COMBINING OUR EDGE IN QUANT AND SUSTAINABLE INVESTING

Decarbonising fixed income portfolios under Your Future Your Super

ROBECO
The Investment Engineers

- A fixed income strategy that considers return, risk, and sustainability
- Evidence-based and forward-looking to contribute to member outcomes
- Based on 25 years of implementing quant fixed income solutions

Many Australian superannuation funds have made Net Zero commitments and want to decarbonise their portfolios in line with these pledges. To do so, their portfolios will need to deviate from benchmarks that do not consider climate risks. Such deviations need to be managed carefully in light of the regulatory environment. Our quant fixed income strategies offer a time-tested approach to decarbonising bond portfolios with strong risk management and attractive return potential. We manage portfolios with significantly lower carbon intensity while aiming to outperform benchmarks within limited risk budgets. The impact of decarbonisation on risk and return is quantified and allows for customisation along risk, return and decarbonisation objectives. Below, we set out our approach to marrying these dimensions.

Asset owners and managers have embraced the importance of incorporating climate-risk frameworks. While it seems as if the equity asset class may have been quicker to incorporate such frameworks, bond investors' focus on downside protection requires equal awareness and management of climate risks. Decarbonising fixed income portfolios means investing more in bonds from low-carbon issuers and less in bonds from high-emission issuers. This could mitigate risks, as issuers with higher emissions could face bigger challenges in the energy transition. By shifting portfolios towards countries and/or companies with lower emissions, investors can endorse issuers' efforts to reduce emissions. However, shifting portfolio weights means deviating from market-value weighted indices. While this does not have to increase absolute risk, it introduces relative risk (i.e. tracking error). This is a relevant consideration in light of the Your Future Your Super (YFYS) framework, where performance is evaluated against market-value weighted indices described by APRA. In light of the constant need to deliver for members, and given that underperformance versus indices can have major consequences for funds, we have to carefully consider the impact on risk and return when future-proofing fixed income portfolios through decarbonisation.

Can an indexed fixed income approach lead the way to decarbonisation?

With the growth in passive investing and a plethora of index providers offering low-carbon fixed income benchmarks, one might argue that a passively tracked carbon-screened, or low-carbon, index could be a solution. In fact, such solutions can provide decarbonisation. However, such 'simple' approaches often do not take into account risk dimensions. In fact, several climate government bond indices tend to exhibit higher duration than the market value-weighted indices. They also do not take into account proven variables that can help tilt a portfolio towards stronger issuers. In the corporate bond market, due to liquidity challenges, passive credit portfolios are often benchmarked against 'investable' indices, which can introduce quite large tracking errors to the official performance (or parent) benchmark. Our research has led us to develop solutions that address such challenges head on. We bring together

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Marketing material for professional investors, not for onward distribution

Olaf Penninga
Portfolio Manager

proven, factor-based signals, with emissions data and prudent risk management. As a result, we can build more advanced decarbonised fixed income portfolios. In addition, our process directly accounts for liquidity and transaction costs, which an indexed low-carbon approach may not. In the next section, we describe how we combine these multiple dimensions in our decarbonised fixed income strategies, summarised in Table 1 below.

A decarbonised Enhanced Indexing portfolio in global aggregate bonds

Robeco has a proven and systematic approach to issuer selection. At the heart of the strategy lies Robeco's Multi-Factor Bonds strategy - our quant approach to global bond investing. Bonds are first ranked on relative attractiveness using proven fixed income factors like value, momentum, low-risk and quality. Our proprietary portfolio construction algorithm is used to create a portfolio of well-ranked bonds taking into account prudent risk limits and to enhance the portfolio's sustainability profile (i.e. Net Zero alignment). This process allows for flexible customisation in terms of risk budget, setting of performance targets and decarbonisation. Many of our quant fixed income mandates are customised along these dimensions. Due to the systematic nature, the process lends itself well to backtesting to quantify the impact of different decarbonisation levels on risk and return. This is a rigorous process we follow and share insights when we co-create solutions with our clients, as their risk, return or decarbonisation budgets change.

Table 1 - Decarbonised Enhanced Indexing fixed income strategies

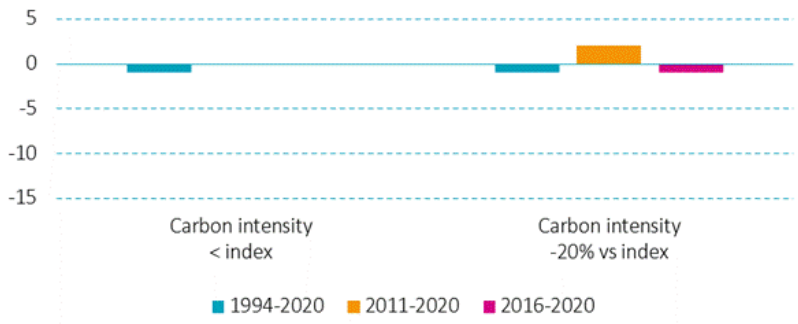
	Global IG Credit	Global Rates	Global Aggregate
Risk budget	100-150bps	50-100bps	100-150bps
Decarbonisation objective	20%	10%	20% credits / 10% sovereigns
Alpha target	0.75%	0.25-0.50%	0.75%

Source: Robeco. The three proposed decarbonised Enhanced Indexing strategies aim to outperform their respective sector benchmarks (after costs) across a full investment cycle with an IR target of 0.75.

Decarbonising credit portfolios

The difference in emissions between companies is much greater than the differences between countries, especially when comparing companies from different sectors, such as an oil company and an IT service provider. As a result, one can achieve a fairly strong decarbonisation within credits without impacting the strategy's expected return. However, this can result in sector biases and hence in performance differences versus the index. To quantify the risk and return impact of decarbonisation, we have run several back tests of our Multi-Factor Credits strategy, with different sets of sustainability enhancements. Back testing is, by design, backward-looking i.e. it tells us whether decarbonisation would have impacted performance in the past. In the future, results could be more favourable if policymakers introduce more stringent regulations or financial incentives to decarbonise. By comparing results for both a portfolio with a 20% decarbonisation target and one without, we can measure how this decarbonisation affects returns. Our analyses indicate a negligible performance impact and no meaningful increase in tracking error for a 20% decarbonisation target, compared to a regular Multi-Factor Credits portfolio. As such, we show that we can construct bond portfolios that have attractive factor exposures and lower carbon emissions without increasing risk.

Figure 1 - Expected return impact of decarbonisation (in bps)

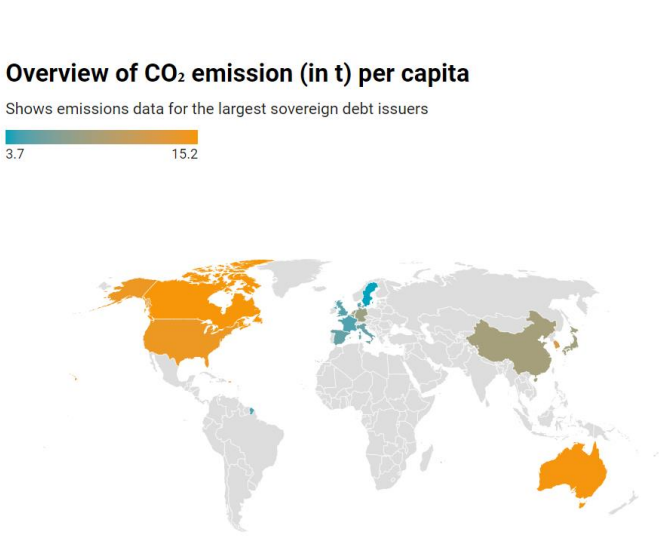


Source: Robeco. This chart shows the impact in basis points per year on the simulated annual outperformance of Robeco Global Multi-Factor Credits for each sustainability restriction. Please note that the above numbers are averages as measured over several research periods (1994-2020; 2011-2020, 2016-2020). Over shorter periods the performance impact may be larger. The value of your investments may fluctuate. Results obtained in the past are no guarantee for the future.

Decarbonising government bond portfolios

To create a government bond portfolio with lower carbon intensity, one has to shift weight from bonds of high-emission countries to bonds from countries with lower emissions. A naïve approach would simply reduce the weight of all bonds from high-emission countries: the higher the country's emissions, the more the weight is reduced, while the weight of bonds from lower-emission countries is increased. Now, looking at the emissions of the main developed government bond markets in Error! Reference source not found., we can see at least two pitfalls with this a pproach. First, the naïve approach would reduce the weight of all US government bonds, which have a maturity of no more than 30 years, and increase the weight of French and UK government bonds – including that of the 50-year bonds issued by these countries. The naïve approach would then shift weight towards the longest-dated bonds and thus increase the duration of the portfolio. Next to that, it would then increase the weight of countries with lower credit ratings like Spain and Italy, increasing the spread risk of the portfolio. A naïve approach thus fails to take risk into account.

Figure 2 – Emissions of largest sovereign bond issuers

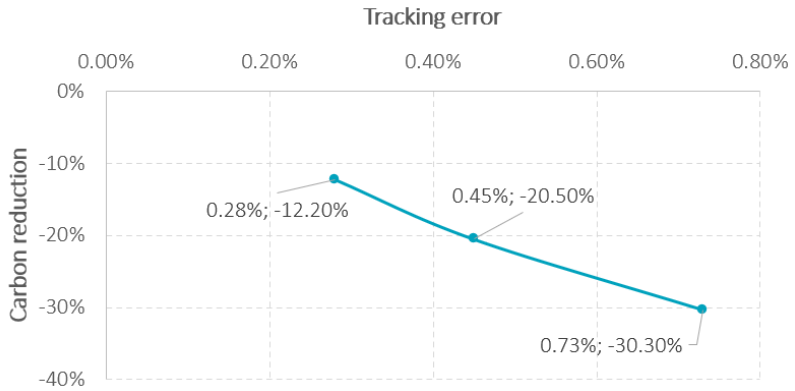


Country	tCO2/capita
Canada	15.2
Australia	15.1
United States	14.4
Korea	12.3
China	8.8
Japan	8.6
Germany	8.2
Netherlands	7.8
Belgium	7.7
Italy	5.5
Spain	5.5
UK	5.0
Denmark	5.0
France	4.8
Sweden	3.7

Source: Robeco, EDGAR (Emissions Database for Global Atmospheric Research) 2023 report, Datawrapper. CO2 (in tons) emissions per capita in 2022 for the largest sovereign bond issuing countries.

While an indexed approach could also address duration and spread risk, most climate bond indices do not address such crucial investment risks. In fact, most climate government bond indices have higher duration than their market-value weighted parent index. They also do not consider an issue's return (i.e. factor) characteristics. We address these key issues in our strategy. Our portfolio construction algorithm shifts weight from higher-emission bonds to those from lower-emission countries, but it takes risk into account when doing so. It controls, for instance, the duration of the portfolio, the spread risk, and the concentration, especially in somewhat less liquid parts of the market. As a result, we can decarbonise more efficiently: achieving the same decarbonisation with less tracking error versus the regular index, or a stronger decarbonisation for a given risk budget compared to a naïve, indexed, approach, while preserving an index-like risk level and the potential to outperform.

Figure 3 – Trade-off between carbon reduction and tracking error for government bond portfolios



Source: Robeco, Bloomberg, EDGAR. Results obtained in the past are no guarantee for the future.

Index-like returns or adding multi-factor alpha

As mentioned, we can use the portfolio construction algorithm just to decarbonise the portfolio efficiently. In that case we create corporate and government bond portfolios with lower carbon intensities and with a lower tracking error versus the index, aiming for returns in line with the index. However, even with limited room to deviate from the index, clients might aim for additional return as well as for decarbonisation. The Multi-Factor Bonds strategy can combine these two goals. Our proprietary algorithms can construct portfolios of bonds with attractive factor exposures, so with bonds that score well on factors like value, momentum, low-risk and quality. In that case, we aim to add alpha while controlling risk. And, as presented in Table 1 we, more often than not, utilise the algorithm to do both: construct a portfolio of bonds with attractive factor and emissions characteristics. Our simulations show that we do not need twice the tracking error to meet both goals; actually, we can often kill two birds with one stone. The portfolio construction algorithm can evaluate way more potential portfolios than any human investor ever could. Often, it can find solutions where deviations from the benchmark contribute to both decarbonisation and increased factor exposure, hence boosting the portfolio's expected return while mitigating emissions and controlling risk.

The elephant in the room: How to measure carbon emissions for bonds?

Emission numbers for companies and countries cannot be compared directly. For corporate bonds, emissions are measured in the same way as for equities. Company emissions can be divided into the emissions related to the company's activities and the generation of the electricity it buys (scope 1 & 2), plus the emissions associated with the company's supply chain (scope 3 upstream) and the use of its products (scope 3 downstream). These emissions are normalised by dividing them by the enterprise value. Governments are responsible for all emissions in their country, as they set policies, rules, and taxes or fiscal incentives for households and companies operating in that country. However, country emissions cannot be normalised using enterprise values. Our preferred normalisation is to divide country emissions by the population size (i.e. per capita).