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**EVIDENCE CONCERNING THE CONNECTION  
BETWEEN SUSTAINABLE DEVELOPMENT AND  
SHAREHOLDER VALUE**

**RESULTS OF ASSESSMENTS OF  
COMPANIES AND STAKEHOLDERS**

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## Contents

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1.	Introduction .....	4
2.	Statistical/econometric tests.....	4
2.1	Event studies.....	5
2.1.1.	Concept .....	5
2.1.2.	Examples .....	5
2.1.3.	Conclusion .....	7
2.2	Cross-section Regressions and panel analyses.....	8
2.2.1.	Concept .....	8
2.2.2.	Examples .....	8
2.2.3.	Conclusion .....	9
2.3	Analyses of environmental and sustainability funds .....	10
2.4	Problems of the statistical/econometric tests .....	13
3.	Indirect evidence: Environmental/sustainability funds and the assessments of companies and stakeholders .....	14
3.1	Criteria for evaluating environmental and sustainability performance used by sustainability funds .....	15
3.2	The connection between sustainability performance and Shareholder value: the assessments of managers of environmental and sustainability funds.....	17
3.3	The connection between sustainability performance and shareholder value: the assessments of companies .....	19
3.4	The connection between sustainability performance and shareholder value: the assessments of stakeholders.....	26
4.	Conclusions.....	27
	References .....	29

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## 1. INTRODUCTION

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There are many theoretical reasons why a good environmental and social performance should enhance the financial performance of companies. This part of the workbook will go beyond the theory and look at the evidence, if a good environmental and social bottom line has helped companies to be financially successful.

The question which evidence exists for a positive connection between shareholder value and the social and environmental performance of companies is important not only for managers of environmental/sustainability funds or for investors with an intrinsic motivation for investing in socially and environmentally responsible companies regardless of their financial performance. This question bears also significance for conventional funds and analysts because it may show them an important category of information that is crucial when assessing the prospects of companies regarding profitability.

In principal, there are two possibilities to examine the connection between sustainability and shareholder value: the first possibility is to conduct econometric research; the second is to bring in experts' assessments of the connection.

In the following sections the results of these examinations are presented. Section 2 surveys the statistical/econometric tests that have been done to evaluate the connection between environmental/sustainability performance and shareholder value. Section 3 presents the assessments of managers of environmental/sustainability funds and of companies and stakeholders. These assessments are based on interviews and questionnaires.

This workbook is based on the intermediate results of the research project "Environmental and sustainability transparency for the financial markets" conducted by the Institute for Environmental Management and Business Administration at the European Business School in collaboration with the Institute for Applied Ecology and the Centre for European Economic Research. The project is funded by the German ministry of research. The main scientific objective of the Project is to research the link between environmental performance and shareholder value. To do this, company and sector level case studies are executed, analysing how environmental information are raised and which factors of environmental performance are relevant for the shareholder value. Supported by these case studies hypotheses of the link between environmental and financial performance are stated. These hypotheses will finally get tested with the help of an econometric study.

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## 2. STATISTICAL/ECONOMETRIC TESTS

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During the past years, quite a few econometric studies have been conducted to examine the connection between environmental/sustainability performance of companies and their shareholder value which will be presented in the following sections. The multitude of studies that have been carried out and that use quite different methodologies (see e.g. Wagner 2001 and Institut für Ökologie und Unternehmensführung 2001 for a comprehensive review) show that

it is by no means simple to give a straightforward answer to the (seemingly) simple question about the connection between sustainability and shareholder value.

Therefore, in the following sections the results of some important studies will be presented in order to gain a clearer picture about the answers found so far and about the questions to be addressed in further research.

Although there are a lot of different studies with different methodologies, they can be divided roughly into three groups: event studies; cross-sectional regressions and panel analyses; and analyses of environmental and sustainability funds.

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## 2.1 Event studies

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### 2.1.1. Concept

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Event studies measure the connection between the publication of a certain piece of information and the change of the share price following immediately after the publication. They examine the effect of new pieces of information (e.g., the publication of emission data) on the share price. The principal aim of event studies is to analyse how information is used and processed in the capital market. Concerning the connection between environmental performance and shareholder value, event studies investigate whether (and how much) new environmental information about a company changes its share price. The underlying idea of the event study methodology is the basic postulate of efficient market theory which says that the share price incorporates all available information about the current and expected performance of a company. If a stock price changes after an event, the market values a company differently, presumably because of the event.

The events investigated in these studies can be positive or negative. A positive event can be the publication of a good environmental ranking of a company or the awarding of a prize for good environmental management. Negative events can be an environmental accident or the publication of data about the emission of harmful substances.

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### 2.1.2. Examples

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Let us, exemplarily, look at some studies in detail: **Hamilton (1995)** examined the impact of pollution on the economic performance of companies (that is, their share price). Specifically, the study investigated the reaction of the market to the publication of data from the Toxic Release Inventory (TRI). The study used data from the Environmental Protection Agency (EPA), from the TRI and from the Center for Research in Security Prices (CRSP). The basic result was: When the data of firms required to report emissions under the TRI were published for the first time in June 1989, the stock market reacted and showed negative abnormal returns which were statistically significant. Specifically, the greater the difference between emissions reported prior to the first TRI data release and the TRI results the higher were the

stock price changes for a firm. On the other hand, firms for which the release showed little or no difference between TRI data and prior available data outperformed chemical industry indexes. This was regarded as indicating that stock market reactions are not only based on the level of emissions but also on the levels of disclosure and magnitude.

There are several reasons for the fact that the publication of information can lead to stock market reactions. One possibility is that the stock market takes information about TRI emissions as an indicator of the productive efficiency of firms. Firms that have higher emissions per dollar revenue than their competitors, waste resources. Therefore, the information might show that the management is incapable (in this respect) and that the probability of future accidents is greater than in other firms. Another reason might lie in the danger that a firm with higher toxic emissions could become the preferred target of environmental and other stakeholder groups boycotting the firm's products and therefore diminishing its revenues. Finally, the high emissions of a firm could lead to an increased control by public agencies and a more detailed investigation of the firm. That might mean higher expenditure for the firm due to new regulations or damages and fines.

The results in the study of Hamilton could be confirmed and differentiated in two other event studies (Konar/Cohen 1997 and Khanna/Quimio/Bojilova 1998):

**Konar/Cohen (1997)** investigated the impact of stock market reactions on the environmental management of the firms. They examined all companies that had, according to the study by Hamilton (1995), significant negative abnormal returns after the publication of their TRI data. They showed that companies with the largest losses in their share price carried out more considerable reductions of emissions than other firms in the same sector. So stock market reactions can lead to firms taking action to improve environmental performance. As a consequence, this can also lead once again to an improvement in financial performance as it is measured by the stock price.

By analysing the data of 91 firms in the chemical industry between 1989 and 1994, **Khanna/Quimio/Bojilova (1998)** have shown that stock market reactions are considerable when the data on the firm's emissions are unexpectedly high. On the other hand, the stock market price of firms whose emissions were expected to be high sank only moderately. Additionally, the continuous publication of the TRI had a kind of a benchmarking effect. When data about the same firm at different points in time became available, the investors and analysts were able to form benchmarks concerning the environmental performance of that firm. A firm with continuously high toxic emissions also suffered from a reduction in the stock market price. The stock market reactions have indeed led to environmental measures by the firms' management. In the case of solid toxic waste investigated in the above-mentioned studies, firms reacted by reducing on-site releases of toxic waste and substituted them by an increase in off-site transfers. Although the total of toxic waste was not reduced, the increase in recycling and environmentally-sound waste management already means an environmental improvement.

**Bosch/Eckard/Lee (1996)** carried out an event study on a sample of 171 cases of EPA related announcements between 1970 and 1990. These cases involved 77 U.S. firms listed in the Wall Street Index of (among others) the automobile, electric utilities, steel and chemical industries. Events were sub-divided in four sub-samples:

- firms that were targeted by EPA for violations

- firms that lost a legal challenge to (and received an unfavourable decision from) EPA
- firms that received a favourable decision from EPA
- firms that challenged an EPA decision in court.

The study estimates abnormal and cumulative abnormal returns. Estimates are based on the 10 business days preceding the announcement, the event day and the ten business days following the announcement. The study finds a negative stock market response to the announcement of an EPA event for a company, combined with a significant cumulative abnormal return. Furthermore, cumulative abnormal returns are strongest and highly significant for firms that lose a contest with EPA.. On the other hand, they are lower for firms that are willing to cooperate with EPA. Challenging of an EPA decision in court does not lead to strong market reaction. Furthermore, the study found no stock market reaction to a positive EPA announcement, that is, a positive event was not followed by an increase in the share price.

**Klassen/McLaughlin (1996)** assessed market reactions to positive and negative environmental events. Negative environmental events used in the study were, e.g., product recalls, poor external ratings of pollution performance or announcement of oil spills. Positive environmental events were, e.g., the announcement of an environmental award by an independent party or environmental certifications. The study found significant abnormal positive and negative returns for awards and for crises, respectively. These returns remained stable and significant when control variables were included, such as firm size effects or financial and management announcements that were published at the same time.

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### 2.1.3. Conclusion

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All in all, the results of the existing event studies can be summarised as follows: after a negative event there is nearly always a statistically significant negative reaction of the share price. There are only a few studies that measure the effect of a positive environmental event on the share price of a company. In these studies, the share price has only a weakly positive reaction on the event; in one study, the result is significant, other studies found no significant results.

Event studies do have – especially when dealing with negative events like failures or accidents – clear-cut and robust results and their methodology is quite elaborated. The basic problem with this kind of study is whether they really give an answer to the question about the connection between environmental and economic performance of a company. The results could also arise because an environmental damage leads to high cost for its removal. The fact that positive environmental events are barely significant for the share price supports this interpretation. If it is correct, many event studies examine the question whether a publicly-known increase of cost is adequately incorporated in the share price.

This leads to the second kind of studies, panel and regression analyses.

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## 2.2 Cross-section Regressions and panel analyses

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### 2.2.1. Concept

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In this group of studies, connections between sustainability performance and shareholder value are examined with the help of cross-section data and panel data. Data about profit or equity returns of companies are regressed on data about environmental and sustainability performance of companies. When using longitudinal or panel data, the change during a certain amount of time is considered additionally. When equity returns are used for measuring shareholder value, the non-diversifiable risk is filtered out with the help of the Capital Asset Pricing Model (CAPM), as a higher return could just be the result of investors demanding a higher compensation for a higher risk.

In the different studies, the environmental performance is approximated by different sets of data: in some studies, the firms are differentiated according to different kinds of harmful substances; other studies use the results of environmental and social ratings of companies and regress the economic data of companies on the ratings; a third group of studies develop their own indices of emissions.

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### 2.2.2. Examples

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**Hart/Ahuja (1996)** analyse the relationship between emissions reduction and financial and operational performance of 127 firms listed in the Standard and Poor's 500 (S&P 500). For measuring the environmental performance they use environmental performance data from the Investor Responsibility Research Center (IRRC) 1993 Corporate Environmental Profile directory. This profile supplies data on reported emissions of selected pollutants from U.S. manufacturing sites which are based on TRI data. Emissions reductions in the study were measured for each firm in the sample as the percentage change of the ratio of TRI-reported emissions to the company's revenues from 1988 to 1989. Operational and financial performance were measured by the accounting profitability measures return on sales (ROS), return on assets (ROA) and return on equity (ROE) for the years from 1989 to 1992. Furthermore, the study included a number of firm-level and industry-level control variables (e.g. advertising intensity, R&D intensity, capital intensity, leverage, industry average environmental performance), The authors developed three econometric models with ROS, ROA and ROE, respectively, as dependent variables, and emissions reduction and control variables as independent variables. The study found that two years after the emissions reduction (per unit of production) occurred, the above measures for financial performance showed improvements which were highest for firms with higher emission levels prior to reduction. Of the three measures of financial performance, ROE took longer to be affected than ROS and ROA.

**Thomas/Tonks (1999)** examined the correlation between the excess stock market returns and environmental activities and features of firms. Their data set is based on 131 companies that replied to a questionnaire survey that inquired whether firms had adopted an environmental policy, if they had been prosecuted by an environmental agency in the UK and if they

had adopted routine staff training schemes to ensure staff compliance with their environmental protocols. The authors used a multiple regression framework to analyse the predictive value of dummy variables representing the adoption of an environmental policy, prosecution and staff training, alongside other possible explanatory variables for total stock market returns. The data referred to the period 1985-97 and was sub-divided in three test periods: pre-1992, 1992-1995 and post 1995. Overall, the analysis found that the adoption of an environmental policy by firms in an industry with strong pollution record improves their stock market returns by reducing negative excess returns. The interpretation of this is that firms in high-polluting industries (who were found to have below-average returns over all three periods) were reducing their negative excess returns over the period 1995-97 when adopting an environmental policy.

**Butz/Plattner (1999)** analysed the correlation between the environmental rating and stock market returns of 65 European firms from various industries and countries. The environmental rating was provided by the Swiss private bank Sarasin and is based on a number of quantitative and qualitative performance criteria. The sample covers the period between May 1996-May 1997. The authors used the systematic, market risk-adjusted excess returns (Jensen's Alpha) as a measure of economic performance. Butz/Plattner regressed the Alpha value on the environmental ratings as dependent variables (the environmental rating was included in the regression by means of three dummy variables). As a result, Butz/Plattner find a positive significant regression coefficient for environmental rating, indicating a positive relationship between environmental and economic performance. However, this only holds for a subset of firms in environmentally intensive industries. Coefficients became insignificant when the whole sample of 65 firms was considered. Moreover, this study is the only one so far to test for a positive connection between social performance (as measured by Sarasin's social rating) and economic performance. By using the same technique, Butz/Plattner found no significant connection between social and economic performance. One key weakness of the study by Butz/Plattner is that they do not include any control variables. This leaves the possibility that factors other than the environmental rating could have influenced the results.

Concerning environmental performance, a result similar to that in the studies of Thomas/Tonks (1996) and Hart/Ahuja (1996) was obtained in a panel analysis with 4484 firms by **King/Lenox (2000)**: On the basis of emission indices developed with data from the Toxic Release Inventory (TRI), King/Lenox found a significant and positive correlation between environmental performance and economic success. This connection is especially pronounced in firms which have – relative to the competitors in their sector – an environmental performance above average. Firms in sectors which are generally “clean” do not have an economic performance that is significantly higher.

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### 2.2.3. Conclusion

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The studies carried out so far seem to show that there is a positive connection between the environmental performance of companies and their shareholder value. But the results of all these studies can be interpreted as correlations only – the question of causality between environmental performance and economic success remains open so far. Furthermore, the studies use very different measures of environmental performance that are not always com-

parable. Additionally, the data on environmental performance are not always available in a standardised form.

Finally, the studies carried out so far concentrated on environmental performance; the social dimension of sustainability has been barely investigated.

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## 2.3 Analyses of environmental and sustainability funds

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In the third group of studies, the connection between sustainability performance and shareholder value is examined indirectly. The economic performance of funds which select the companies they invest in according to environmental and social criteria is analyzed and compared to the performance of conventional funds. By using a time series analysis it is investigated if there are significant differences in the values of different portfolios.

On the first sight, it seems to be very simple to compare the performance of conventional and environmental/sustainability funds by looking at the different returns of the funds. But there are two **problems**: often the environmental funds back-track their performance, that is, they do not only compare their returns with the returns of other funds after the date they were issued but also make comparisons as if the fund had been issued in previous years. Often in such **back-tracking**, environmental funds outperform conventional funds, but one can argue, that the portfolio of the environmental fund has been selected with the benefit of hindsight. So that is not a reliable measure. Secondly, different returns can simply come from different risks. So one also has to take into account this factor when comparing the portfolios.

In the studies considered the return of portfolios containing shares of companies with a positive environmental performance (measured, e.g., by a rating) is compared with the return of portfolios containing shares of companies with a negative environmental performance. Important influences (market, interest rates etc.) are filtered out. Remaining differences between these returns should be caused solely by the environmental performance (rating) of the companies. Again, let us look at some studies in detail:

**White (1995)** has investigated the performance of different Environmental Mutual funds. He used the performance data of 6 US- and 5 German environmental funds between 1991 and 1993 and compared them with the performance data of benchmark indices. He tested four hypotheses:

- Hypothesis 1: US environmental funds outperform the US stock market index. The hypothesis had to be rejected.
- Hypothesis 2: US environmental funds outperform the socially responsible part (DSI) of the US stock market. The hypothesis had to be rejected.
- Hypothesis 3: German environmental funds outperform the German stock market index. There was a positive, but insignificant outperformance due to the HCM EcoTech fund.
- Hypothesis 4: German environmental funds performed better than US environmental funds. The hypothesis had to be rejected.

In another study, **White (1996)** did not investigate existing portfolios, but constructed model portfolios out of firm data. He used three-element scale ratings published by the Council on

Economic Priorities (CEP) for the environmental performance of firms. These ratings classified firms as environmentally proactive, middle, or high-polluting. Environmentally proactive firms are defined having substantial activities in recycling, alternative energy sources, waste reduction and environmentally more benign products and packaging as well as few environmental non-compliance events. Companies with a middle rating are characterised as being in compliance with legal standards, but not pursuing proactive environmental programs. High-polluting firms on this rating scale are characterised by several major accidents, significant non-compliance and constant lobbying against strict environmental policy. These ratings were available for 97 firms that were publicly listed on the New York or the American Stock Exchange for the years 1989 to 1992. Monthly stock returns for all firms obtained from the Center for Research in Security Prices (CRSP) were combined with these ratings to analyse the relationship between shareholder value and firm's reputation for environmentally conscious behaviour. Based on the CEP ratings, three portfolios of high-, medium- and low-rated firms, respectively, were created and monthly returns on these portfolios were then value-weighted, using monthly equity capitalisation data also obtained from CRSP. Jensen's alpha measure was used to measure the (risk-adjusted) performance of each portfolio and compare this to the others. The study found superior risk-adjusted performance (i.e. investment returns) relative to the market over the study period for the portfolio of high-rated firms with substantial environmental management activities. The other two portfolios expressed as well positive values for the Jensen alpha measure; but these were not statistically significant and considerably smaller than in the case of the portfolio of high-rated firms.

Comparing his two studies that covered approximately the same time period, White concluded that the performance of the existing funds he investigated depended more strongly on the ability of the fund managers than on the environmental performance of the companies. So the poor performance of the funds could rather show a poor performance of the fund managers than a poor performance of firms with a positive environmental performance.

**Cohen/Fenn/Naimon (1995)** made also an analysis of a constructed portfolio. The basic approach to the analysis was the construction of two portfolios – one containing firms with low values of environmental measures and another with high values. The portfolios were designed to contain a matched group of firms, where the matching was done based on industry category. First, companies were sorted into 85 different groups based on the industry categories used by S&P. Within each industry the firms were ranked equally on the environmental measure of interest. The firms with an environmental measure below the median got a dummy variable equal to 0, the other got a variable equal to 1. (best in class). The primary source of data for this study is the database published by Investor Responsibility Research Center (IRRC) in its *1992 Corporate Environmental Profiles Directory*, which have not previously been available to researchers in an accessible format for all the S&P 500 companies. As environmental indicators the following were used:

- Superfund sites
- Number of compliance penalties
- Dollar value of compliance penalties
- Volume of toxic chemical releases
- Number of oil spills
- Volume of oil spills
- Number of chemical spills
- Volume of chemical spills
- Number of environmental litigation proceedings

In all cases these indicators get divided by the firm's revenues to adjust for firm size. As financial indicators were used:

- ROA
- ROE
- total return to shareholders risk adjusted
- total return to shareholders unadjusted

The main hypothesis being tested in this study is whether or not firms perform well in the environmental arena also perform well financially. The test asks whether the "low pollution" portfolio performs the same or differently from the "high pollution" portfolio, where high and low refer to each of the environmental indicators. The results were as follows:

- Ad Environmental Litigation: Firms with a relatively larger number of environmental lawsuits were found to earn a lower level of ROA and ROE – this finding was statistically significant, whereas risk adjusted market returns were actually higher (not significant) for the "high litigation" portfolio.
- Ad Superfund Sites: The "low site" portfolio outperformed the "high site" portfolio just in the years 1987-1989 and only for the total return to shareholder and not for the ROE and ROA and in the following years even not for the total return to shareholder. One reason for this might be that the market (return to shareholder) has anticipated high future costs, despite the fact that there are little immediate impacts for the firms based on being listed on the Superfund list.
- Ad Fines: No significant differences in the portfolios could be found.
- Ad Oil Spills: ROA and ROE of the high spill portfolio are significant lower, also the risk adjusted returns, but not statistically significant.
- Ad Chemical Spills: Similar results as for oil spills. Total returns however are slightly higher for the high spill portfolio, but not significant.
- Ad Toxic Chemical Releases: No significant differences.

This study shows that "green investors" do not need to pay a premium for their conviction. Investments in environmental leaders were found to perform as well – sometimes even better – than those in environmental laggards. It is, however, to state that any relationship that is found does not necessarily imply the direction of causation. It might also be that firms are good environmental citizens because they are environmentally strong.

**Kreander et al. (2000)** investigated the performance of 40 ethical funds from seven European countries (UK, Sweden, Germany, Netherlands, Norway, Switzerland, Belgium) and compared it to the performance of conventional funds. There was no significant difference between the investment returns of the two different kinds of funds.

One of the problems of this kind of study is the limited availability of data: analyses with too few observations lead to fuzzy results. Some studies do not consider differences in the risks of different portfolios. Furthermore, a potential "survivorship-bias" is not mentioned: that is, the bad economic performance of funds which went out of the market is not considered so that the average performance of the remaining funds is accounted for as too high. Generally, the studies are not state of the art regarding performance measurement.

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## 2.4 Problems of the statistical/econometric tests

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There are two major problems with these statistical/econometric tests: the availability of data and the problem of causality.

1. Data on the environmental and sustainability performance of companies are normally not available in a standardized form. That makes econometric analyses quite difficult. If there are data, these data stretch over a few years only, so that time series analyses become a good deal more difficult.
2. The second problem is the interpretation of the results of the studies in terms of causality. Normally, the results can be interpreted as correlations only. Another related problem is the measurement of false correlations: it may be that sustainability performance and economic performance of a company are driven by a third variable which is not measured; in this case, there would be no causal connection between sustainability performance and economic performance.

In principle, there are three hypotheses to explain a positive correlation between environmental/sustainability performance and shareholder value:

- Profitable companies have a higher propensity to invest in environmentally friendly technologies than companies with low profits (or even losses).
- Seeking a better environmental/sustainability performance could lead to a better economic performance.
- Companies with a better environmental performance have a better management in general (so it is general management that equally drives environmental/sustainability performance and economic performance).

So far, none of these theories has been confirmed or falsified in the existing studies. Generally, finding causalities in economic models is difficult; the interpretation of a correlation as a causality depends on the underlying model. So the most important thing is to find stable and statistically significant relationships which can be interpreted as causalities within the framework of an economic model. Furthermore, the problem of false correlations can be neutralized by including additional explaining variables in the regressions. Additionally, one can apply different methods and compare the results.

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### **3. INDIRECT EVIDENCE: ENVIRONMENTAL/SUSTAINABILITY FUNDS AND THE ASSESSMENTS OF COMPANIES AND STAKEHOLDERS**

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The evidence presented in this chapter might be called indirect evidence for the connection between sustainability and shareholder value. It is based upon interviews carried out within the framework of the above-mentioned research project. In this project the existing environmental and sustainability funds in Germany were asked about the criteria they use for evaluating companies. Furthermore, they were asked about their assessment on the connection between these criteria and the shareholder value of companies.

Why can the results of these examinations be considered as evidence for the connection between sustainability and shareholder value? The reason is as follows: Most of the existing funds which evaluate companies according to environmental and social criteria do this because they regard a corporate orientation towards sustainability as an important competitive advantage that leads to an increase of corporate profits and therefore to a higher shareholder value. This, in turn, improves the performance of funds that choose companies with a positive environmental/sustainability performance for their portfolios. So the assessments of fund managers can give an important clue for the factors of environmental/sustainability performance which are considered as important.

But first, we have to distinguish different approaches towards ethical investment. Basically, one can follow an active approach and a passive approach. An active approach means to (try to) influence the business of companies one owns shares of. Such efforts include dialoging with companies on issues of concern, and submitting and voting proxy resolutions. Socially responsible proxy resolutions are generally aimed at influencing corporate behaviour toward a more responsible level of corporate citizenship, steering management toward action that enhances the well-being of all the company's stakeholders, and improving financial performance over time. The passive approach consists of including or excluding publicly traded securities from investment portfolios or mutual funds based on social and/or environmental criteria. Generally, social investors seek to own profitable companies that make positive contributions to society. In a supporting approach, "buy lists" include enterprises with outstanding employer-employee relations, excellent environmental practices, products that are safe and useful, and respect for the human rights around the world. Conversely, in an avoiding approach, they avoid investing in companies whose products and business practices are harmful.

Environmental/sustainability funds are using primarily a passive approach: they select companies for their portfolios which they regard as sustainable. To do this they evaluate potential candidates for investment and analyse their financial, environmental and social performance. From the companies which "pass" this test, the portfolio is selected.

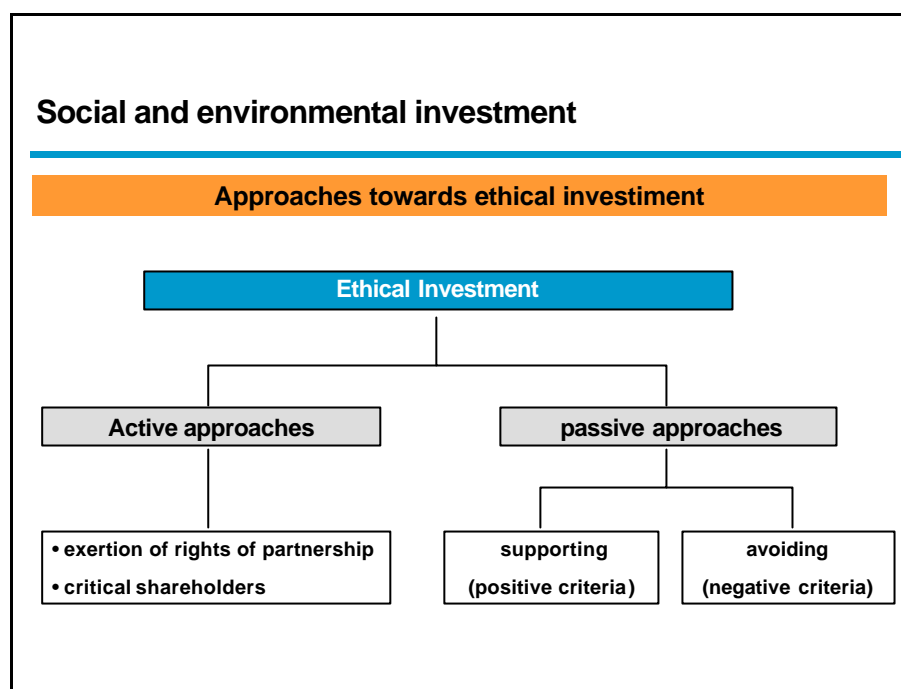


Fig. 1: Approaches towards ethical investment

### 3.1 Criteria for evaluating environmental and sustainability performance used by sustainability funds

Regarding the criteria these funds use for evaluating the environmental and sustainability performance of companies the process of portfolio selection of these funds has to be taken into account.

This process involves several steps: in the first step some sectors and companies are selected which are evaluated more closely. Many funds exclude certain firms or sectors in principle because of activities or practices are considered as unsustainable. The exclusion criterias used most often are the following:

- genetic technology in agriculture;
- gambling;
- production of persistent organic pollutants;
- production of “normal” automobiles;
- nuclear energy;
- child labour;
- patents on genetically modified animals and plants;
- pornography;
- weapons;
- tobacco.

Not every environmental and sustainability funds excludes certain sectors. Some funds invest according to the “best-in-class”-principle. That means they choose firms in every sector which they regard as having a better social and environmental performance in comparison to their competitors in the sector.

The companies which are considered as potential candidates for an investment are then examined more closely. Usually, this examination is carried out by using a questionnaire which must be filled in by the company. This questionnaire is to collect information about the social and environmental performance of companies.

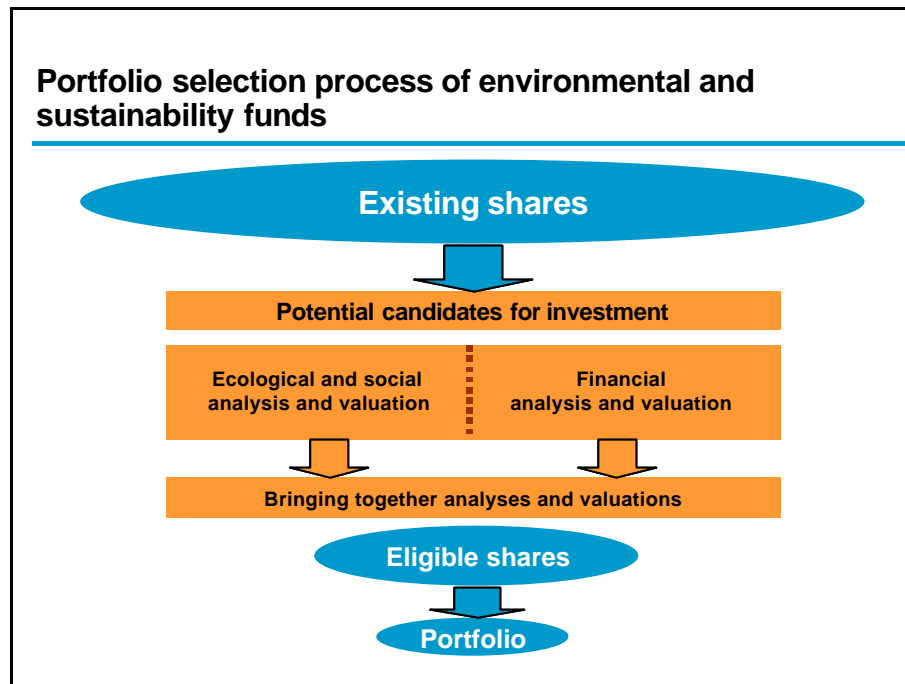


Fig. 2: Portfolio selection process

In the above mentioned research project the questionnaires used by the funds and the research agencies were analysed to find out which criteria are used. The criteria used for evaluating the **environmental performance** of companies can be classified under six categories:

- corporate environmental policy
- environmental management
- Site, production, processes
- Products and services
- Ecological requirements for suppliers, processing, and distribution
- environment related social activities

The criteria used for evaluating the **social performance** of companies can also be classified under six categories:

- corporate social policy
- social management

- relations with employees
- customer relations
- suppliers, processing and distribution
- social responsibility of companies

Some of these criteria are evaluated by nearly all existing funds, for example the existence of environmental management systems or the execution of regular audits. Concerning production, reduction targets (regarding greenhouse gas emission, water use, waste and resources) and the use of renewable energy sources are evaluated most commonly. Concerning products, ecological criteria in product development and the environmental impact during the phase of use are evaluated most frequently. Concerning environment related social activities, funds most often ask about cooperation with stakeholders.

Concerning the criteria for social performance the following points are important: Funds regularly ask about the existence of a corporate social policy and social reporting, about social requirements for suppliers or about customer service. Concerning employees, nearly all funds ask companies about education and training, salaries and fringe benefits, equality, prevention of discrimination and about reduction of health and safety risks at the working place.

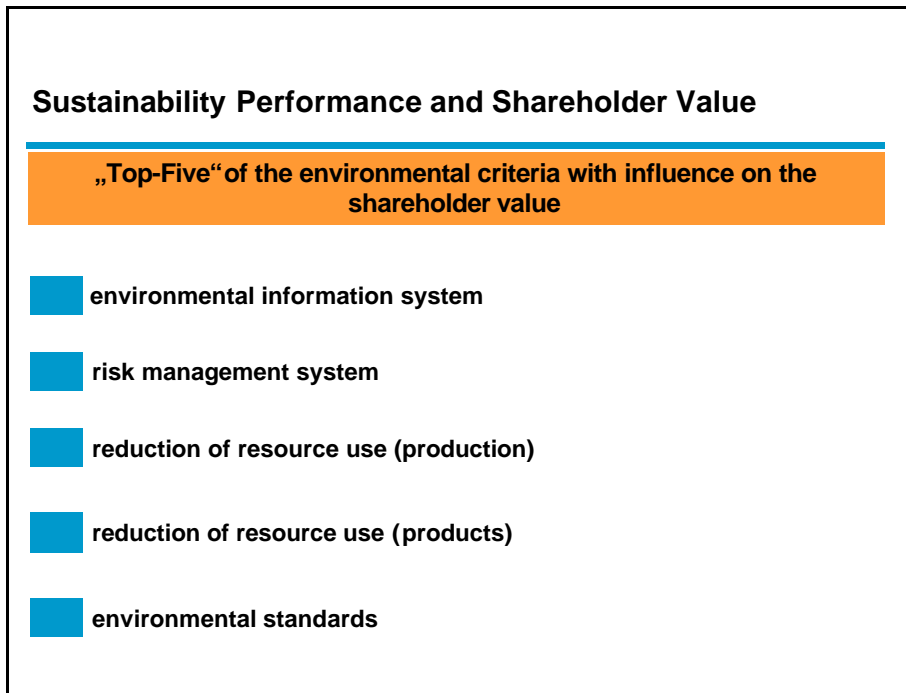
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### **3.2 The connection between sustainability performance and shareholder value: the assessments of managers of environmental and sustainability funds**

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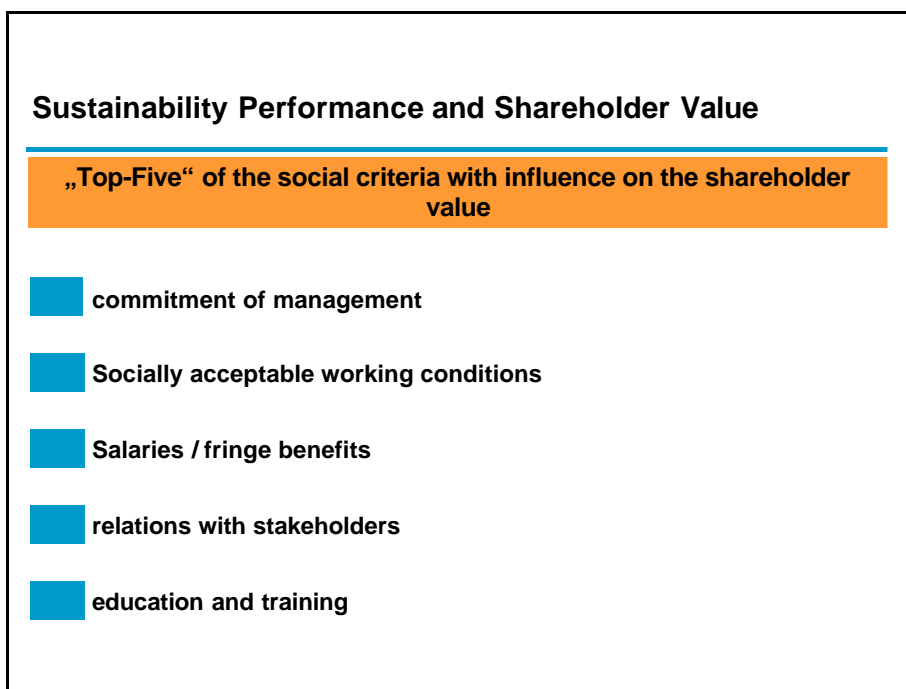
How do the managers of environmental/sustainability funds think about the connection between different indicators of the environmental and social performance of companies and the shareholder value of these companies? According to the survey in the above mentioned research project the managers' opinion is as follows (some figures are given in section 3.3 in comparison with the related assessments of companies):

- In general, funds managers regard the relation between indicators of environmental and social performance and the shareholder value as positive. That means they believe that firms with a good environmental and social performance also earn a higher profit (because of this performance).
- Concerning the criteria for environmental performance, funds managers see the strongest positive relationship between shareholder value and the following criteria: environmental information systems, risk management systems; reduction of emissions (products and processes); corporate environmental standards. Other criteria that are regarded as important regarding shareholder value are the execution of regular audits and the environmental training of employees.



**Fig. 3: Environmental criteria and shareholder value**

- Concerning the criteria for social performance, funds managers see the strongest positive relationship between shareholder value and the following criteria: commitment of management; socially acceptable working conditions; salaries and fringe benefits; relations with stakeholders; training and education. Furthermore, customer service, regular survey of customer satisfaction, and product safety/consumer protection are also regarded as important.



**Fig. 4: Social criteria and shareholder value**

- Both within the criteria for environmental performance and the criteria for social performance funds managers believe that qualitative and management related criteria have a stronger impact on the shareholder value than quantitative criteria. In this respect, especially the corporate policy and the management system are regarded as very important. A reason for this assessment might be that a comprehensive management system and an integrated corporate social and environmental policy build the foundation for socially and environmentally acceptable business, whereas single quantitative indicators are only a (perhaps small) part of the whole system.
- In general, funds managers see a stronger (positive) relationship between environmental performance and shareholder value than between social performance and shareholder value. This can have several reasons:
  - The managers think that environmental performance has indeed stronger impact on shareholder value than social performance.
  - The funds have more experience with the connection between environmental performance and shareholder value.
  - Criteria for social performance are relatively new, while criteria for environmental performance are established. During the past years, quite a few new indicators for social performance have been developed so that funds might be uncertain about their relation to shareholder value and are therefore more careful in doing respective assessments.

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### **3.3 The connection between sustainability performance and shareholder value: the assessments of companies**

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Besides the environmental and sustainability funds which select their portfolios according to criteria for social and environmental performance companies and stakeholders were also asked about their assessment of sustainability funds and about the connection between the environmental/sustainability performance of companies and their shareholder value.

Companies, especially when listed on the stock market, have several roles on the market for sustainable investment: on the one hand they are analysed by the funds which (possibly) choose the companies' stocks for their portfolios; on the other hand the companies are the most important source of information for the funds. Furthermore, the companies themselves might become investors if corporate pension funds are obliged to take into account social and environmental criteria when making their own portfolio decisions. In the research project, interviews were carried out with 17 managers coming from companies in six different sectors: automotive industry, financial services, chemical industry, retail, pharmaceuticals, telecommunication.

All in all, the companies interviewed invest a considerable amount of time and man-power in answering the questionnaires of funds and rating agencies. There are five reasons given for this effort:

- companies hope to gain a better reputation and a better public image if their rating is positive and if they are included in an environmental/sustainability fund. Several companies use their rating and their inclusion in such a fund for their public relation efforts.
- Companies often think that inclusion in an environmental/sustainability fund has a positive influence on the share price and the value of the company.
- Thirdly, companies see advantages in recruiting staff: Qualified employees, so the argument goes, care for the environmental and social performance of the companies they work for. If companies have got a positive rating, they become more attractive and can recruit their staff more easily.
- The enquiries by the research agencies and the funds, so the companies say, increases the acceptance and the sensitivity for environmental and sustainability aspects within corporations.
- Finally, companies assume that taking part in the enquiries gives them access to a new circle of investors.

All in all, the companies are convinced that there is a connection between environmental/sustainability performance of companies and their shareholder value.

They assume that this is a long-term connection. But the companies differ in their assessment whether the rating agencies and funds include the factors which have, according to the companies, an influence on the shareholder value. Some companies agree to this, others think that the funds do not ask for the factors which are relevant for shareholder value. But the companies agree that the financial market can be an effective lever for promoting sustainable development.

The fourteen companies participating in the case studies of the research project also answered a questionnaire containing the criteria used by environmental and sustainability funds for evaluating the sustainability performance of companies. Regarding these criteria, the companies were asked the following questions:

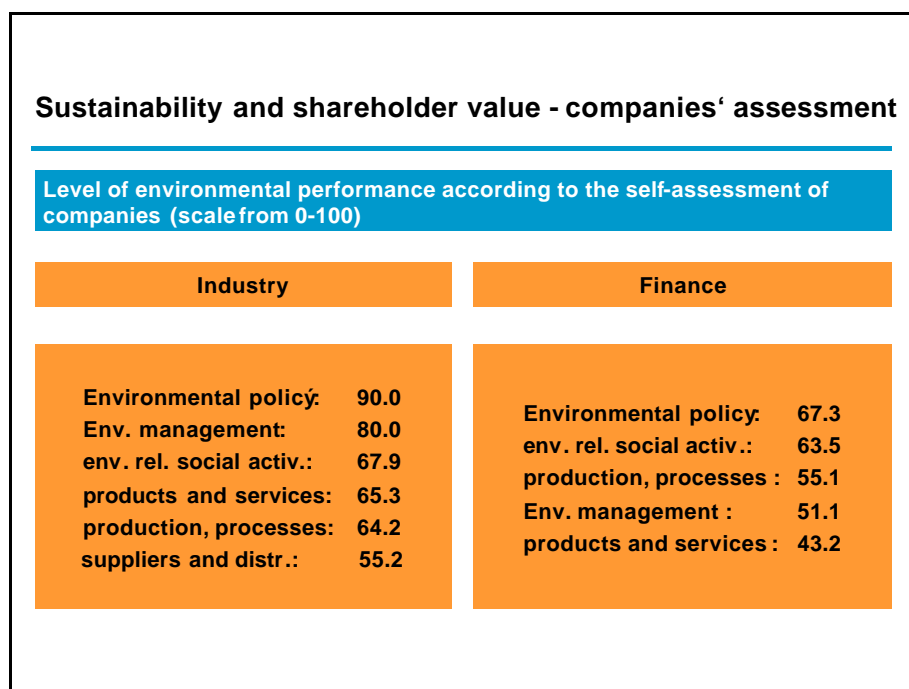
- Which level have the companies reached in the various categories and criteria? The companies could state that level on a scale ranging between 0% and 100%. A value of (near) 0% means that the company is just beginning to take measures, a value of (near) 100% means the company has nearly exhausted its possibilities.
- How do the companies assess the importance of the various criteria for sustainable development? The companies could state whether they regard the criteria as of low importance (=1), of middle importance (=2) or of high importance (=3).
- Which potential influence on the shareholder value does a further intensification of the measures have? The companies should assume a further improvement of their performance or an increase in effort towards 100%. They could state the impact on the shareholder value with a five-stage scale, ranging from “very negative” (-2) via “neutral” (0) to “very positive” (+2).

As only 14 companies have answered this questionnaire, this survey can in no way be regarded as anything near statistically representative. But it can give some hints for formulating hypotheses concerning the connection between sustainability and shareholder value that have to be further analysed and tested. The 14 companies are taken from the following sectors:

- 5 companies from the financial services industry (banking and insurance);
- 3 automotive companies;
- 3 pharmaceutical companies;
- 2 chemical companies;
- 1 company from the telecommunication industry.

The questionnaires of the financial companies and the industrial companies were evaluated separately, as these questionnaires were slightly different, especially concerning the criteria within the category of “products and services”.

Regarding the state of environmental performance in the industry and in the financial sector, respectively, it stands out that industry ascribes to itself a higher level in every category than the financial sector (fig. 5). The reason might be that this topic has already been discussed in industry for a longer time than in the financial sector.



**Fig. 5: Level of environmental performance**

Regarding the level of the social dimension of sustainability the picture is similar: companies from industry ascribe to themselves a higher level than financial companies. This is different only within the category of social activities (contact with stakeholders, sponsorship etc.).

Sustainability and shareholder value - companies' assessment			
Level of social performance according to the self-assessment of companies (scale from 0-100)			
Industry		Finance	
Customer relations:	83.8	social responsibility:	74.4
rel. with employees:	74.9	rel. with employees:	72.2
social responsibility:	69.9	Customer relations:	66.2
corporate social policy:	67.0	corporate social policy:	54.2
suppliers and distr.:	51.7	suppliers and distr.:	51.7
social management:	35.0	social management:	37.5

**Fig. 6: Level of social performance**

In the following paragraphs, the companies' assessments concerning the level of measures as well as their importance for sustainable development and shareholder value are contrasted.

In the figures to come, the first column lists the several categories. The second column contains the level companies have reached together with the rank in brackets. The third column contains the assessment of the importance of these measures for sustainable development: a value of 1 means a low importance, a value of 2 medium importance, a value of 3 high importance; additionally, the rank is given in brackets again. The fourth column contains the assessment of the impact of these measures/categories for shareholder value: a value of -2 means a very negative impact, a value of 0 means no impact, a value of +2 means a very positive impact.

Regarding the environmental performance of industry, there is a big gap between the assessment of "environmental policy" on the one hand and "production and products" on the other hand. Companies ascribe to themselves quite high a level in environmental policy; they regard it also as relatively important for sustainable development and as having a relatively big impact on the shareholder value. The level of measures concerning products and processes is lower, and these measures are also regarded as less important for sustainable development (but only narrowly so). The relative gap in the assessment of the importance of these measures for shareholder value is especially interesting. This is only more drastic in the category "suppliers and distribution": this category has the lowest – but still positive – impact on shareholder value. But within this category, there is a field of potential conflict between sustainability and shareholder value: for the criterion "use of environmentally sound means of transport", companies report a level of 55.6%, the importance of this criterion for sustainable development amounts to 2.67 which is quite high, but the impact on shareholder value is -0.1 which is slightly negative. The reason for this may be that the greater use of

environmentally sound means of transport might lead to sacrifices in terms of delivery reliability.

**Sustainability and shareholder value - companies' assessment**

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**Environmental performance of industry**

Criterion	Level scale from 0–100  (rank)	Importance SD 1=low; 2=medium; 3=high (rank)	Importance SHV scale from –2 [very negative] to +2 [very positive] (rank)
environmental policy	90.0 (1)	2.85 (1)	1.22 (1)
env. management	80.0 (2)	2.71 (2)	0.72 (2)
env. rel. social activities	67.9 (3)	2.21 (6)	0.48 (5)
products and services	65.3 (4)	2.52 (5)	0.58 (4)
production, processes	64.2 (5)	2.57 (3)	0.60 (3)
suppliers, distribution	55.2 (6)	2.53 (4)	0.32 (6)

**Fig. 7: Environmental performance of industry**

Regarding the social performance of industry, the categories “customer relations” and “relations with employees” are especially interesting. Good customer relations are seen as the most important impact factor for the shareholder value. Compared with this category, “relations with employees” rank rather low: companies ascribe to them only a modestly positive impact on shareholder value (fig. 8). Within this category there is also a field of potential conflict, namely the “strengthening of employees’ participation rights”: the level is reported to be 78.9%, the importance for sustainable development is 2 (medium), the impact on shareholder value is –0.3.

It is interesting that in the category “social policy” companies report a much lower level than in the category “environmental policy”; one of the reasons might be that in Germany a lot of social measures are prescribed by law so that companies have less possibilities to differentiate themselves from their competitors.

<b>Sustainability and shareholder value - companies' assessment</b>			
<b>Social performance of industry</b>			
<b>Criterion</b>	<b>Level scale from 0–100 (rank)</b>	<b>Importance SD 1=low; 2=medium; 3=high (rank)</b>	<b>Importance SHV scale from –2 [very negative] to +2 [very positive] (rank)</b>
customer relations	83.8 (1)	2.60 (2)	0.94 (1)
relations with employees	74.9 (2)	2.40 (4)	0.44 (3)
social responsibility	69.9 (3)	2.23 (6)	0.40 (4)
social policy	67.0 (4)	2.59 (3)	0.56 (2)
suppliers, distribution	51.7 (5)	2.38 (5)	0.56 (2)
social management	35.0 (6)	2.69 (1)	0.31 (5)

**Fig. 8: Social performance of industry**

Regarding the environmental performance of the financial sector, it stands out that the financial companies – contrary to industry – give the highest weight in terms of impact on the shareholder value to the category “products and services” (environmental risks in granting loans; financing environmentally progressive companies; integration of environmental and sustainability aspects in equity analysis etc.); at the same time this is the category the reported level is the lowest. One can conclude from that that the financial sector will increase its efforts in this category in the future.

<b>Sustainability and shareholder value - companies' assessment</b>			
<b>Social performance of the financial sector</b>			
<b>Criterion</b>	<b>Level scale from 0–100 (rank)</b>	<b>Importance SD 1=low; 2=medium; 3=high (rank)</b>	<b>Importance SHV scale from –2 [very negative] to +2 [very positive] (rank)</b>
social responsibility	74.4 (1)	2.29 (4)	0.90 (3)
relations with employees	72.2 (2)	2.56 (3)	1.16 (2)
customer relations	66.2 (3)	2.57 (2)	1.38 (1)
social policy	54.2 (4)	2.23 (5)	0.85 (4)
suppliers, distribution	51.7 (5)	1.88 (6)	0.38 (5)
social management	37.5 (6)	2.80 (1)	0.90 (3)

**Fig. 9: Social performance of the financial sector**

Regarding the social performance of the financial sector, the companies ascribe – like the industrial companies – to customer relations the greatest impact on shareholder value (fig. 9).

But the financial companies do not think – contrary to the industrial companies – that good relations with employees are at odds with shareholder value: The impact of this factor on the shareholder value are regarded as more positive than by the industrial companies; furthermore, financial companies do not think that the criteria “employees’ participation rights”, “workplace conditions” and “security of employment” have a negative impact on shareholder value, as the industrial companies do. The interesting question arises whether there hold different connections in the industry and the financial sector, respectively, and if so, for what reason.

If one compares the companies’ assessments of the impact of different categories on the shareholder value with related assessments done by environmental and sustainability funds (section 3.2) one can see that the funds assess, in general, this impact more positive than the companies. The question is whether there are reasons – apart from considerations concerning marketing – for this different assessment.

Comparing the impact assessments of the category “products and services”, it stands out that the financial sector places a heavy weight on this category – similar to the assessment of the funds (fig. 10). But one has to take into account that the possibility of comparing these assessments is limited: the criteria within the category “products and services” in the questionnaire used for asking the funds were not the same as in the questionnaire for asking the financial companies, but were more similar to the categories in the questionnaire used for asking the industrial companies.

<b>Sustainability and shareholder value - companies' assessment</b>			
<b>Impact assessment of environmental performance on shareholder value</b>			
<b>Criterion</b>	<b>importance SHV (industry)</b>	<b>importance SHV (finance)</b>	<b>importance SHV (environmental and sustainability funds)</b>
<b>environmental policy</b>	<b>1.22</b>	<b>1.00</b>	<b>1.6</b>
<b>env. management</b>	<b>0.72</b>	<b>0.93</b>	<b>1.0</b>
<b>production, processes</b>	<b>0.60</b>	<b>0.63</b>	<b>1.0</b>
<b>products and services</b>	<b>0.58</b>	<b>1.38</b>	<b>1.4</b>
<b>env. rel. social activ.</b>	<b>0.48</b>	<b>0.50</b>	<b>0.9</b>
<b>suppliers, distribution</b>	<b>0.32</b>	<b>---</b>	<b>0.7</b>

**Fig. 90: Impact assessment of environmental performance on shareholder value**

A similar picture can be seen if one compares the impact assessments by companies and funds of the social performance. Again, the financial sector ascribes to some categories, e.g. customer relations, a comparably high or higher impact as the funds (fig. 11).

<b>Sustainability and shareholder value - companies' assessment</b>			
<b>Impact assessment of social performance on shareholder value</b>			
<b>Criterion</b>	<b>importance SHV (industry)</b>	<b>importance SHV (finance)</b>	<b>importance SHV (environmental and sustainability funds)</b>
customer relations	0.94	1.38	0.82
social policy	0.56	0.85	0.9
suppliers and distr.	0.56	0.38	0.6
rel. with employees	0.44	1.16	0.9
social responsibility	0.40	0.90	0.5
social management	0.31	0.90	0.7

**Fig. 101: Impact assessment of social performance**

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### **3.4 The connection between sustainability performance and shareholder value: the assessments of stakeholders**

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Stakeholders, too, are an important source of information concerning the environmental and social performance of companies. Furthermore, members of NGOs are often representatives in investment boards of sustainability funds. In the research project, interviews were carried out with 6 representatives coming from environmental organisations, customer organisations and unions.

The stakeholders that were interviewed during the research project also think that the market for environmental/sustainability oriented investment can be an effective lever for promoting a sustainable development of companies and of the economy as a whole. But the stakeholders are skeptical regarding the supply of respective investment possibilities. Especially, they register a certain arbitrariness in the use of the term “sustainability” by the funds. Therefore, they see their main role in informing investors about the idea of sustainability and about chances and risks of the market, and in protecting investors against dishonest and misleading offers. Regarding the connection between environmental/sustainability performance and shareholder value there is no unified picture among the stakeholders.

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## 4. CONCLUSIONS

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The above-mentioned results show that there are a lot of indications that a good social and environmental performance of companies does have a positive impact on their shareholder value. But so far, the results of statistical/econometric studies are far from conclusive and depend highly on the methodology used in the study. The results of event studies are relatively clear-cut: negative events lead to a significant negative reaction of the stock market; positive events might lead to (weakly) positive reaction of the stock market but often not statistically significant. In cross-section regressions and panel studies there is often a positive correlation between environmental performance and shareholder value; the connection between social performance and shareholder value has been rarely tested so far, in the one study that has done so, no connection could be found. In the analyses of environmental and sustainability funds, there could be found cases of better and of worse performance compared to conventional funds or indices.

The managers of environmental and sustainability funds investigate the social and environmental performance of companies with a wide range of criteria. All in all, they are convinced that there is a positive connection between a good sustainability performance of companies and their shareholder value. Here two points are of special interest: Firstly, the managers of sustainability funds think that the connection between environmental performance and shareholder value is stronger than the connection between social performance and shareholder value – perhaps because of the relative novelty of criteria for evaluation social performance. (The companies' managers agree in so far, as they are very uncertain about the reliability and meaningfulness of social criteria and social performance.) Secondly, fund managers place more weight on qualitative criteria than on quantitative criteria, as they assume a stronger impact of qualitative criteria on shareholder value. The reason for this might be that qualitative criteria often concern the whole company or the management, respectively, whereas quantitative criteria refer to single "nuts and bolts" within the company. Changing, for example, management systems might therefore have a stronger impact on the environmental and social performance (and on the shareholder value) than changing single quantitative impacts.

The companies that were interviewed agreed that there is a positive connection between sustainability performance and shareholder value. But they were more reserved in assessing the strength of this connection than the funds.

Why is it important for investment bankers and analysts to be aware of possible connections between sustainability performance and shareholder value? Information about social and environmental performance could give analysts important hints for evaluating companies and forecasting their profits. Furthermore, by being informed about the sustainability performance of companies managers of conventional funds could gain access to a new circle of (ethically oriented) investors.

But the studies so far have shown only a general connection between environmental/sustainability performance and shareholder value. But knowing about the specific factors within social and environmental management which have a positive impact on the shareholder value would be far more important for the practical decisions of investors, fund managers and corporate managers. Therefore, it would be important in future studies to test

the connection between specific environmental and social factors and their connection to the shareholder value of companies. Furthermore, existing environmental and sustainability funds should be further investigated to find out the essential elements of such funds (economic characteristics of such funds, fund managers' investment style) and whether such funds deliver a risk-adjusted additional return compared with conventional funds.

Finally, it should be added that it is not essential that further investigations show a positive connection between sustainability performance and shareholder value. For sustainable investment to gain increasing support, it can be sufficient if environmental and sustainability factors do not worsen the economic performance of a company.

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