

# Measuring Sustainability Performance of Investments: The Case of Dutch Bond Funds

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Bert Scholtens\*

## Abstract

We investigate the implications of using various indicators of sustainability to assess the performance of bond investment funds. In particular, as an example, we look into the environmental performance of Dutch mutual funds investing in bonds. We find that it does matter a lot which particular sustainability indicator is used. This suggests that funds should be very transparent and straightforward about their sustainability performance. We argue that basically they have two options. First is that the industry comes up with some benchmark against which the responsibility of their investments is measured and reported. Second is that the funds make very clear and transparent which particular aspects of sustainability they specifically target and how they keep score. Continuing the current practice of just saying that the fund invests sustainable but not how and what the results are may backfire on investor interest in responsible investing and on the availability and costs of funds for responsible projects.

Keywords: bond portfolios, performance measurement, adjusted net savings, ecological footprint, environmental sustainability index, environmental performance index

JEL classification: G23, M14, Q01

\* Department of Finance, Faculty of Economics and Business, University of Groningen, P.O. Box 800, NL-9700 AV Groningen, The Netherlands; Phone: +31 50 363 7064; Fax: +31 50 363 8252; E-mail: l.j.r.scholtens@rug.nl.

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## **Introduction**

Investment is not only about return and risk, it also is about achieving non-financial objectives. In this perspective, socially responsible investment (SRI) has grown fast. A lot of research has been done already on its financial characteristics. But it is not clear how investment funds perform from a sustainability perspective. The objective of this paper is to assess the societal relevance of using different ways of measuring the sustainability of bond portfolios. We discuss measurement methods that can be used to assess the responsibility of investment funds.

Socially responsible investing is becoming a well-established notion in the financial services industry. The financial institutions are coming round to the idea that there is more to investing than just checking the figures. In most countries, private households have the opportunity to save or invest their money not only on the basis of financial rewards, but also in the face of the non-monetary value of these savings and investments. In this respect, it is of key importance for the investment funds to ask and answer the following questions: What are we trying to accomplish? How do we keep score? How do we measure better versus worse? However, only very recently some SRI funds have started to inform their (potential) investors about their non-financial achievements. For example, the Dutch investment manager ASN reports about the CO<sub>2</sub> efficiency of all the stocks it invests in and provides details about the CO<sub>2</sub> 'performance' of its funds. In this paper, we want to investigate on a more systematic basis how investment funds can be assessed with respect to the sustainability of their investments. We also will discuss the implications of this assessment for the investment community. As to sustainability, we refer to the definition of the WCED (1987): Sustainable development is '...development that meets the needs of the present without compromising the ability of future generations to meet their own needs...'. As such, sustainable development implies economic growth together with the protection of environmental quality, each reinforcing the other. The essence of this form of development is a stable relationship between human activities and the natural world, which does not diminish the prospects for future generations regarding their quality of life.

At the level of the firm, the issue of sustainability has been translated into the concept of corporate social responsibility (CSR) (Smith and Lenssen, 2009). With CSR, the firm takes account of its employees, customers and other stakeholders (people), the natural environment (planet), and the future prospects of the firm (profit) (see Elkington, 1998). Investing with taking account of ‘people’ and ‘planet’ is often defined as socially responsible investment (SRI) (see Boatright, 1999). SRI has attracted a lot of research interest from academics. So far, most of the economic research has concentrated on the impact on financial risk and return of taking CSR into account when making (equity) investments (see Statman 2000; Gezcy et al. 2003; Bello 2004; Bauer et al. 2005; Kreander et al. 2005). These studies generally find that taking account of CSR has only a small effect on the risk and return of the investments. Usually, the effect is not significant. Derwall and Koedijk (2008) is the only study we are aware of that systematically assesses the financial performance of SRI fixed-income funds. Furthermore, Drut (2009) investigates the impact on the efficient frontier when taking into account the Vigeo sustainability ratings. He suggests that an investor can increase the sustainability rating of the portfolio without doing harm to the risk-return trade-off. However, this study relies on a proprietary database and it is not exactly clear how Vigeo arrives at its assessment. The latter also counts for Drut’s conclusion because restricting the investment set significantly impacts on the frontier. In fact, Drut (2009) arrives at an optimal investment portfolio with indexes of five countries (namely for Finland, Japan, Norway, Sweden, and Switzerland). Nevertheless, this is very welcome pioneering research.

In our review of the literature, we did not come across studies that systematically look into the sustainability performance of (responsible) bond funds. In general, surprisingly little attention has been paid to the impact of socially responsible savings and investments on corporate social responsibility. Exceptions are Munoz-Torres et al. (2004), who investigate the CSR performance of Spanish investment funds on the basis of social ratings, and Scholtens (2007), who assesses the CSR performance of Dutch banks and funds on the basis of their activities. Related is research by for example Neubaum and

Zahra (2006). They find that long-term institutional ownership is to be positively associated with corporate social performance and that the coordination of activism interacts with long-term institutional holdings to positively affect this performance after three years. David et al. (2007) find that shareholder proposal activism reduces corporate social performance. Rather than pressuring firms to improve their CSR, it seems that activism engenders diversion of resources away from CSR to political activities by managers to resist external pressures and to retain discretion.

This paper investigates alternative ways in which the sustainability performance of investment funds can be assessed. As such, the aim of the paper is to make an early attempt at valuing non-financial performance evaluation of bond investments.

Many approaches have been suggested to measure sustainable development (see Bartelmus and Cleveland, 2008). The Ecological Footprint, the Ecological Rucksack, Adjusted Net Savings, the Index of Sustainable Welfare, Material Input Per Service, Total Material Flow are just examples of some prominent indicators. In general, these indicators rely on some way to reduce the multidimensional aspects of sustainability to one single unit. Martinez-Allier et al. (1997) argue that this assumes the commensurability of values. Van den Bergh and Verbruggen (1999) point out that the indicators usually reflects a specific value theory.

Our aim is to investigate the consequences of using different sets of comprehensive sustainability data for a large group of countries in connection with the investments of bond funds. We specifically use environmental performance indicators. The main reason is that – at least in their intention – they are homogenous and that they are well discussed in the academic literature. However, our approach can easily be extended with other (types of) indicators. We use four different global environmental indicators: the World Bank's Adjusted Net Savings (ANS), the Ecological Footprint (ECF), the Environmental Sustainability Index (ESI), and the Environmental Performance Index (EPI). As such, we depart from the framework of Pillarisetti and Van den Bergh (2008). These authors critically reflect upon aggregate indicators of sustainability. Pillarisetti and Van den

Bergh (2008) use three indicators to rank countries: ANS, ECF and ESI. They conclude that the rankings vary significantly among these indicators. Our approach extends their analysis in two different ways. First, we also investigate the EPI. This is because the EPI is to be regarded as the successor of the ESI. Second, we apply the indicators not to only to countries but extend the analysis to investment portfolios. That is, we try to assess the sustainability of the funds on the basis of their investments in government bonds. A very crucial assumption of our analysis is that we assume that it primarily is the government which is to be held responsible for the sustainability of a country. Implicitly, this suggests that the impact or result, i.e. the sustainability of a country, is directly connected to the activities of the national government. However, some would claim that the corporate sector and consumer also have a responsibility here. This is correct. But a simplistic view about politics is that the consumers and corporations delegate policy making to their government and, as such, the responsibility for taking action lies with their government. The outcome of the actions of consumers and firms within a country regarding the environmental quality of a country can be managed by the government, for example via strict or lenient regulation. Thus, for the sake of simplicity, we assume it is the government who in the end is to be held responsible for the quality of the natural environment.

We focus on the sustainability performance of bond funds in the Netherlands. The Netherlands is a country with numerous innovations with respect to socially responsible savings and investments and with investment funds investing worldwide (see Scholtens, 2005). The total size of these savings and investments in relation to their conventional counterparts is one of the largest in Europe (Eurosif 2006). The relationship between (responsible) bond funds and sustainable development is not directly clear. The basic idea is that investing in responsible bonds gives the investor the means to select firms and institutions with the best or at least above average performance regarding sustainable development and to refrain from underperformers. First, this selection has a signaling effect, that is, in some way or another an investor does regard these investments as having special qualities (see also Greenbaum and Thakor, 2007). When the investor has a good reputation, this may translate to the investment object too. Second, in case of

'enough' providers of responsible money, it impacts on the financing costs of the above average or best performers (becoming lower) and of the poor performers (becoming higher) (see Heinkel et al., 2001). As far as we are aware of, there is no empirical study after the impact on CSR or sustainability from bond investments.

The purpose of our study is to come up with an assessment of straightforward ways regarding the assessment of the sustainability of bond funds. However, given the relatively small amount of funds investigated and the short time-period for which sustainability data are available, the evidence we will provide is still to be regarded as preliminary.

The structure of this paper is as follows. After the introduction of our topic, we come up with the data about sustainability and the government bond investments as well as our methodology. Then, we present the results of the analysis. The next section discusses these results from the perspective of how to assess the sustainability of investments. Last is a brief conclusion.

## **Data & Method**

In this section, we explain how the country indicators of sustainable development can be used to assess the sustainability of bond portfolios. To this extent, we first introduce the data regarding the sustainability indicators and the portfolios. Then, we explain how the sustainability of the portfolios can be estimated.

We use four sustainability indicators: the World Bank's Adjusted Net Savings (ANS), the Ecological Footprint (ECF), the Environmental Sustainability Index (ESI), and the Environmental Performance Index (EPI). These four indicators were chosen because they all assess the environmental quality of a country from the perspective of environmental sustainability. Furthermore, we chose them because their methodology and data were freely available. This contrasts with the ratings from professional agencies

like KLD, EIRIS, SiRi, Innovest, and Vigeo where the underlying data and the exact weighting schedule to arrive at the scores is not transparent. Furthermore, regarding the use of ANS, ECF, ESI and EPI, we ended up with a substantial number of countries as well as with a heterogenous sample. We are well aware of the fact that each of the indicators used in this paper has called for a strong debate about their validity with respect to reflecting sustainability (see, among others, Fiala, 2008, Hildén and Rosenström, 2008; Lehtonen, 2008; Moran et al., 2008; Pillariseti and Van den Berg, 2008). But this debate is not the focus of our study. We will ‘just’ use the different indicators in our analysis. In addition we want to point out that the four indicators are biased towards looking into environmental issues regarding sustainable development. We think this is not really problematic as we do not want to assess the sustainability of the investment funds *per se*. Our main purpose is to discuss the measurement methods.

The World Bank (1997) introduced the notion of the Genuine Savings Rate. This has been modified and has been renamed Adjusted Net Savings (ANS). The ANS is defined as follows:

$$ANS = \frac{GDS - D_p + EDU - \sum R_i - CO_2damage - PM10damage}{GNI}$$

where *ANS* is adjusted net savings, *GDS* is gross domestic savings, *D<sub>p</sub>* is the depreciation of physical capital, *EDU* is the current expenditure on education, *R<sub>i</sub>* is the rent from the depletion of the *i<sup>th</sup>* natural capital, *CO<sub>2</sub>damage* is the damage from carbon dioxide emissions, *PM10damage* is the damage from particulate matter, and *GNI* is gross national income at market prices (World Bank, 2007). *ANS* assumes substitutability between different types of capital. A negative *ANS* implies that welfare is to decline in the future, a positive *ANS* suggests welfare will increase. Based on data for 2005, the *ANS* gives the lowest score to Chad (-58.4). Other countries that have a low score are Angola, Azerbaijan, Congo, Kazakhstan, Mauritania, Syria, and Uzbekistan. Countries scoring high are Botswana, China, and Namibia.

The Ecological Footprint (ECF) is a measure in hectares of biologically productive space with world average productivity that measures how much land and water area a human population requires to produce the resources it consumes and to absorb its wastes under the prevailing technology (Wackernagel and Rees, 1996). There is Ecological Balance (EB) when:

$$EB = \sum_i TBC - \sum_i ECF$$

where *TBC* is total biological capacity and *ECF* is the ecological footprint; *i* is for the countries. There is an ecological deficit if the footprint exceeds biological capacity, if it is the other way round, the country has an ecological reserve (see WWF et al., 2006). For total biological capacity, cropland, pasture, forests, fisheries, built space and energy are taken into account. The footprint varies with population size, per capita consumption and the resource intensity of the prevailing technology. WWF et al. (2006) allocate 1.8 global hectares per person to ensure ecological balance. That is, consumption is sustainable when the footprint is not above this amount. WWF et al. (2006) report on the basis of 2003 data. For this year, the average ECF is 2.4. It is highest in the United Arab Emirates (11.9) and lowest in Bangladesh (0.5). Examples of countries with a large footprint are the US, Kuwait, and Canada. The footprint is smallest in Benin, Cambodia, Mozambique and Nepal.

The Yale Centre for Environmental Law and Policy (Esty et al., 2005) developed the Environmental Sustainability Index (ESI). This indicator uses 76 variables to arrive at 21 indicators. The variables have information about, for example, natural resource endowments, pollution levels, etc. The indicators (*I*) are about air quality, biodiversity, eco-efficiency, greenhouse gas emissions, etc. Each indicator is given an equal weight (*w*). Thus,

$$ESI = \sum_{i=1}^{21} wI_i$$

If a country scores high, this signals that it is relatively better positioned to maintain sound environmental conditions for the future. The score can be between 0 and 100, where a low score reflects poor sustainability. In 2005, Finland had the highest ESI (75.1) and North-Korea had the lowest (29.2). Other top-performers were Norway, Uruguay and Sweden, whereas Taiwan and Turkmenistan were among the poorest performers. The average ESI-score in 2005 was 49.9.

The fourth indicator, the Environmental Performance Index (EPI) also is constructed by the Yale Centre for Environmental Law and Policy (Esty et al., 2008). This index builds on the ESI. However, it has 25 indicators instead of 21. Another difference with the ESI is that the EPI uses different weights for the indicators. The EPI focuses on two environmental objectives: reducing environmental stresses to human health and promoting ecosystem vitality and sound natural resource management. It assesses six categories: environmental health, air quality, water resources, biodiversity and habitat, productive natural resources, and climate change. It deploys a proximity-to-target methodology. This methodology tracks national performance on a core set of environmental policy goals for which every government can be held accountable. The EPI provides an absolute measure of performance by assessing countries on a proximity-to-target basis. The EPI identifies specific targets and measures the distance between the target and current national achievement. Esty et al. (2008) have assigned specific weights to each indicator. The environmental health and ecosystem vitality subcategories each represent 50% of the total EPI score. Within the former category, the environmental burden of disease indicators is weighted 50% and accordingly makes up 25% of the overall score. The effects of water and air pollution on human health are each allocated 12.5% of the overall score. Within ecosystem vitality, the climate change indicator has a 50% weight (25% of total), the air pollution indicator weighs 2.5% in the total score, and water, biodiversity and habitat, and productive natural resources each weigh 7.5% in the total. The five best performers regarding the EPI are Switzerland, Sweden, Norway, Finland, and Costa Rica. The bottom five countries are Niger, Angola, Sierra Leone, Mauritania and Mali. The average EPI is 71.9.

As for the investment funds, we focus on mutual funds that invest in governments bonds. This is because of several reasons. First is that most responsible finance research so far tends to focus on equity funds and bond investments almost have been neglected (see discussion in the introduction). Second is that sustainability data are not available at the level of individual firms or households, but only at the aggregate (country) level. We investigate bond portfolios of Dutch mutual funds as the market for socially responsible investments in the Netherlands is relatively well-developed (Eurosif, 2006) and as we could get access to fund data. We selected all reports of mutual funds with at least 50% of their investments in corporate or government bonds. As such, we ended up with a sample of 22 funds who did provide information about the composition of the investment portfolio at the individual country level. Of these 22 bonds, there are three (ASN Mixfonds, ASN Obligatiefonds, Triodos Meerwaardefonds) which are specifically marketed and positioned as socially responsible investment funds. We focus on the investments in government bonds and refrain from other (i.e. corporate) bond investments of the funds. The holdings in government bonds were rescaled to 100%. Then, we calculated the distribution of the investments along the various countries whose bonds were included in the fund's portfolio.

The basic descriptive statistics are in Tables 1 and 2. Table 1 gives scores for the four sustainability indicators of the countries any of the bond funds invested in. By the way, the bond funds appear to invest only in a selection of the available investment objects, i.e. countries. Table 2 gives the mutual funds and the percentage they invest in government bonds. On average, two thirds of the investments of mutual funds we did analyze are in government bonds. The remainder is mainly invested in corporate bonds, stocks, real estate or liquid assets. The average holding in government bonds was rescaled by a factor 1.51 to arrive at 100%.

We have to point out that there are some additional data limitations. First is that the four indicators all relate to different moments in time. Second is that not all countries are rated. Third is that with the course of time the investment funds do change the

composition of their portfolios. Therefore, the findings in the results section only are of a preliminary nature and have to be interpreted with caution.

## **Results**

Table 3 gives the performance of the mutual funds with respect to the sustainability of their investments in government bonds for the four indexes. For a particular fund, the score on an index is calculated by multiplying the weight of its investment in the bonds of a particular government with the score of that government on this index. This was done for all government bond investments and for all four indexes. If we compare the funds' average performance on the four indicators with the unweighted averages in Table 1, we observe that the performance with respect to Adjusted Net Savings and the Environmental Performance Index is somewhat higher whereas that with respect to the Ecological Footprint and the Environmental Sustainability Index is lower.

Next, we rank the mutual funds with respect to their performance on the four indicators. For example, the fund with the highest score on Adjusted Net Savings for its portfolio is in position 1. The fund with the lowest score on the Ecological Footprint is ranked first on this index (this is because a larger footprint implies less sustainability). With the Environmental Sustainability and the Environmental Performance Index, we put the countries with the highest score in rank 1. The overall results of this ranking are shown in Table 4. Here, the funds are ordered not alphabetically but according to their average rank on the four indicators.

Table 4 shows that, on average, the Kempen Euro Obligatie Fonds ranks highest, although it never is among the top-3 performers with any of our sustainability indexes. The OHRA fund ranks last. This fund performs poor on all four indexes. The Van Lanschot Bond Opportunity Fund (2006) performs best with respect to Adjusted Net Savings and the Ecological Footprint. However, it does perform only moderate on the ESI and it is the poorest performer with respect to the EPI. The Van Lanschot Bond

Opportunity Fund (2007) performs best on the EPI, but rather poor on the ANS and the ECF. The Postbank fund performs best on the ESI, but ranks relatively low on the Ecological Footprint. Thus, it appears that there is not much consistency in the funds' performance on the four indexes. This especially is revealed by the substantial differences in the standard deviation of the ranks as well as by the differences in the coefficient of variation. It is interesting to note that the funds that position themselves as socially responsible funds are not the top-performers in the rankings in Table 4. The ASN Obligatiefonds on average ranks fourth. Only with the ESI it is in the top-3. ASN Mixfonds ranks 7<sup>th</sup>. This fund ranks second with respect to the ECF. The Triodos fund ranks 26<sup>th</sup> (with the 2008 portfolio) and 27<sup>th</sup> (with the 2005 portfolio). This fund does not appear in any of the top-10 ranks of the four environmental indicators.

Only for a small number of funds, we are able to arrive at sustainability performance information for more than one year. As such, we can try to assess the consistency in their performance. Table 5 - a snapshot from Table 3 - compares the performance of the funds for which we had access to this information. Table 5 has some interesting results. First, it shows that the changes in the country composition of the funds did not affect their sustainability performance in the same direction and/or the same order of magnitude. For example, the ABN AMRO fund increased the ANS, ECF and EPI, and reduced its ESI. The increase of the ANS and EPI signals an improvement of the fund's sustainability performance. However, the increase in the ECF and the decrease in the ESI point at a worsening of the performance. For the other five funds, we arrive at similar conclusions as to the change in their performance on the four indicators. The only exception is the Van Lanschot Global Bond Fund. This fund performs worse in 2007 compared to 2006 with respect to all four indicators. A second observation is that the order of magnitude of the changes differs. This especially is the case with the Triodos fund and the Van Lanschot Bond Opportunity Fund. The sustainability performance of these two funds worsens considerably with respect to the adjusted net savings and the ecological footprint. However, it slightly improves for the environmental social and the environmental performance index. Purely for illustrative reasons we correlate the changes in the four indexes of the six funds. The results are in Table 6. The only significant

correlation is the one between ANS and ECF. This is high and negative. Given the definition of the ECF this points out that an improvement of the ANS goes hand in hand with an improvement in the ECF. However, at the same time, Table 6 shows that an increase in the fund's ANS is to be associated with a worsening of the fund's ESI and the EPI. This suggests that an improvement in adjusted net savings is to be associated with lower performance on the last two indicators. However, these correlations are not significant.

The assessment of the sustainability of the 22 Dutch funds in this section on the basis of four indexes gives way to four general observations. First is that it shows that the ranking of the funds' performance differs substantially for the four indicators. The ranking on the basis of the ANS and the ECF are quite close, but those of the other pairs of indicators is certainly not. Second is that the funds from Kempen, AEAM, ASN, Postbank and ING on average perform relative well. Those of OHRA, Triodos, Van Lanschot, Robeco, Levob and Achmea in general perform relatively poor. Third is that there can be very substantial difference in the sustainability performance with the course of time due to changes in the portfolio composition of the funds. Fourth is that the funds that are positioned as responsible funds are not superior to the conventional fund on any of the four environmental indicators. These findings are based on several caveats discussed earlier in the paper.

## **Discussion**

The preceding section shows that it really does matter a lot which indicator is used. However, so far, it is quite uncommon in the mutual fund industry to report about non-financial performance. This seems somewhat strange. In the marketing of the funds, the non-financial characteristics are stressed a lot. Nevertheless, the funds seldom make very clear how they do take account of the non-financial characteristics and what is their performance in this respect. The recent crises and several scandals in the finance industry have made clear that it is of the utmost importance that financial institutions are more explicit about what they do, how they do it and what it does mean. Not reporting about

the sustainability of the investments seems quite contradictory with respect to the purpose of the fund which is about transparency as such, especially for the funds that are labeled as responsible funds. Within the context of SRI, this suggests that funds should be very transparent and straightforward about their sustainability performance. Otherwise, it is not unlikely that investors will ask why they have to pay higher fees for investing in responsible funds, although the evidence that fees are significantly higher than in conventional ones is not overwhelming. Furthermore, investors might want to know the returns in non-financial terms of their investments as well. With responsible investing, these non-financial attributes do play a role in the investment decision. Thus, it is highly likely and very logical that investment funds will (be required to) report about their sustainability performance in the future.

The exercise in the previous section shed some light on how this might look like. But, of course, alternative approaches can be imagined. Notwithstanding the exact approach taken, we argue that basically three different approaches can be used to inform the (prospective) investors about the sustainability performance of the fund. One is the industry-wide benchmark, second is the focused indicator, third is the what we will call dashboard approach, which is a mix of the first two.

#### *Industry-wide benchmark*

The simplest way would be that the international responsible investment community would come up with one standard with respect to reporting their sustainability performance. Then, all funds would report their sustainability performance along the same yardstick. In this way, all funds could be very easily compared regarding sustainability. However, it is quite unlikely that the industry will come up with such a standard itself, apart from the fact of course that it will be difficult to arrive at a proper yardstick for sustainability. To compare the situation with assessing financial performance, it would be similar to require all funds to report their tracking error vis-à-vis a single global market index. Maybe, then, there is a case for the GRI or the UNPRI to come up with such a standard. But there is in fact no formal jurisdiction which would be able to force the use of a worldwide standard for the investment industry. Neither is

there a common global institution of the investment industry itself which by self-regulation would provide such a benchmark and which could check whether all funds report along its guidelines. At the national level, financial supervisors have the potential to require funds to provide this information. But then, given that there are a lot of national supervisors and cooperation between them is far from perfect, it is highly unlikely that they will be able to come up with a common benchmark.

### *Indicator*

Secondly, given that the funds may specialize in different attributes of sustainability, it is possible that each funds reports its performance from the perspective of a particular indicator. For example, it might report how it scores on the ANS, ECF, ESI or EPI. And there are many other benchmarks it might use. For example, a fund especially concerned about development issues, might report its performance in terms of the Human Development Indicator, etc. As different indexes fill different needs, they are able to capture different issues. In this case, sustainability reporting is similar to financial reporting of the funds where they report there tracking error with respect to a well-defined index. It goes without saying that the funds will have to keep using the same indicator on a continuous basis and that the choice of the indicator has to be well motivated. With this approach, not all the funds can be compared but the funds that refer to the same indicator can be.

### *Dashboard*

A combination of the former two approaches is the dashboard approach. Here, the fund reports its sustainability performance with respect to different issues or indicators. This would be more in line with the approach favored by the GRI: The fund reports about the sustainability performance of its investments along a wide range of indicators. For the fund this could be interesting as it allows it to report whatever information is available. However, the problem of having a dashboard with too many indicators is that the information value becomes less and less with every additional measure. The chances are that providing more and more information would have the effect of have difficulties in seeing the wood for the trees for those who need to make investment decisions.

Furthermore, fund performance is very unlikely to be comparable through time and among funds. So, the practical value of the dashboard approach appears to be very limited. However, if we continue to make a comparison with how funds historically did report about their financial performance, it is not unlikely that it is exactly this route which will be followed. Funds may be inclined to provide all kinds of details which make it hard for investors how to combine and assess this information. As always, there is a thin line between accuracy of information about the sustainability of investment funds and the capacity of the investor to grasp this information.

To communicate about the funds' sustainability performance, we argue that investment funds basically they have three options. First is that the industry comes up with some benchmark against which their responsibility is measured. Second is that the funds make very clear and transparent what aspects of sustainability they specifically target and how they keep score. Third is the dashboard approach in which the funds report their score within the perspective of various benchmarks and indicators.

## **Conclusion**

We assess the use of measuring the sustainability of fixed-income investment funds. This is an important issue as more and more funds promise the public to invest their money prudently and try to promote a better world. But how do we keep score? And how do we measure better versus worse? We perform a preliminary assessment of the government bond portfolios of Dutch funds. We use four different indicators about a country's sustainability, the World Bank's Adjusted Net Savings, the Ecological Footprint, promoted by the World Wildlife Fund, and the Environmental Sustainability Index and the Environmental Performance Index, both developed by the Yale Centre for Environmental Law and Policy. We investigate the country composition of the government bond investments of the Dutch bond funds and relate this composition to the countries' score on the four indexes. This provides us with an overall measure of the sustainability of the government bond portfolio of the investment funds. It appears that

the results substantially differ for the different indicators. This is not a surprise as they basically capture different issues. We find that specialized SRI bond funds are not superior to conventional funds on the environmental indicators. We also find that there is little consistency in the performance of funds (and countries) along the different indicators and that changes in fund composition can translate in completely opposite changes in their sustainability. It suggests that reporting about sustainability is subject to manipulation as funds can seemingly easily pick indicators on which they score best. This is not helpful for the investor. It implies that it is important to point out how a sustainability of the fund's investments is defined, measured and reported.

Sustainability indicators can be useful for fund managers, (potential) investors, financial supervisors and policy makers to track progress towards sustainable development. However, we show that different indicators can point in different directions with respect to changes in fund composition. This is highly unfortunate as managers, investors, supervisors and policy makers are in need of reliable and consistent information about non-financial sustainability performance of investments. We basically see three options: a common benchmark, a well-defined focussed performance indicator, and a dashboard approach. All three have their drawbacks. Our favorite outcome would be that the investment community itself becomes convinced that yardsticks regarding sustainability should be put in place. Financial supervisors should take care that apart from decent financial reporting, the funds report in a consistent and transparent matter about their sustainability and this information should be useful for the investor. Here, we think that the indicator approach would work best, whereas the dashboard approach is the least attractive option.

## References

- Bartelmus, P., and C.J. Cleveland: 2008, 'Measuring sustainable economic growth and development', in C.J. Cleveland (ed.), *Encyclopedia of the Earth* (Environmental Information Coalitions, National Council for Science and the Environment, Washington D.C.).
- Bauer, R., K. Koedijk, and R. Otten: 2005, 'International evidence on ethical mutual fund performance and investment style', *Journal of Banking and Finance*, 29, 1751-1767.
- Bello, Z.Y.: 2005, 'Socially responsible investing and portfolio diversification', *Journal of Financial Research*, 28, 41-57.
- Boatright, J.R.: 1999, 'Ethics in Finance', (Blackwell: Malden, MA).
- David, P., M. Bloom, and A.J. Hillman: 2007, 'Investor activism, managerial responsiveness, and corporate social performance', *Strategic Management Journal*, 28, 91-100.
- Derwall, J., and K. Koedijk: 2008, 'Socially Responsible Fixed-Income Funds', Working Paper. Maastricht and Tilburg University.
- Drut, S.: 2009, 'Sovereign Bonds and Socially Responsible Investment', Working Paper CEB 09-014.RS, Université Libre de Bruxelles, Solvay Brussels School of Economics and Management, Centre Emile Bernheim.
- Elkington, J.: 1998, 'Cannibals with Forks', (Capstone: Oxford).
- Esty, D.C., M. Levy, T. Srebotnjak, and A. de Sherbinin: 2005, '2005 Environmental Sustainability Index: Benchmarking National Environmental Stewardship', (Yale Center for Environmental Law and Policy: New Haven).
- Esty, D.C., M. Levy, C.H. Kim, A. de Sherbinin, T. Srebotnjak, and V. Mara: 2008, '2008 Environmental Performance Index', (Yale Center for Environmental Law and Policy: New Haven).
- Eurosif: 2006, 'European SRI Study', (Eurosif: Paris).
- Fiala, N.: 2008, 'Measuring sustainability: Why the ecological footprint is bad economics and bad environmental science', *Ecological Economics*, 67, 519-525.
- Geczy, C., R. Stambaugh, and D. Levin: 2003, 'Investing in socially responsible mutual funds', SSRN Working Paper 4163803.
- Greenbaum, S.I., and A.V. Thakor: 2007, 'Contemporary Financial Intermediation', (Elsevier: Amsterdam).

- Heinkel, R., A. Kraus, and J. Zechner: 2001, 'The effect of green investment on corporate behavior', *Journal of Financial and Quantitative Analysis*, 36, 431-449.
- Hildén, M., and U. Rosenström: 2008, 'The use of indicators of sustainable development', *Sustainable Development*, 16, 237-240.
- Kreander, N., R.H. Gray, D.M. Power, and C.D. Sinclair: 2005, 'Evaluating the performance of ethical and non-ethical funds: A matched pair analysis', *Journal of Business Finance & Accounting*, 32, 1465-1493.
- Lehtonen, M.: 2008, 'Mainstreaming sustainable development in the OECD through indicators and peer reviews', *Sustainable Development*, 16, 241-250.
- Martinez-Alier, J., G. Munda, J. O'Neill: 1998, 'Weak comparability of values as a foundation for ecological economics', *Ecological Economics*, 26, 277-286.
- Moran, D.D., M. Wackernagel, J.A. Kitzes, S.H. Goldfinger, and A. Boutaud: 2008, 'Measuring sustainable development – Nation by nation', *Ecological Economics*, 64, 470-474.
- Munoz-Torres, M.J., M.A. Fernandez-Izquierdo, and M.R. Balaguer-French: 2004, 'The social responsibility performance of ethical and solidarity funds: an approach to the case of Spain', *Business Ethics: A European Review*, 13, 200-218.
- Neubaum, D.O., and S.A. Zahra: 2006, 'Institutional ownership and corporate social performance: The moderating effects of investment horizon, activism, and coordination', *Journal of Management*, 32, 108-131.
- Pillarsetti, J., and J.C.J.M. van den Bergh: 2008, 'Sustainable Nations: What Do Aggregate Indicators Tell Us?', Tinbergen Institute Discussion Paper TI 2008-012/3.
- Scholtens, B.: 2005, 'What drives socially responsible investment? The case of the Netherlands', *Sustainable Development*, 13, 129-137.
- Scholtens, B.: 2007, 'Financial and Social Performance of Socially Responsible Investments in the Netherlands', *Corporate Governance: An International Review*, 15, 1090-1105.
- Smith, N.C., and G. Lenssen (Eds.): 2009, 'Mainstreaming Corporate Responsibility', (John Wiley & Sons: Chichester).
- Statman, M.: 2000, 'Socially responsible mutual funds', *Financial Analysts Journal*, 54, 30-39.

Van den Bergh, J.C.J.M., and H. Verbruggen: 1999, 'Spatial sustainability, trade and indicators: An evaluation of the Ecological Footprint', *Ecological Economics*, 29, 61-72.

Wackernagel M, Rees W. 1996. *Our Ecological Footprint: Reducing Human Impact on the Earth*. Gabriola Island, Canada: New Society Publishers.

World Bank: 2007, 'World Development Indicators', (World Bank: Washington D.C.).

World Wildlife Fund (WWF): 2006, 'Zoological Society of London, and Global Footprint Network. Living Planet Report 2006', (WWF International: Gland).

Table 1  
Descriptive statistics for the sustainability indicators

	<b>ANS</b>	<b>ECF</b>	<b>ESI</b>	<b>EPI</b>
Australia	3.9	6.6	61.0	79.8
Austria	15.2	4.9	62.7	89.4
Belgium	10.6	5.6	44.4	78.4
Brazil	8.0	2.3	62.2	82.7
Canada	4.6	7.6	64.4	86.6
Croatia	12.5	2.9	59.5	84.6
Czech Republic	14.6	4.9	46.6	76.8
Denmark	14.2	5.8	58.2	84.0
Finland	12.2	7.6	75.1	91.4
France	10.5	5.6	55.2	87.8
Germany	10.1	4.5	57.0	86.3
Greece	7.7	5.0	50.1	80.2
Ireland	21.1	5.0	59.2	82.7
Italy	10.5	4.2	50.1	84.2
Japan	14.6	4.4	57.3	84.5
Lithuania	10.7	4.4	58.9	86.2
Luxembourg	NA	5.6	NA	83.1
Netherlands	14.1	4.4	53.7	78.7
Norway	14.6	5.8	73.4	93.1
Portugal	1.0	4.2	54.2	85.8
Russian Federation	-10.4	4.4	56.1	83.9
Slovak Republic	1.5	3.3	52.8	86.0
Slovenia	16.3	3.4	57.5	86.3
Spain	11.6	5.4	48.8	83.1
Sweden	18.6	6.1	71.7	93.1
Switzerland	NA	5.1	63.7	95.5
United Kingdom	7.1	5.6	50.2	86.3
United States	3.0	9.6	53.0	81.0
average	9.9	5.2	57.7	83.7
minimum	-10.4	2.3	44.4	50.5
maximum	21.1	9.6	75.1	95.5
total sample				
average	7.0	2.4	49.9	71.9
minimum	-58.4	0.5	29.2	39.1
maximum	39.1	11.9	75.1	95.5

NA = not available; ANS = Adjusted Net Savings; ECF = Ecological Footprint; ESI = Environmental Sustainability Index; EPI = Environmental Performance Index.  
Sources: Esty et al. (2005, 2008), World Bank (2007), WWF (2006)

Table 2  
Descriptive statistics for the mutual funds

Mutual Fund	Year	% of the portfolio invested in government bonds
ABN AMRO Euro Obligatiefonds	2006	82.37
ABN AMRO Euro Obligatiefonds	2007	90.16
Achmea Euro Obligatiefonds	2007	42.40
AEAM Long Duration Overlay Fund	2005	79.30
AEAM Long Duration Overlay Fund	2006	100.00
AEGON Europees Mix Fonds	2007	80.18
AEGON Europees Obligatie Fonds	2008	100.00
ASN Mixfonds	2008	84.00
ASN Obligatiefonds	2007	87.00
ING Euro Obligatie Fonds	2007	25.63
ING First Class Obligatie Fonds	2007	22.84
ING Obligatie Fonds	2007	35.57
Kempen Euro Obligatie Fonds	2007	72.50
Kempen Euro High Grade Pool	2006	92.10
Kempen Euro High Grade Pool	2007	80.10
Levob Euro Obligatiefonds	2007	56.00
OHRA Bond Fund	2007	72.70
Postbank Obligatiefonds	2007	41.57
Postbank Verzekeringen Obligatie Plus Fonds	2007	36.50
Robeco Euro Government Bonds	2007	97.34
SNS Euro Mixfonds	2008	47.00
SNS Euro Obligatiefonds	2008	50.00
Triodos Meerwaarde Obligatiefonds	2005	96.50
Triodos Meerwaarde Obligatiefonds	2008	95.95
Van Lanschot Bond Opportunity Fund	2006	58.40
Van Lanschot Global Bond Fund	2006	61.10
Van Lanschot Bond Opportunity Fund	2007	7.20
Van Lanschot Global Bond Fund	2006	54.90
average		66.05
standard deviation		26.46

Portfolio composition is measured at year-end, for 2008 at the end of the first quarter.  
Source: Annual and Quarterly Reports of the funds

Table 3  
Fund performance with respect to the sustainability indexes

Fund	ANS	ECF	ESI	EPI
ABN AMRO Euro Obligatiefonds 2006	10.81	4.84	55.17	85.31
ABN AMRO Euro Obligatiefonds 2007	10.94	5.11	54.37	85.62
Achmea Euro Obligatiefonds	11.74	4.80	52.86	82.95
AEAM Long Duration Overlay Fund 2005	13.04	4.75	55.61	83.48
AEAM Long Duration Overlay Fund 2006	12.41	4.72	55.80	83.86
AEGON Europees Mix Fonds	10.09	5.06	53.96	85.14
AEGON Europees Obligatie Fonds	10.38	4.79	52.67	84.57
ASN Mixfonds	11.86	4.63	55.69	83.74
ASN Obligatiefonds	11.87	4.74	56.36	84.01
ING Euro Obligatie Fonds	11.24	4.71	53.73	84.16
ING First Class Obligatie Fonds	12.49	4.71	54.32	84.05
ING Obligatie Fonds	12.13	5.31	56.87	84.33
Kempen Euro Obligatie Fonds	11.94	4.83	56.21	84.80
Kempen Euro High Grade Pool 2006	12.83	4.69	55.45	83.74
Kempen Euro High Grade Pool 2007	13.22	4.72	56.03	83.39
Levob Euro Obligatiefonds	11.20	4.83	53.02	84.25
OHRA Bond Fund	8.01	6.34	51.35	82.88
Postbank Obligatiefonds	12.49	5.17	56.93	84.36
Postbank Verzekeringen Obligatie Plus Fonds	11,27	5.43	56.04	84.57
Robeco Euro Government Bonds	10.82	4.88	52.76	84.04
SNS Euro Mixfonds	11.71	4.67	55.39	83.68
SNS Euro Obligatiefonds	11.41	4.68	54.97	83.32
Triodos Meerwaarde Obligatiefonds 2005	7.86	6.73	54.09	82.75
Triodos Meerwaarde Obligatiefonds 2008	11.47	5.08	53.97	82.31
Van Lanschot Bond Opportunity Fund 2006	13.39	4.60	55.10	81.78
Van Lanschot Global Bond Fund 2006	11.46	4.81	54.85	83.95
Van Lanschot Bond Opportunity Fund 2007	10.50	5.60	55.20	87.75
Van Lanschot Global Bond Fund 2007	11.30	5.24	54.61	83.36
Average	11.43	5.02	52.95	84.01
Standarddeviation	1.30	0.50	9.54	1.14
Coefficient of variation	0.11	0.10	0.18	0.01

ANS = Adjusted Net Savings; ECF = Ecological Footprint; ESI = Environmental Sustainability Index; EPI = Environmental Performance Index.

Table 4  
Fund ranks on sustainability indexes

Fund	ANS	ECF	ESI	EPI	SUM	AVE	STD	VARCO
1 Kempen Euro Obligatie Fonds	9	16	4	5	34	8.5	5.45	0.64
2 Kempen Euro High Grade Pool (2006)	4	5	10	17	36	9.0	5.94	0.66
3 Postbank Obligatiefonds	5	22	1	8	36	9.0	9.13	1.01
4 ASN Obligatiefonds	10	10	3	14	37	9.3	4.57	0.49
5 AEAM Long Duration Overlay Fund (2006)	7	8	7	16	38	9.5	4.36	0.46
6 Kempen Euro High Grade Pool (2007)	2	9	6	21	38	9.5	8.19	0.86
7 ASN Mixfonds	11	2	8	18	39	9.8	6.65	0.68
8 AEAM Long Duration Overlay Fund (2005)	3	11	9	20	43	10.8	7.04	0.66
9 ING Obligatie Fonds	8	24	2	9	43	10.8	9.36	0.87
10 ING First Class Obligatie Fonds	6	7	19	12	44	11.0	5.94	0.54
11 Van Lanschot Bond Opportunity Fund (2006)	1	1	14	28	44	11.0	12.88	1.17
12 SNS Euro Mixfonds	13	3	11	19	46	11.5	6.61	0.57
13 Postbank Verzekeringen Obligatie Plus Fonds	18	25	5	7	55	13.8	9.43	0.69
14 ABN AMRO Euro Obligatiefonds (2006)	23	17	13	3	56	14.0	8.41	0.60
15 SNS Euro Obligatiefonds	16	4	15	23	58	14.5	7.85	0.54
16 ING Euro Obligatie Fonds	19	6	23	11	59	14.8	7.68	0.52
17 Van Lanschot Global Bond Fund (2006)	15	14	16	15	60	15.0	0.82	0.05
18 ABN AMRO Euro Obligatiefonds (2007)	21	21	18	2	62	15.5	9.11	0.59
19 Van Lanschot Bond Opportunity Fund (2007)	24	26	12	1	63	15.8	11.62	0.74
20 Levob Euro Obligatiefonds	20	15	24	10	69	17.3	6.08	0.35
21 AEGON Europees Obligatie Fonds	25	12	27	6	70	17.5	10.15	0.58
22 AEGON Europees Mix Fonds	26	19	22	4	71	17.8	9.60	0.54
23 Achmea Euro Obligatiefonds	12	13	25	24	74	18.5	6.95	0.38
24 Robeco Euro Government Bonds	22	18	26	13	79	19.8	5.56	0.28
25 Van Lanschot Global Bond Fund (2007)	17	23	17	22	79	19.8	3.20	0.16
26 Triodos Meerwaarde Obligatiefonds (2008)	14	20	21	27	82	20.5	5.32	0.26
27 Triodos Meerwaarde Obligatiefonds (2005)	28	28	20	26	102	25.5	3.79	0.15
28 OHRA Bond Fund	27	27	28	25	107	26.8	1.26	0.05

ANS = Adjusted Net Savings; ECF = Ecological Footprint; ESI = Environmental Sustainability Index; EPI = Environmental Performance Index.

SUM is the sum of the four ranks; AVE is the average rank of the fund regarding the four indicators; STD is the standard deviation of the ranks of the fund; VARCO is the coefficient of variation of the fund with respect to the four indicators.

Table 5  
Changes in fund performance on sustainability indexes

Fund	ANS	ECF	ESI	EPI	average change (%)
ABN AMRO Euro Obligatiefonds (2006)	10.81	4.84	55.17	85.31	
ABN AMRO Euro Obligatiefonds (2007)	10.94	5.11	54.37	85.62	
% change	1.14	5.76	-1.44	0.36	1.46
AEAM Long Duration Overlay Fund (2005)	13.04	4.75	55.61	83.48	
AEAM Long Duration Overlay Fund (2006)	12.41	4.72	55.80	83.86	
% change	-4.78	-0.58	0.34	0.45	-1.14
Kempen Euro High Grade Pool (2006)	12.83	4.69	55.45	83.74	
Kempen Euro High Grade Pool (2007)	13.22	4.72	56.03	83.39	
% change	3.09	0.72	1.05	-0.42	1.11
Triodos Meerwaarde Obligatiefonds (2005)	11.47	5.08	53.97	82.31	
Triodos Meerwaarde Obligatiefonds (2008)	7.86	6.73	54.09	82.75	
% change	-31.47	32.60	0.24	0.53	0.48
Van Lanschot Bond Opportunity Fund (2006)	13.39	4.60	55.10	81.78	
Van Lanschot Bond Opportunity Fund (2007)	10.50	5.60	55.20	87.75	
% change	-21.59	21.63	0.18	7.30	1.88
Van Lanschot Global Bond Fund (2006)	11.46	4.81	54.85	83.95	
Van Lanschot Global Bond Fund (2007)	11.30	5.24	54.61	83.36	
% change	-1.39	8.91	-0.43	-0.71	1.60
average % change	-9.17	11.51	-0.01	1.25	0.90

ANS = Adjusted Net Savings; ECF = Ecological Footprint; ESI = Environmental Sustainability Index; EPI = Environmental Performance Index.

Source: Table 3.

Table 6

Correlation coefficients of sustainability performance changes of mutual funds

	ANS	ECF	ESI	EPI
ANS	1,00			
ECF	-0,94	1,00		
ESI	-0,19	0,01	1,00	
EPI	-0,51	0,43	0,08	1,00

ANS = Adjusted Net Savings; ECF = Ecological Footprint; ESI = Environmental Sustainability Index; EPI= Environmental Performance Index.