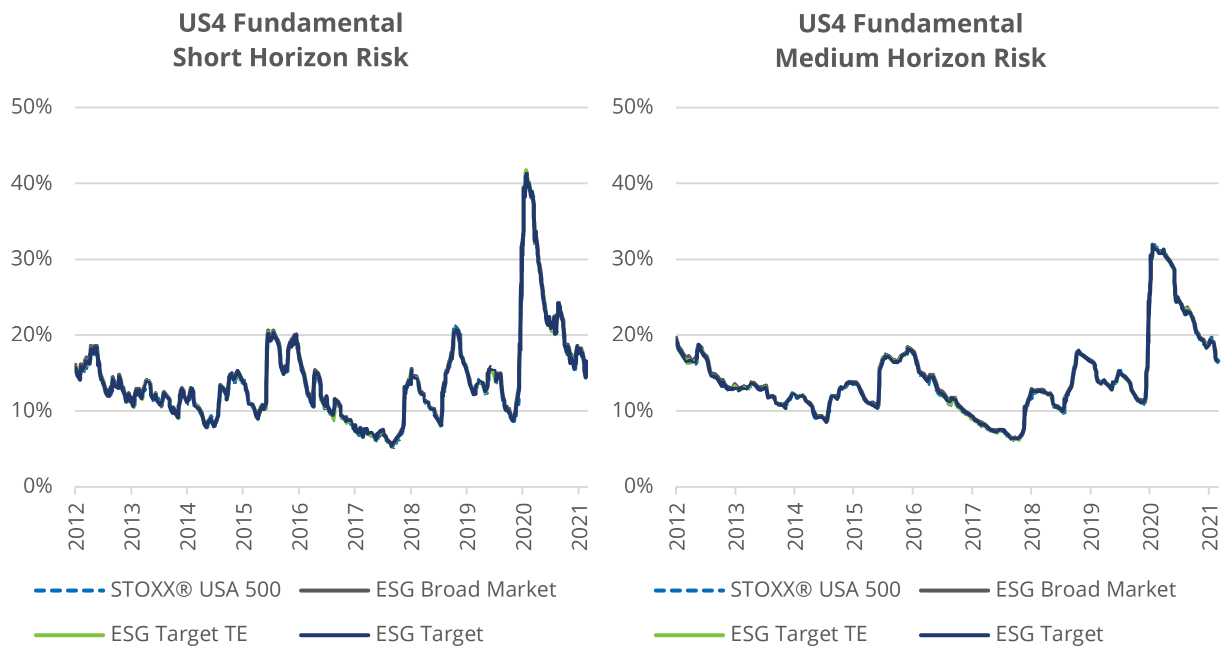
In addition, forecasted total risk was indistinguishable for the STOXX® USA 500 Index and its ESG variants at both short and medium horizons throughout the period, as measured by Axioma's US4 Fundamental model. The four lines overlap in the charts below, meaning that only one line – for ESG Target – is visible (Figure 6).

Figure 6. Forecasted risk measured using Axioma's US4 Fundamental model at short and medium horizons



Source: Qontigo

5. ESG Target TE saw lowest overall stock concentration

In terms of holdings, ESG Target had the smallest number of assets (about 200), while ESG Broad Market – which by definition eliminates 20% of the names from the parent benchmark – had double that at the last rebalance on March 22, 2021. The number of holdings in ESG Target TE was in the middle, at around 300.

The top 10 stocks accounted for more than one-quarter of the weight of all three indices. ESG Broad Market saw the highest concentration in its top 5 and top 10 stocks, at 21% and 28% respectively (Table 2).

ESG Target TE had the lowest overall concentration as measured by the Herfindahl-Hirschman Index (HHI) at 132, while ESG Target had the highest (147).

Remarkably, the concentration statistics were similar despite the very different number of stocks in each portfolio. This suggests that the portfolio concentration for investors in the highest-risk strategy is not significantly higher. In addition, all three ESG indices were well diversified across sectors.

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Table 2. Index concentration and number of holdings as of March 22, 2021

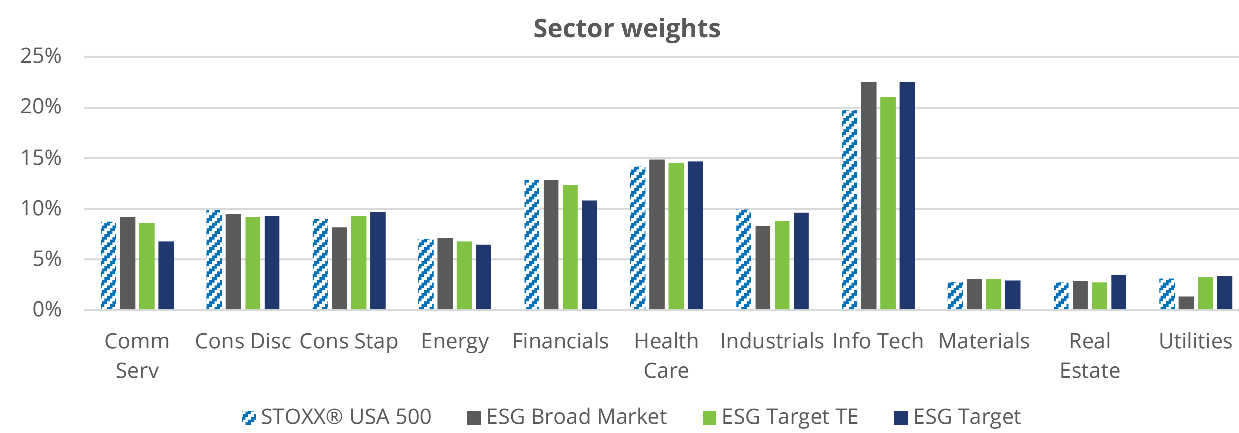
Concentration on March 22, 2021	ESG Broad Market	ESG Target TE	ESG Target
Weight of 5 top stocks	21%	18%	18%
Weight of 10 top stocks	28%	25%	27%
Weight of 25 top stocks	41%	40%	44%
Weight of 50 top stocks	56%	55%	63%
HHI	145	132	147
Number of stocks	400	302	205

Source: Qontigo

6. All three ESG indices benefited from overweighting Information Technology

Information Technology, Health Care, and Financials are the dominant sectors in all three ESG variants, as they are in the parent benchmark[4]. ESG Target TE had the lowest weight in Information Technology across the three variants and ESG Target the lowest weight in Financials (Figure 7).

Figure 7. Average sector weights for the period under study



Comm Serv	Cons Stap	Cons Disc	Info Tech
Communication Services	Consumer Staples	Consumer Discretionary	Information Technology

Source: Qontigo

[4] This analysis uses GICS 2018 classification

All three ESG indices overweighted Information Technology and underweighted Industrials. This resulted in all cases in a positive allocation effect on their active performance relative to the STOXX® USA 500 Index (Figure 8).

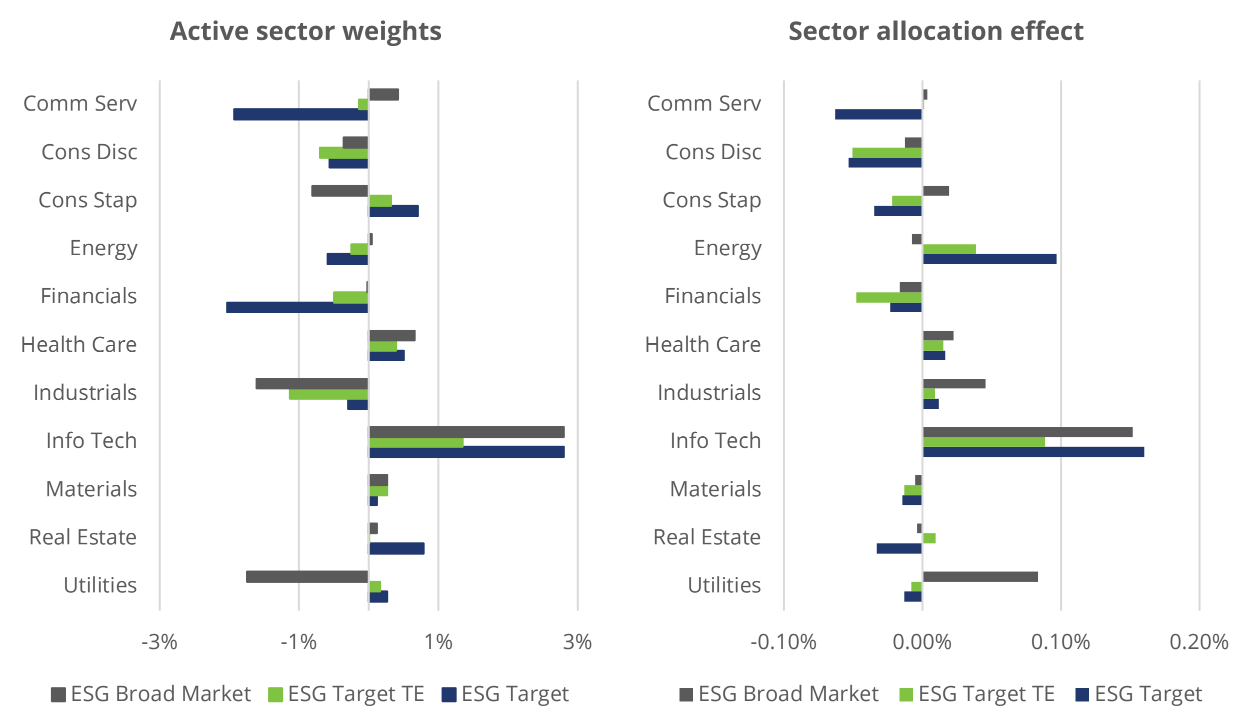
Utilities had a negative active weight in ESG Broad Market, resulting in a large positive allocation effect to this ESG index's return. In contrast, Utilities were slightly overweighted in ESG Target and ESG Target TE, which had a small negative effect on both indices.

The large underweight in Communication Services and Financials in ESG Target had a negative allocation effect on the latter's return.

The underweight in Energy in both ESG Target and ESG Target TE resulted in an allocation benefit for both indices, while the ESG Broad Market Index was hurt by its slight overweight in Energy.

As was to be expected given the objective of the optimization used for building this index, ESG Target TE saw the smallest deviations from the parent benchmark in terms of sector weights.

Figure 8. Average active sector weights and sector allocation effects



Comm Serv	Cons Stap	Cons Disc	Info Tech
Communication Services	Consumer Staples	Consumer Discretionary	Information Technology

Source: Qontigo

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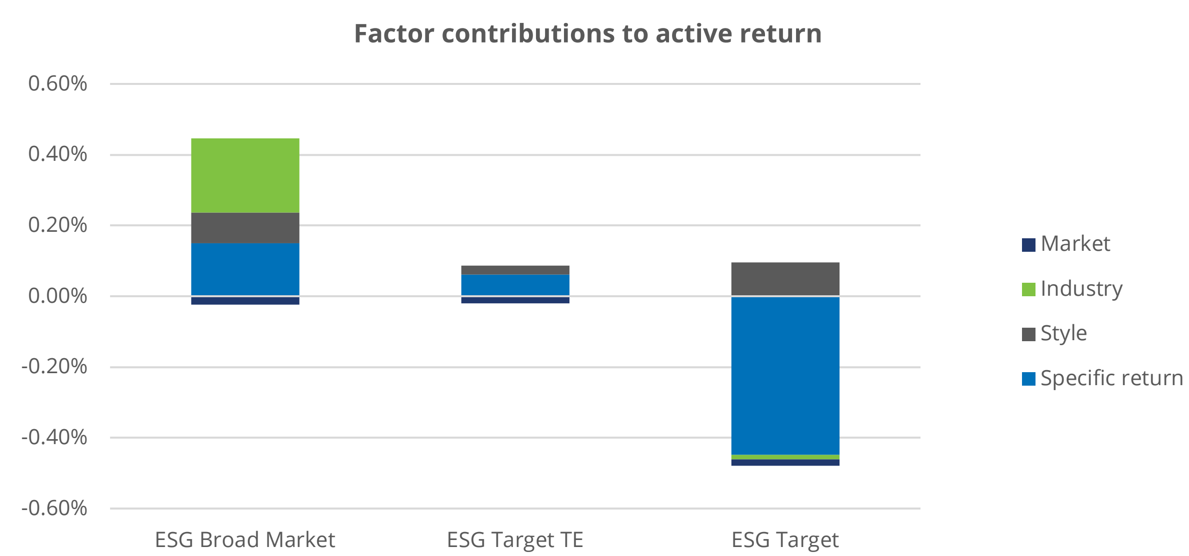
7. Specific return helped ESG Broad Market but hurt ESG Target

Specific return made a large negative contribution to the ESG Target portfolio, but was positive for both ESG Broad Market and ESG Target TE (Figure 9). Industry contribution was quite positive for the ESG Broad Market Index but slightly negative for ESG Target, whereas it did not have much of an impact on ESG Target TE. Market contribution was negative across all three ESG indices, while style factor contribution was positive for all three. Further details about the contribution of the different style factors are given below.

Figure 9. Factor contributions to active return



Source: Qontigo

The divergence between ESG Target and ESG Broad Market was also reflected in the tracking error of 1.21% between these two ESG indices – the highest among each pair (Table 3). These tracking errors indicate that, although the results over our long test period were similar, the portfolios were as different from one another as they were from the benchmark.

Table 3. Tracking error between ESG variants

Tracking Error	ESG Target TE	ESG Target
ESG Broad Market	0.70%	1.21%
ESG Target TE	0	0.93%

Source: Qontigo

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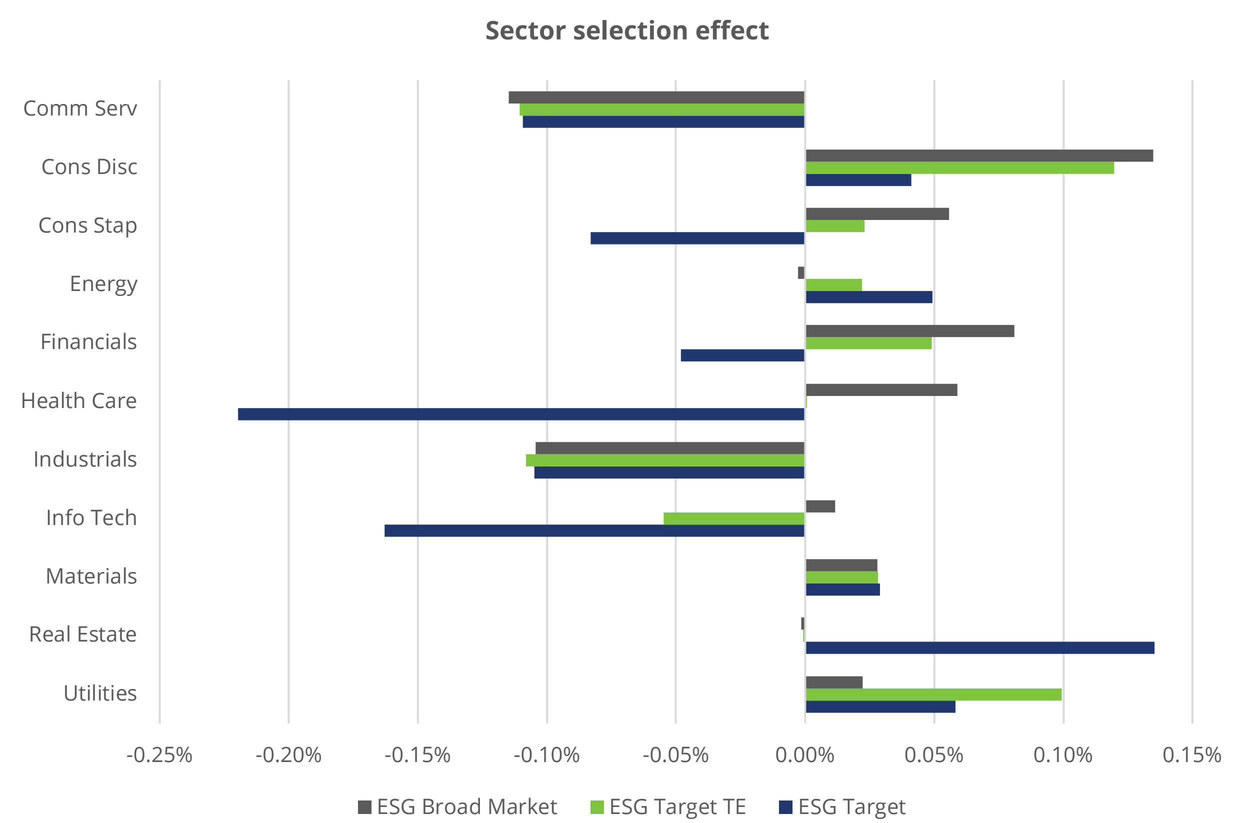
The ESG Target Index was most negatively affected by the selection of stocks within Health Care, Information Technology, Communication Services, Industrials, and Consumer Staples, while the ESG Broad Market Index benefitted the most from the stocks picked within Consumer Discretionary, Financials, Health Care, and Consumer Staples (Figure 10). The ESG scores and risk characteristics that determine which stocks the optimizer will select (in the case of the ESG Target and ESG Target TE indices) clearly distinguished winners from losers better in some sectors than in others.

Figure 10. Sector selection effect



Comm Serv	**Cons Stap**	**Cons Disc**	**Info Tech**
Communication Services	Consumer Staples	Consumer Discretionary	Information Technology

Source: Qontigo

Although all ESG indices saw better ESG scores than the parent benchmark, ESG Target's return was hurt most by its selection of individual names. On aggregate, the impact of stock selection was positive for ESG Broad Market, negative for ESG Target, and near zero for ESG Target TE. In contrast, sector allocation was positive for all three ESG indices (Figure 11).

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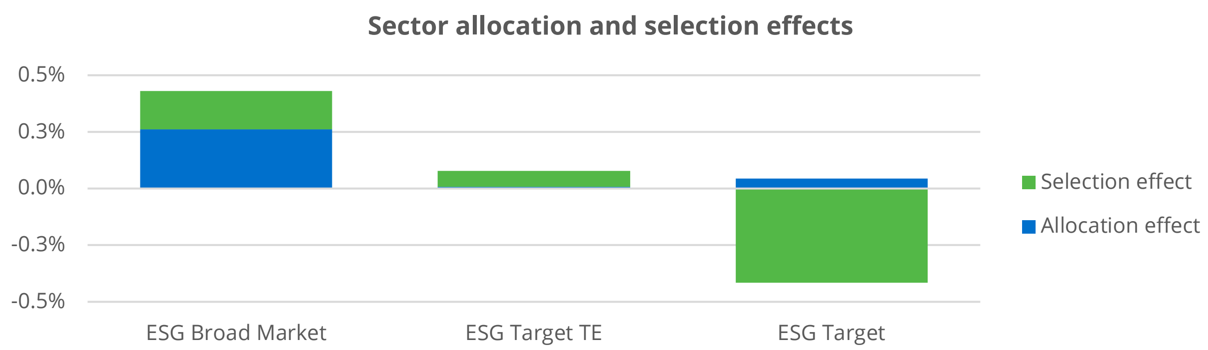
Figure 11. Total sector allocation and selection effects



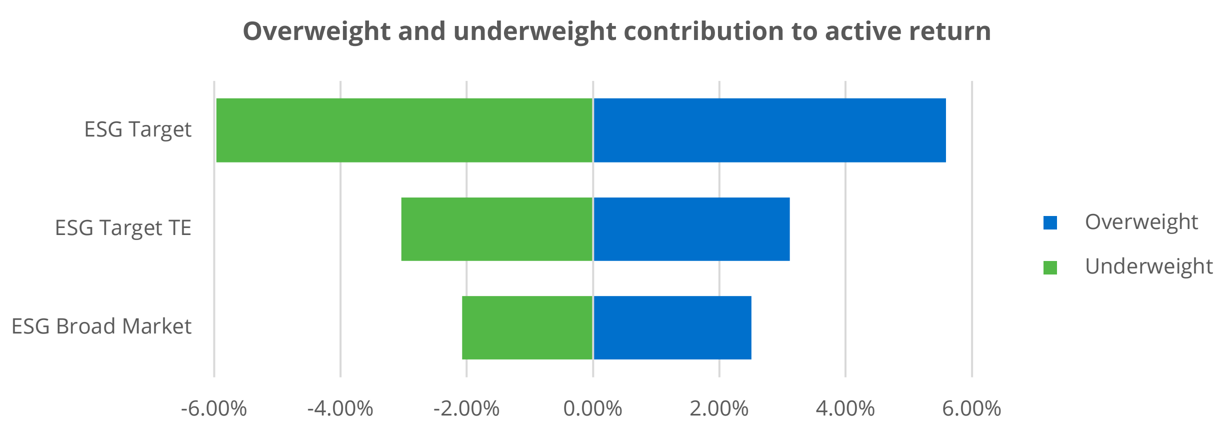
Source: Qontigo

The effect on performance of overweights was similar in magnitude to that of underweights in each ESG index (Figure 12), although the impact was inverted. Overweights made a positive contribution to the active return of all ESG indices.

As was to be expected given ESG Target's higher tracking error and slightly higher concentration, overweights here made the largest contribution of the three ESG variants. Overweights's contribution to ESG Target was slightly lower than that of the underweights which resulted in a negative active return for ESG Target.

The negative contribution made by the ESG Broad Market and ESG Target TE underweights was slightly lower than the positive contribution from overweights in each of the two indices, resulting in positive active returns for these two ESG indices.

Figure 12. Overweight and underweight contributions to active return



Source: Qontigo

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8. Volatility made largest positive style factor contribution to ESG Broad Market and ESG Target active returns

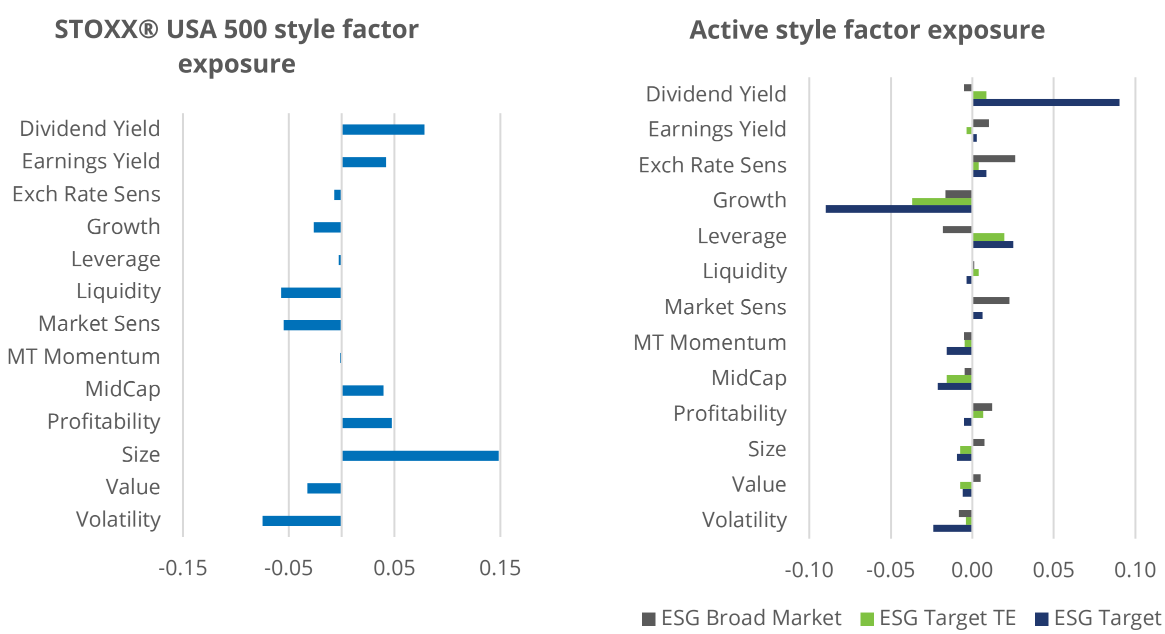
All three ESG variants had negative exposures to the Volatility style factor, resulting in positive contributions to their returns, with ESG Target seeing the highest negative active exposure and the largest positive impact (Figures 13 and 14).

ESG Target had the highest average active exposure to Dividend Yield and the lowest active exposure to Growth; both factors contributed negatively to ESG Target's active return. ESG Target's active exposure to Dividend Yield was strongly positive throughout the last decade, while the exposures of ESG Broad Market and ESG Target TE oscillated between positive and negative and were smaller in magnitude (Figure 15). ESG Target saw the largest negative active exposures to Growth during the same period.

ESG Broad Market had the largest average positive active exposure to Market Sensitivity across the three ESG indices, and saw the largest negative contribution from this factor. ESG Broad Market's active exposure to Market Sensitivity was positive throughout history, apart from a brief exception in 2019 and 2020, in contrast to ESG Target and ESG Target TE.

ESG Broad Market had a negative average exposure to Leverage, in contrast to ESG Target and ESG Target TE where it was positive. However, Leverage's impact on return was quite small across the three ESG indices. Historically, ESG Broad Market's active exposure to Leverage was generally negative (although it turned positive recently), while that of ESG Target and ESG Target TE was positive for most of the past decade.

Figure 13. Average style factor active exposures



Exch Rate Sens	Market Sens	MT Momentum
Exchange Rate Sensitivity	Market Sensitivity	Medium-Term Momentum

Source: Qontigo

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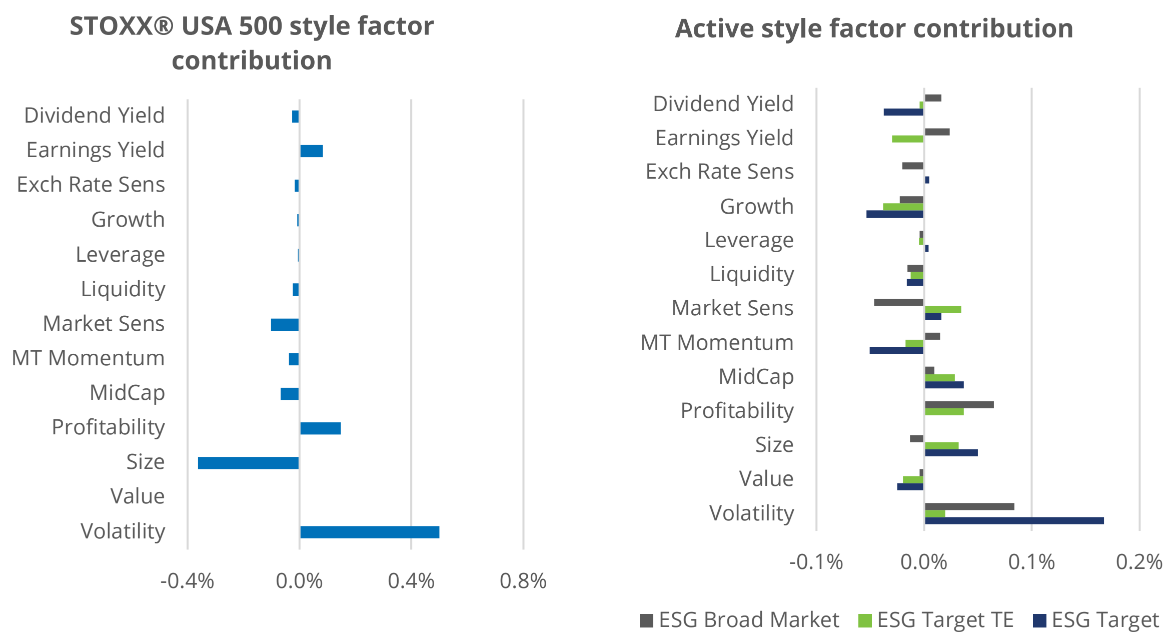
Figure 14. Style factor contributions to return



Exch Rate Sens	**Market Sens**	**MT Momentum**
Exchange Rate Sensitivity	Market Sensitivity	Medium-Term Momentum

Source: Qontigo

9. Conclusion

The STOXX® USA 500 ESG Broad Market, ESG Target TE, and ESG Target index variants provide options for sustainable investing that are aimed at satisfying a variety of investment objectives. The indices allow portfolio managers to select the trade-off between improving average ESG score and tracking error that is most suitable for their investment objectives. All three ESG index variants have been designed to deliver higher ESG scores than the parent index. ESG Broad Market and ESG Target TE followed the parent benchmark more closely (i.e., they had the lowest tracking error), while ESG Target had a higher active risk but also a significantly better ESG score. What is more, these ESG indices vary in terms of sector weighting and style factor exposures, which could also play a role in managers' selection decisions.

We anticipate that these STOXX® USA 500 ESG index variants would fulfill the needs of a broad spectrum of investors, but in addition, Qontigo's solutions in the ESG space offer:

1. Customization capabilities: although these ESG indices are available as standard, Qontigo's Open Architecture platform allows for customizing some of the parameters to fine tune specific objectives.
2. Sustainalytics ESG datasets are the primary source of ESG scores, but Open Architecture allows for the same methodology (with any customizations) to be applied on a client's proprietary ESG dataset.
3. Qontigo's expanded sustainability index framework allows us to offer additional overlays, such as low vol, high div, and similar strategies on these indices.

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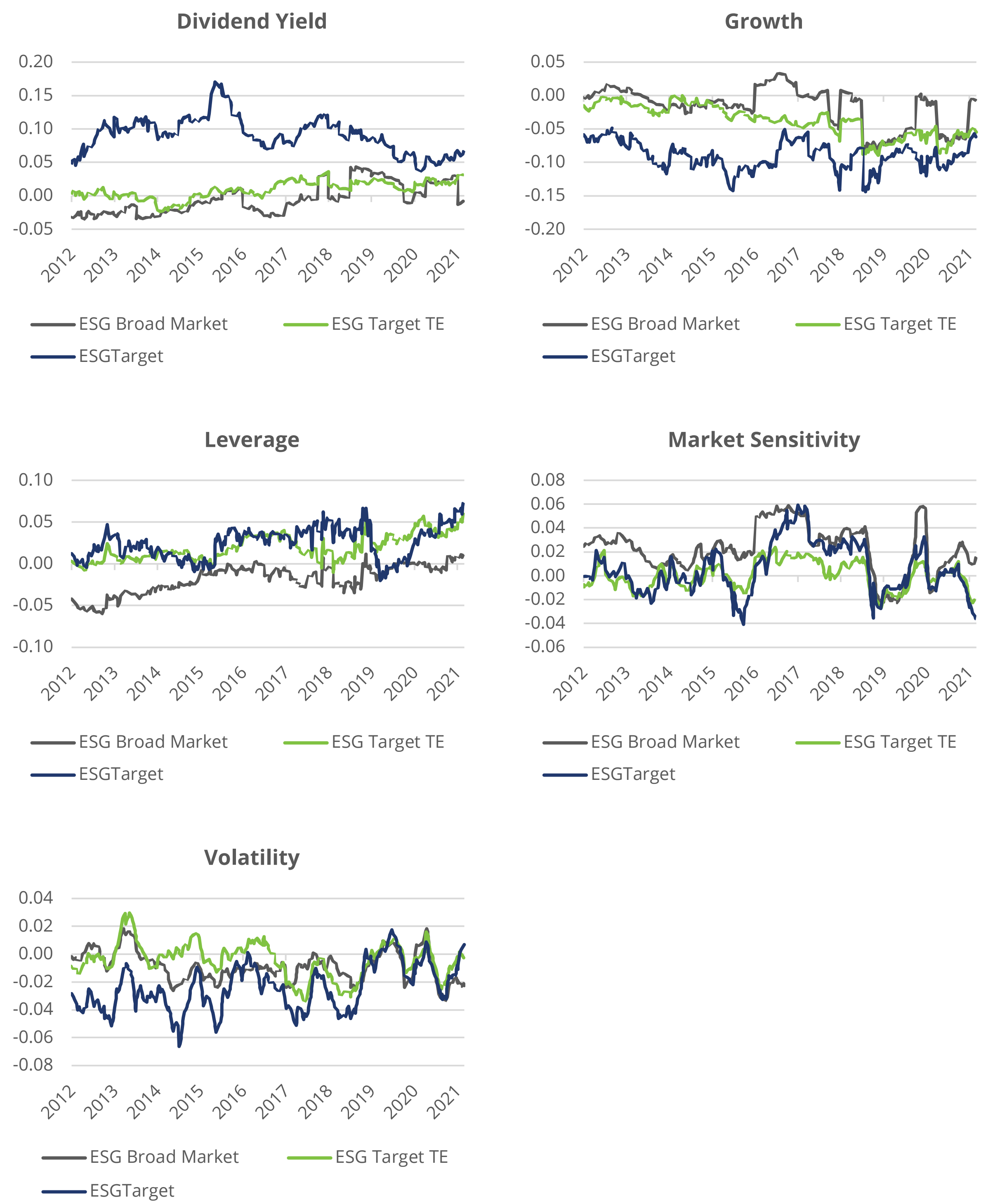
Figure 15. Historical active factor exposures



Source: Qontigo

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