

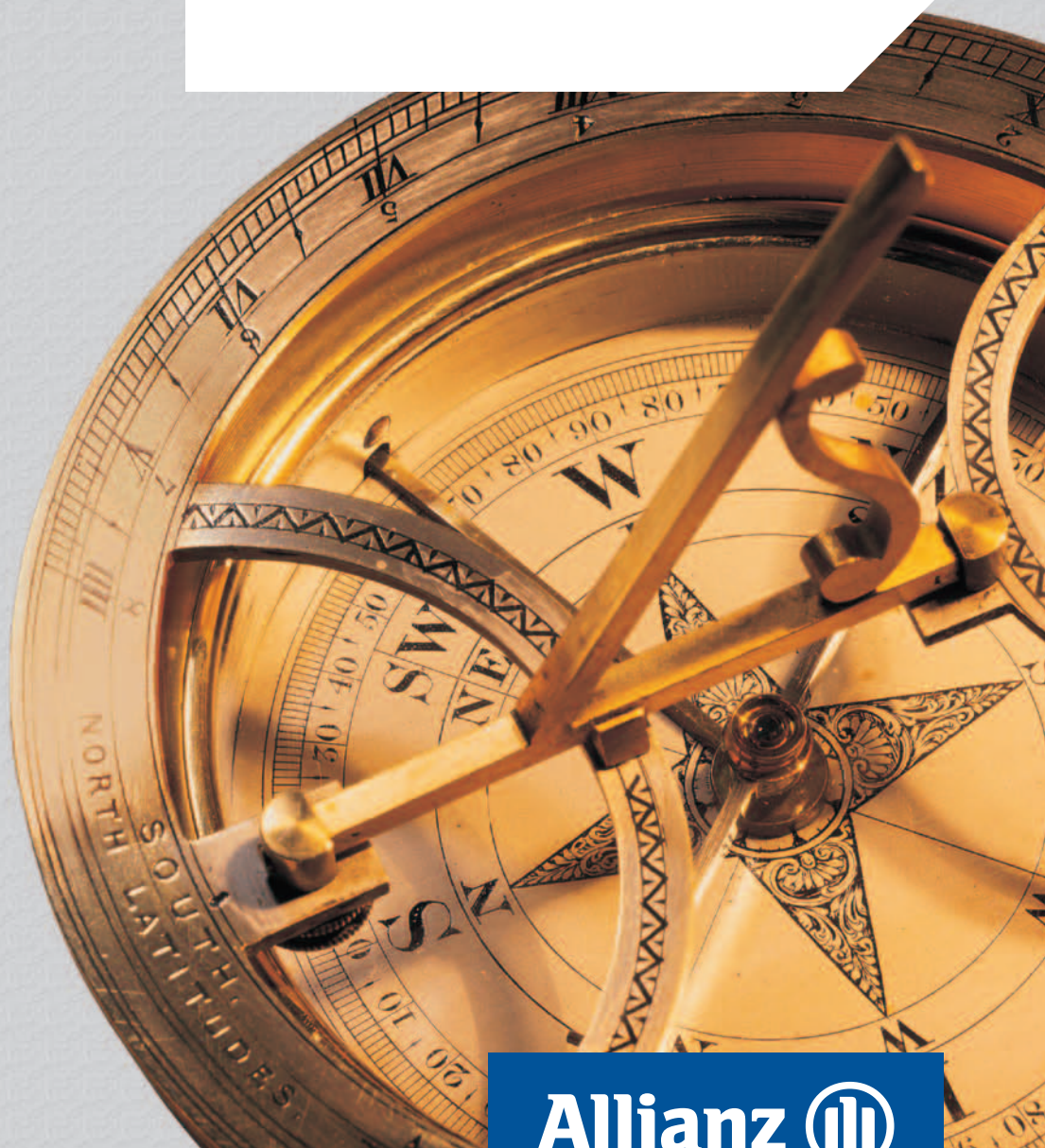
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# Responsible Investing reloaded

Sustainability Criteria Matter

April 2011



**Allianz**   
Global Investors

Decisive Insights  
for forward-looking  
investment  
strategies



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## Imprint

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Data origin – if not otherwise noted: risklab GmbH



# ESG Portfolio Risk Reloaded

Sustainability criteria are of particular importance in the case of growth assets

There is an increasing amount of evidence that sustainability criteria such as Environmental, Social and Corporate Governance (ESG) factors are too important to be ignored when making investment decisions today. This is especially true of the 'New Normal' investment environment where low return expectations and high uncertainty are the norm. In this world, all risk factors require special attention. Merely focusing on traditional risk factors such as equity markets, credit spreads, interest rates and inflation risk is not enough. Investors are well advised to also look at sustainability criteria such as ESG as a new class of risk. These supposedly soft factors may materialize unpleasantly in the future as financially significant tail risk factors and may have a severe impact on investment results across all asset classes.

In today's capital markets, investors are increasingly fleeing from low-yielding government bonds into growth assets in order to achieve their investment goals. Allocations are made into return-seeking asset classes such as emerging markets

## Guest article

Early in his career, **Dr. Steffen Hörter** specialized in risk management and financial services at a firm of consultants, where he gained international experience. After holding various management positions at Allianz Global Investors Europe, Dr. Hörter became a partner of risklab in 2008.

equity and corporate bonds which are expected to deliver comparatively attractive returns. The new risklab ESG study provides sound evidence that ESG risk factors could have an impact on the extreme risks of these asset classes and that these risk factors could change the risk profile of portfolios significantly<sup>1</sup>. Or conversely, ESG factors would offer the chance to optimize investments and minimize risks.

<sup>1</sup> More detailed information on the study (E.S.G. Risk Factors in a Portfolio Context v2.0, Authors: Steffen Hörter, Wolfgang Mader, Barbara Menzinger, risklab GmbH 2011) you can find on: [www.risklab.com](http://www.risklab.com)

## Decisive Insights:

### Investors should derive three decisive insights from the risklab ESG analysis:

- The new risklab analysis shows that ESG factors are seemingly a significant source of investment risk for investors who want to diversify into growth assets such as developed market equity, emerging market equity and corporate bonds.
- From a bottom-up perspective, ESG factors should be integrated into investment research in order to minimize extreme risks, particularly in emerging market equity. ESG factors have a higher impact on the extreme risks of this asset class compared to others. In this context it is also worth noting that a recent report by the European Sustainable Investment Forum (Eurosif) reveals that on average there is less ESG transparency and external verification within corporations domiciled in emerging markets, compared to European companies<sup>2</sup>.
- ESG risk-optimized strategic asset allocation can improve expected portfolio performance. In a comparison to an example balanced portfolio, it was found that expected tail risks can be reduced by up to approximately 1/3 or an additional expected return potential of up to 50 basispoints (bps) p.a. could be achieved at the same level of risks. Portfolios should be analyzed for exposure to ESG risks and optimization opportunities. For example, a portfolio could be analyzed for the implicit carbon footprint or exposure to low corporate ESG-ratings.

In conclusion, the study shows, for example, that the tail risk of an ESG risk-neutral emerging market equity strategy, as defined by the MSCI Emerging Markets index, could be reduced from -64.5% p.a. to -38.8% p.a. by optimizing ESG risk factor exposure. Tail risk is measured as Conditional Value at Risk (CVaR) at a level of 95%.

Similar effects are found with corporate bonds, albeit on a smaller absolute scale, but still significant relative scale. Here, the tail risk

of the default strategy defined by the Merrill Lynch Global Broad Market Corporate Index could be reduced from -8.1% p.a. to -4.9% by optimizing the ESG risk factor exposure. ESG risk factors are also important for core asset classes such as developed equity. The study shows that the ESG-neutral default strategy defined by the MSCI World Equity index has the potential to reduce tail risk from -38.1% p.a. to -25.7% p.a. The results are amplified with strategies where the ESG risk profile - inadvertently or otherwise - is

<sup>2</sup> Source: Eurosif – Emerging Markets Theme Report – 5<sup>th</sup> in a series, 2010, <http://www.eurosif.org/research/theme-reports/emerging-markets>.

negatively leveraged versus the neutral default strategy defined by the benchmark. Overall results are summarized in table 1.

In the risklab analysis, the assumption is that the ESG risk profile within the analyzed asset classes can be improved by optimizing exposure to the specific sustainability risk criteria quantified. There is no tactical, short term view on ESG risk factors and they are quantified long-term over 20 years. Unlike a bottom-up SRI portfolio manager, who may evaluate and score up to 30-50 ESG key performance indicators per company, risklab focuses on a few carefully selected, representative ESG factors and condensed ESG ratings.

In order to capture environmental risk, unexpected carbon emission rights price changes and sector specific carbon footprint are quantified. Since it is not certain how the global carbon emission rights markets will develop beyond the European carbon exchange, energy price risk and relative industry energy intensity have also been included.

Specialist ratings are used in order to quantify corporate social and corporate governance risk sensitivity. Social performance risk factor sensitivity is computed on the basis of ratings derived by GES Investment Services. For corporate governance risks, RiskMetrics governance ratings are quantitatively processed. The financial risk in connection with corporate social and governance factors results from an unexpected change of social

**Table 1: Return Profiles of ESG risk analyzed asset classes**

	Return/Risk Metric	Average values p. a. over 20 years		
		Expected Return	Volatility	CVaR <sup>3</sup> 95% (12M)
Equity Developed	+ ESG Equity World	7.5%	15.2%	-25.7%
	Neutral ESG Equity World		20.2%	-38.1%
	- ESG Equity World		25.8%	-52.7%
Equity Emerging Markets	+ ESG Equity Emerging Markets	8.5%	19.2%	-38.8%
	Neutral ESG Equity Emerging Markets		27.9%	-64.5%
	- ESG Equity Emerging Markets		37.3%	-91.2%
Corporate Bonds	+ ESG Corporate Bonds	5.3%	4.8%	-4.9%
	Neutral ESG Corporate Bonds		6.1%	-8.1%
	- ESG Corporate Bonds		7.6%	-11.5%

**No explicit return impact modeled: substantial tail risk impact of ESG Risk Factors**

Note: Quantification of selected sustainability criteria (ESG factors) related to expected (extreme) risks of the asset classes with the same level of expected returns; <sup>3</sup> CVaR 95% (12M) = Conditional Value at Risk at a confidence level of 95% and a time horizon of 12 months.

Source: risklab GmbH

**Tabelle 2: Modeling of ESG risk**

		Environmental Risk		Social Risk	Governance Risk
Risk Factor	<i>Risk Driver</i>	Sharp change in prices of CO <sub>2</sub> emission rights	Sharp change in energy prices	Deterioration of 'Social Performance'	Sharp deterioration of 'Corporate Governance'
	<i>Stochastic Model</i>	Regime switching	Autoregressive Markov Switching	Geometrical Brownian motion	Regime switching
Risk Sensitivity	<i>Relative Sector Footprint</i>	Carbon emission footprint	Energy consumption	Individual Risk Ratings for Social Performance	Governance ratings
	<i>Data Source</i>	Relative carbon footprint in MSCI World/MSCI EM based on monthly ratings (2005-2010) from Trucost <sup>4</sup>	Energy use in tonnes of oil equivalent for OECD <sup>6</sup> / Non-OECD Countries based on annual data (2004 – 2008) from IEA <sup>5</sup>	Individual risk ratings for social performance from GES Investment Services	Relative corporate governance ratings in MSCI World/MSCI EM for different sectors on monthly ratings (2005-2010) from RiskMetrics
Risk Logic		Unexpected CO <sub>2</sub> spot price hikes hit those companies / sectors stronger that have a comparatively higher CO <sub>2</sub> footprint	Unexpected energy price hikes hit those companies / sectors stronger that have a comparatively higher energy consumption	Unexpected changes in social performance hit those companies / sectors with a comparatively strong social rating downgrade	Unexpected changes in governance performance hit those companies / sectors with a comparatively strong governance rating downgrade

Source: risklab GmbH

or governance ratings. Such ratings are of comparable relevance, as with credit ratings. Table 2 summarizes the ESG risk factor modeling.

It is important for any investor to have full transparency and a quantitative view of how ESG risks translate into the portfolio. The risklab responsible investing approach builds

on the established, state-of-the-art asset allocation and portfolio optimization solution it has successfully serviced to its clients over the past 10 years.

To illustrate such effects quantitatively, risklab analyzed a balanced portfolio which is invested 50% in equity and 50% in bonds. Over a time period of 20 years, this reference

<sup>4</sup>Trucost data enables organisations to identify, measure and manage the environmental risk associated with their operations, supply chains and investment portfolios. <sup>5</sup> International Energy Agency, <sup>6</sup> Organisation for Economic Co-operation and Development  
Source: risklab GmbH

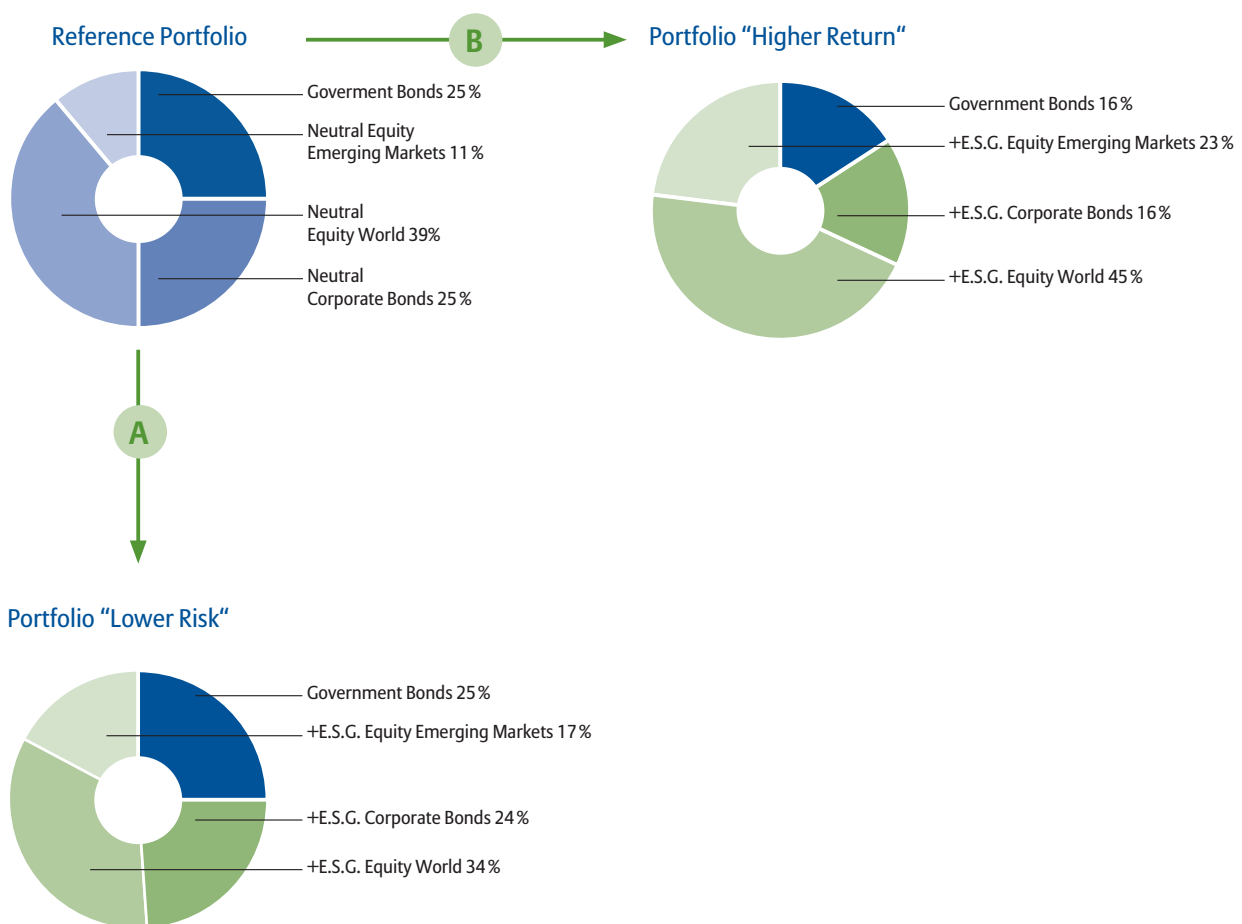
portfolio is expected to achieve an annual return of 6.5% p.a. with a tail risk of -15.9% p.a. measured as Conditional Value at Risk (95%). Two alternative portfolios are then compared to this reference portfolio. Both portfolios invest in ESG risk-optimized developed equity, emerging equity and corporate bonds.

Portfolio A offers the potential of reducing the expected tail risk by approximately one third

to -10.9% p.a. with the same level of expected portfolio returns.

With Portfolio B, the expected return of the portfolio can be increased by 50bps p.a. to 7.0% p.a. with the same level of extreme risk. The portfolio analysis is presented in the following graph and table.

**Table 3: Quantitative Analysis Portfolio Optimization (20 year horizon)**



Risk/Return Metric	Reference Portfolio	Portfolio "Lower Risk" (A)	Portfolio "Higher Return" (B)
Expected Return	6.5%	6.5%	7.0%
CVaR 95% (12 Monate)	-15.9%	-10.9%	-15.9%

Source: risklab GmbH

Benchmarks used: Equity World: MSCI World Equity Index, Equity Emerging Markets: MSCI Emerging Markets Index, Corporate Bonds: Merrill Lynch Global Broad Market Corporate Index. The +/- ESG sub-asset classes are not benchmark referenced but were introduced by risklab for the analysis. Government bonds as asset class were modelled by risklab (AAA Zero Rate Term Structure) – without any direct benchmark reference.

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