ESG

Does ESG matter for asset allocation?

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The integration of ESG factors into the investment process is increasingly becoming mainstream for institutional investors. However, investors struggle with how to incorporate ESG criteria into their top-down asset allocation decisions.

In this report we show how ESG criteria can be systematically and consistently integrated into the asset allocation process. Our approach can be used for almost any multi-asset portfolio without materially reducing return expectations or increasing portfolio risk.

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ESG integration has become mainstream in security selection

The integration of environmental, social, and governance (ESG) criteria into the security selection process has become mainstream in Europe and many other regions of the world. ESG integration has become so important that asset managers lose mandates from pension funds and other institutional investors if they cannot explain how they integrate ESG criteria into their investment process. As one participant at our last ESG Roundtable said: "ESG has become a licence to operate".[1]

But our ESG Roundtable also showed that there are gaps that need to be closed before institutional investors can implement a comprehensive and consistent ESG framework. ESG integration is relatively far advanced in equity investments, where different companies provide ratings and all kinds of information on single stocks. Increasingly, this is also the case for government and corporate bonds, and first steps are being made in alternative investments such as real estate, infrastructure and private equity.

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One of the areas that institutional investors struggle with, however, is the integration of ESG criteria into asset allocation decisions. Precious little research has been done in this area and most investors at this point in time seem to ignore the topic due to a lack of guidance. In this report, we want to address this gap head on and develop a simple framework for integrating ESG factors into the asset allocation decision.

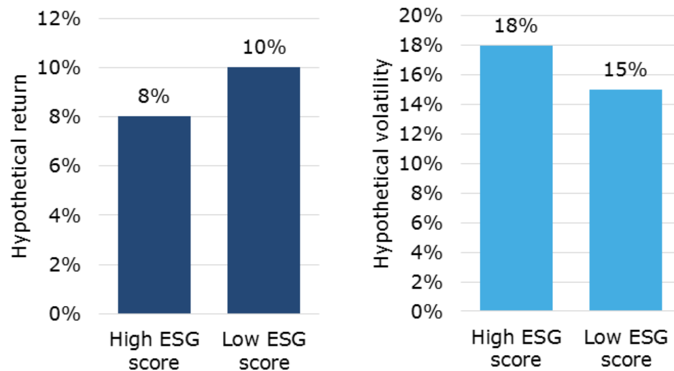
The benefits of our approach are:

- It allows investors to use whatever ESG rating or methodology they prefer. In our case study we will use RobecoSAM Sustainability Rankings but our methodology is easily adjusted to any other ESG methodology.
- It allows investors to integrate ESG criteria consistently across all asset classes.
- It allows investors to use traditional indices as a starting point for asset allocation decisions, thus enabling them to benefit from the full historical information available in these indices and making it easier to hire high quality third party asset managers for each asset class.
- It allows investors to decide the degree of influence ESG criteria have on the asset allocation decision. Our case study below will show portfolios based on a relatively moderate influence of ESG criteria on asset allocation, but more aggressive investors can easily scale up the impact ESG criteria have on their portfolio.

Our approach to ESG integration to asset allocation starts with a simple idea shown in Fig. 1. The question that investors often ask is "what are the costs of ESG integration?"

[1] https://www.fidante.com/resources/fidante-sustainable-investing-roundtable---the-way-forward-in-esg-investing

Fig 1: When do you switch from one investment to the other?



Source: Fidante Partners.

There is an increasing number of academic studies that show ESG integration does not lead to lower returns, and we do not believe that ESG integration means that investors have to accept lower returns. But for our purposes it is instructive to think of the trade-off between ESG investing and traditional investing in the dimensions of risk and return.

Looking at the left hand side of Fig. 1, we present the investor with two choices: an investment with a high ESG score and a low return vs. an investment with a low ESG score and a high return. Assuming the investor has a preference for the investment with a high ESG score, by how much does the low-score ESG investment have to outperform the high-score ESG investment before the investor switches?

The right hand side of Fig. 1 shows a similar choice but this time framed as a choice between investments with different risk. How much lower has the risk of a low-score ESG investment to be before an investor switches from a high-score ESG investment to a low-score ESG investment?

The answer to these questions is very subjective and something that each investor has to define individually. But in our methodology, we use the intuition of this thought experiment as the starting point to integrate ESG criteria into the asset allocation decision.

Let us assume that an institutional investor has chosen a specific provider to rank different investments along the different dimensions of ESG. We do not make any assumptions about the methodology of the ESG ranking or the criteria used for the ranking. All we assume is that the final ESG ranking is mapped onto a scale of 0 to 100, with 100 the best possible ESG score, 50 the average ESG score and 0 the worst possible ESG score. Many ESG ratings already use such a rating system, so that many investors will be familiar with it.

In order to define the appropriate asset allocation, investors typically rely on long-term capital market assumptions (CMA), such as the expected return, volatility and correlation between asset classes. Investors should use forward-looking capital market assumptions, but in order to avoid discussions about the appropriate forecasts for different asset classes we will use historic data since the beginning of 2000, knowing full well that these may not be representative of future expectations (see appendix for the exact numbers used).

The next step of the asset allocation process is to calculate an optimal portfolio given specific constraints. In our case study we will use a resampled efficient frontier optimiser as developed by Michaud and Michaud (2008)[2] because it provides more robust and better performing portfolios than traditional Markowitz optimisation. We optimise our portfolio for a target volatility of 7% in order

[2] R. Michaud and R. Michaud (2008). Efficient Asset Management. 2nd ed., Oxford.

to show results for a moderate risk portfolio typical of many institutional investors.

Using the intuition gained from Fig. 1 we can say that a preference for high-score ESG investments is the same as giving high-score ESG investments a return boost in the portfolio optimiser. Investments with a high ESG score get a little bit higher return than the capital market assumptions would assume, investments with an ESG score of 50 get exactly the long-term expected return and investments with a low ESG score get a penalty in the form of a reduced return assumption. It is important to state that this return boost does not reflect the prediction of a higher expected return for investments with a high ESG rating. Rather, it reflects our assessment that a low-score ESG investment would have to overcome a certain return hurdle before we would be willing to switch from a high-score ESG investment to a low-score ESG investment. Details of the methodology to calculate the return boost and its integration into the portfolio optimisation process can be found in the appendix.

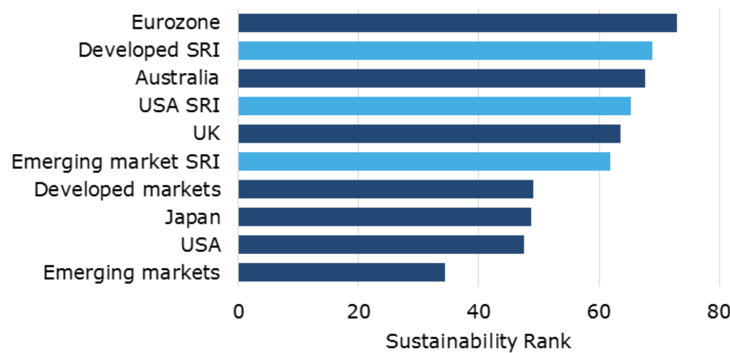
ESG ranking of traditional indices

The first step in our approach to ESG integration at the asset allocation level is to determine the ESG rankings of traditional reference indices. As mentioned above, we will use the Sustainability Rankings calculated by RobecoSAM. We will ignore changes in these rankings even though these might provide additional valuable information for investors and could also be integrated into our asset allocation approach.

For equity markets we will use MSCI indices since these indices are the most popular indices globally. We calculate the ESG rank of different country or sector indices by weighting the ranking of each company in the index with its index weight. Fig. 2 shows the resulting ESG rank on a scale from 0 to 100 for several MSCI country indices as well as three MSCI Socially Responsible Investment (SRI) indices.

Unsurprisingly, the ESG rank of the MSCI Developed Market World index is close to 50, but there are significant regional differences. Stocks in the Eurozone, the UK and Australia have significantly better ESG rankings than stocks in the US or emerging markets. In our approach, this implies that stocks in the Eurozone and the UK will be preferred in the portfolio optimisation.

Fig 2: Average sustainability rank of equity indices

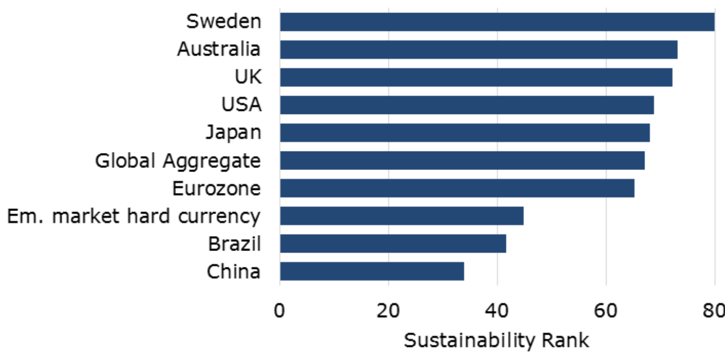


Source: RobecoSAM, MSCI, Fidante Partners.

Comparing traditional MSCI indices with MSCI SRI indices shows that for each region, the SRI indices have significantly higher rankings. This is due to the fact that MSCI restricts membership in the SRI indices to stocks with a minimum ESG rating of B. The effect of this restriction is, however, a much smaller universe of stocks included in the index. For example, the MSCI World index consists of 1,644 stocks while the MSCI World SRI index contains only 408 stocks. The top 10 stocks in the MSCI World index are led by Apple and amount to 12% of the index. In comparison, the MSCI World SRI index does not contain Apple, Amazon, Facebook or Alphabet and the top 10 stocks amount to 22% of the index. As a result, the MSCI World SRI index is not only more concentrated than the MSCI World, but differs in its economic exposures.

In Fig. 3 we take a look at government bond rankings for different countries and regions. Again, there are clear differences between regions, with Scandinavian countries, such as Sweden, topping the list and emerging markets lagging.

Fig 3: Average sustainability rank of bond indices



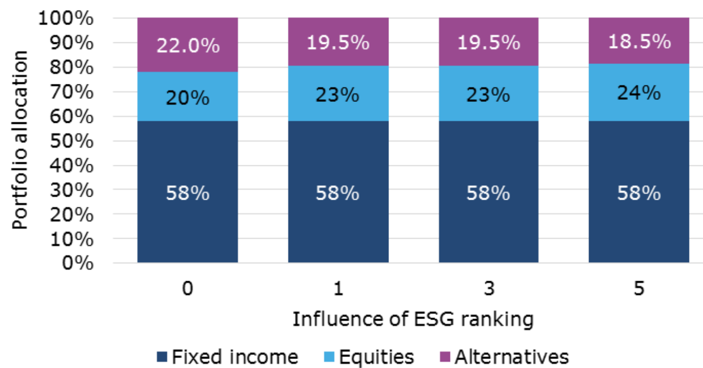
Source: RobecoSAM, Bloomberg, Fidante Partners.

Case study: A moderate risk portfolio

We now proceed to calculate the optimal portfolio for a UK-based institutional investor who is aiming for a portfolio with a target volatility of 7%. All the data will be calculated in Sterling without currency hedging. We assume the investor wants to invest in fixed income, equities, real estate and infrastructure, but not hedge funds or private equity. The omission of hedge funds and private equity is owing to the fact that there is at the moment no comprehensive ESG ranking of individual hedge funds or private equity funds.

In Fig. 4 we show the resulting broad asset allocation between fixed income, equities and alternative investments for different weights given to ESG rankings. A weight of 0 means that ESG criteria are ignored and the portfolio is the result of a classic optimisation. A weight of 1 means that an investment with a sustainability ranking of 100 gets a return boost of 0.5% compared to an investment with a sustainability ranking of 50. A weight of 3 means a 1.5% return boost for an investment with a sustainability ranking of 100 and a weight of 5 implies a 2.5% return boost. Correspondingly, investments with a sustainability ranking of 0 would receive a return penalty of 0.5%, 1.5%, and 2.5%.

Fig 4: Allocation changes as the influence given to ESG rankings increases



Source: Fidante Partners.

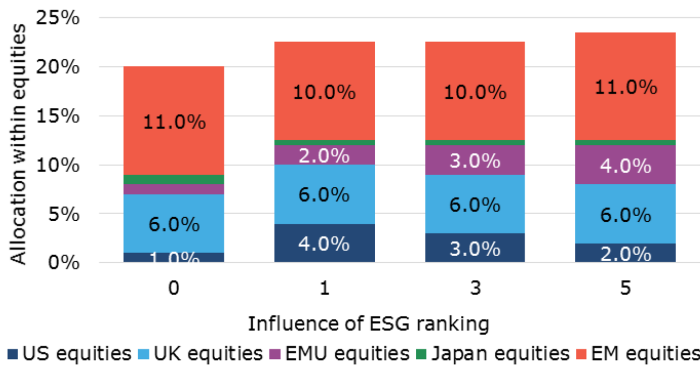
Fig. 4 shows that the broad split between stocks, bonds and alternative investments is not affected by ESG rankings. The overall portfolio volatility is driven mostly by the combination of low volatility assets (typically fixed income), high growth assets (typically equity) and diversifiers (typically alternative investments). Because the overall portfolio volatility is held constant, the high-level mix between these broad asset classes hardly changes.

If we take a look into fixed income, equities and alternative investments, however, the influence of ESG rankings on the asset allocation becomes more important. Fig. 5 shows the change in asset allocation within the equity part of the portfolio. Because emerging market equities have historically outperformed developed market equities by a wide margin, the return boost given to stock markets with a high sustainability ranking is insufficient to overcome the return advantage of emerging markets. Thus, the share of emerging markets in the portfolio remains large in all four portfolios shown in Fig. 5. However, if the influence of ESG rankings is increased, our optimisation results show that, eventually, emerging market equities would be replaced by UK and Eurozone equities.

What we also observe in Fig. 5 is the increasing allocation to Eurozone equities. Eurozone equities have the highest sustainability ranking amongst the regions considered here and thus get a larger allocation as the influence of ESG rankings

increases. US equities, in comparison, have a rather low sustainability ranking and – unlike emerging market equities – only a small return advantage over European stocks in the past. As a result, the allocation to US equities shrinks as the influence of ESG rankings increases. The resulting changes in equity allocation might not seem big at first glance, but investors should be aware that the allocation to Eurozone equities changes from 5% of the equity portion of the portfolio to 17% of the equity portion, while the US allocation drops from 18% to 8%. There are significant shifts within equities.

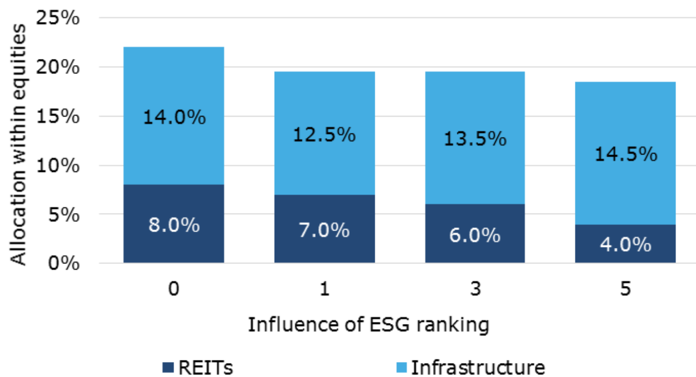
Fig 5: Equity allocation changes as the influence given to ESG rankings increases



Source: Fidante Partners.

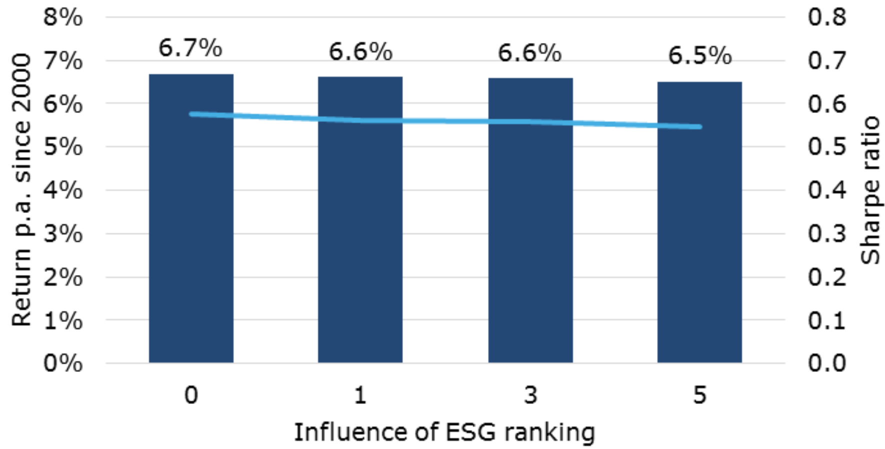
Fig. 6 takes a closer look at the allocation between real estate and infrastructure. We have used the S&P Global Infrastructure index as a proxy for listed infrastructure investments and the FTSE EPRA NAREIT Developed Index as a proxy for REIT investments. The sustainability ranking of the listed infrastructure index is 46.5 and thus close to the average, while the sustainability ranking of the REIT index is a very low 24. As a result, increasing the influence of ESG rankings on the portfolio optimisation leads to an increasing penalty for real estate investments and the allocation within alternative investments increasingly shifts in favour of infrastructure. The low score for the REIT index also shows that the major listed real estate companies tend to have very low ESG ratings. Direct investments in real estate or investments in listed real estate companies with a dedicated ESG strategy (e.g. green real estate) can significantly increase the average ESG rating and change the dynamics between real estate and other alternative investments, as we observe in Fig. 6.

Fig 6: Alternatives allocation changes as the influence given to ESG rankings increases



Source: Fidante Partners.

Fig 7: Portfolios with ESG integration have historically performed well (target volatility 7%)

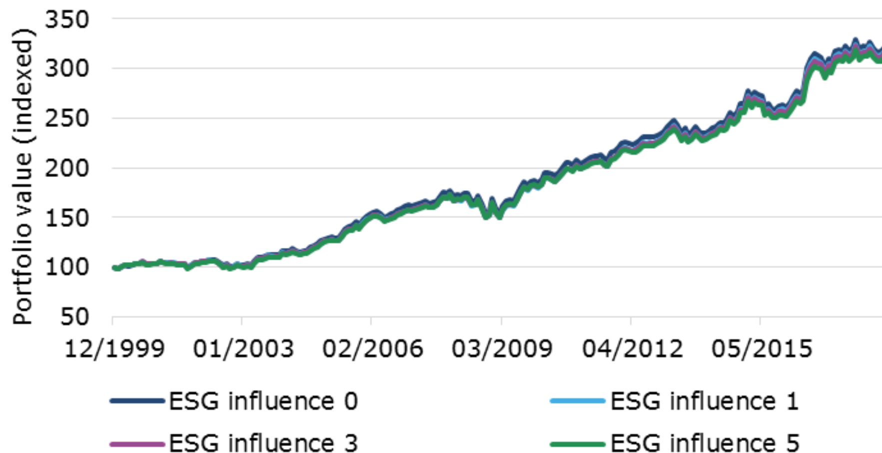


Source: Fidante Partners.

Of course, the question on everybody's mind is, whether this shift in asset allocation has a negative impact on overall portfolio performance? After all, our methodology directly manipulates the return assumptions that enter the portfolio optimiser. Fig. 7 shows the performance of the four portfolios in our case study since 2000 in Sterling. We show both absolute returns per annum as well as risk-adjusted returns (i.e. Sharpe ratios). While an increasing influence of ESG rankings does reduce historical performance, this reduction is so small that we believe it is a price worth paying for investors who want to systematically integrate ESG criteria into their asset allocation decision.

In order to get an idea of the potential long-term costs of this reduction in return Fig. 8 shows the indexed performance of all four portfolios since 2000 in what can be called "the most boring chart ever" because the differences between portfolios are hardly visible. £100 invested in a portfolio without ESG integration would have turned into £326 by the end of June 2018 and £316 in a portfolio with ESG integration and ESG influence factor 5.

Fig 8: Long-term performance differences of portfolios with and without ESG integration

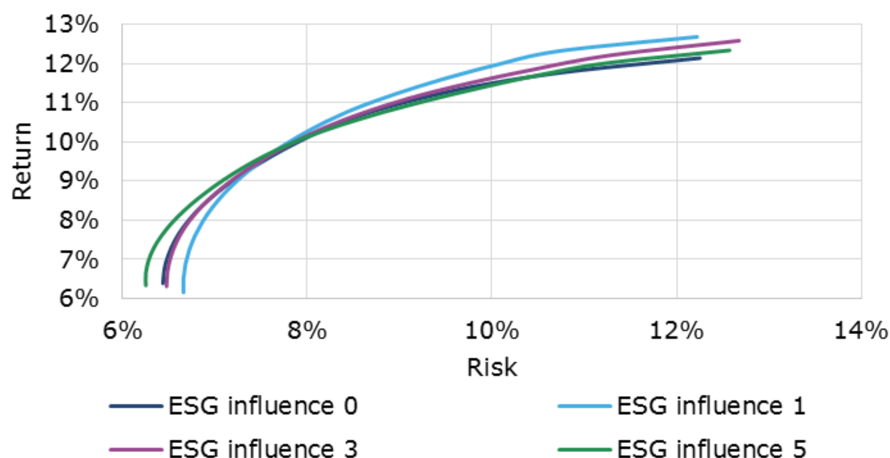


Source: Fidante Partners.

We have also checked different risk measures for the four portfolios in our case study. Popular risk measures such as Value at Risk do not change at all as the influence of ESG rankings increases. In all four portfolios, the one-month, 95% value at risk is 3.1%, while the maximum historical drawdown since 2000 was 13.6% for the portfolio optimised without ESG rankings and 13.5% for the portfolios optimised with ESG rankings. This lack of influence of ESG criteria on value at risk might seem astonishing at first, but readers need to be aware that we are dealing here with backward looking value at risk values, not forward looking expected value at risk. In other words, these numbers reflect historic volatility of different asset classes rather than the expected risk in the future. If ESG-related risks are not properly priced in financial markets, then the ex-ante value at risk of high-score ESG investments should be lower than that of low-score ESG investments because there is always the possibility that an oil spill, a bribery scandal or climate change will lead to catastrophic losses in a single asset or an entire asset class. There is some indication that bond volatility in Greek and Brazilian government bonds was higher due to a lack of good governance in these countries, but in our high-level cases study ESG-related risks have simply not materialised on a large enough scale in the past to materially influence historic value at risk.

Finally, we want to broaden the perspective and leave the portfolios with a target volatility behind and look at the entire efficient frontier. Fig. 9 shows the efficient frontier for different weights of the ESG ranking (ranging again from 0 to 5). The differences between the efficient frontiers tend to be small and we caution readers to put too much emphasis into these differences. The methodology we used to calculate the efficient frontiers is a Monte Carlo based simulation of efficient frontiers. As such it has an element of randomness in it that causes small differences between different simulations. Fig. 9, in our view, shows essentially four identical efficient frontiers, confirming that there is no material loss of return or material increase in risk if ESG factors are included in the asset allocation process.

Fig 9: Efficient frontiers of portfolios with and without ESG integration



Source: Fidante Partners.

Summary

To answer the question posed in the title of this report: “Does ESG matter for asset allocation?” – Yes and no.

On the one hand, ESG criteria do not seem to have a material influence on the split between defensive and growth oriented asset classes that determines the overall risk profile of a portfolio.

On the other hand, the influence of ESG criteria on the regional or sector allocation within an asset class can be material. Within fixed income, equities and alternative investments we have shown that it is possible to include ESG rankings in a systematic and consistent way across asset classes, and that this inclusion can materially shift the allocation in favour of investments with high sustainability rankings and away from investments with low sustainability rankings.

Our methodology can be calibrated by investors in order to increase or reduce the influence of ESG factors on the asset allocation, thus providing the flexibility to meet differing investor needs.

Our case study also indicates that the effects of these asset allocation shifts in favour of high-score ESG investments do not significantly influence absolute or risk-adjusted returns of portfolios, demonstrating that ESG integration can be done without necessarily giving up return or increasing risk.

Appendix 1: Technical details of ESG integration

We assume an ESG ranking scale from 0 (worst) to 100 (best). If investors use changes in ESG rankings, these can be standardised as well (for example, by mapping changes in ESG rankings from worst to best and then giving a score of 0 to the worst investment and a score of 100 to the best investment and interpolating linearly between these extremes).

Let $r_{i,CMA}$ be the return expectation of investment $i = 1 \ldots n$ based on the capital market assumptions (CMA) used by the investor. Then $r_{i,ESG}$ is the return boost or return drag calculated from the ESG ranking of investment i as:

$$r_{i,ESG} = \frac{ESG_i - 50}{100} \qquad (1)$$

where ESG_i is the ESG ranking of investment i.

The modified return assumption $r_{i,mod}$ for investment i used in the portfolio optimiser is then given as:

$$r_{i,mod} = r_{i,CMA} + \gamma \cdot r_{i,ESG} \qquad (2)$$

where γ is the factor determining the boost/drag of the ESG ranking on the return assumptions from the capital market assumptions ($\gamma > 0$).

If investors use a multidimensional approach to ESG rankings, eq. (2) becomes:

$$r_{i,mod} = r_{i,CMA} + \sum_{j=1}^{m} \gamma_j \cdot r_{ij,ESG} \qquad (3)$$

where $j = 1 \ldots m$ are the number of dimensions used in the ESG ranking, γ_j are the boost factors for each dimension of the ESG ranking and $r_{ij,ESG}$ are the return boosts for investment i based on ESG dimension j.

The modified return assumptions can then be used in a traditional Markowitz mean-variance optimisation:

$$\min \omega^T \Sigma \omega \qquad (4)$$

subject to

$$R_{mod}^T \omega = \mu \qquad (5)$$

and

$$\sum_{i=1}^{n} \omega_i = 1;\ \omega_i \geq 0\ \forall\ i \qquad (6)$$

where ω is the vector of asset weight ω_i for assets i, Σ is the covariance matrix for the returns of the assets in the portfolio, R_{mod} is the vector of modified returns from eq. (2) and μ is a variable target return. Eq. (6) assumes that all asset weights are positive (i.e. no short-selling) and sum to 1 (i.e. no leverage).

Appendix 2: Historic risk and return of asset classes

The following table shows the historic risk and return characteristics of the asset classes used in our case study. All data is calculated in Sterling without currency hedging between January 2000 and June 2018.

Fig 10: Historic risk and return for different asset classes

Asset class	Return p.a.	Volatility p.a.	Correlation									
Gilts	5.8%	5.8%	1.00									
Global fixed income	5.8%	8.2%	0.58	1.00								
Emerging market debt	9.9%	11.2%	0.35	0.69	1.00							
US equities	5.3%	14.8%	-0.02	0.28	0.57	1.00						
UK equities	1.6%	13.5%	-0.09	0.05	0.40	0.80	1.00					
Euro equities	3.2%	19.2%	-0.07	0.11	0.42	0.76	0.87	1.00				
Japan equities	2.1%	16.0%	0.02	0.29	0.46	0.60	0.52	0.50	1.00			
Em. market equities	7.6%	20.3%	-0.03	0.15	0.53	0.72	0.74	0.76	0.57	1.00		
REITs	11.2%	16.8%	0.18	0.28	0.56	0.70	0.69	0.66	0.57	0.68	1.00	
Listed infrastructure	10.8%	12.9%	0.18	0.37	0.62	0.75	0.79	0.79	0.59	0.78	0.81	1.00

Source: Bloomberg, Fidante Partners.
Note: All data in Sterling based on monthly returns January 2000 to June 2018.

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