You never know the value of water until the well runs dry - The impact of Sustainable Development Goals on firm value

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Abstract

The contribution to the 17 Sustainable Development Goals (SDGs) represents the next generation of measures for the sustainability of firms. We are the first to study the impact of a firm's SDG performance on its value using unique data on SDG-aligned products and services from more than 5,800 global firms. Comparing firms that disclose their SDG performance to 25,800 non-disclosing firms reveals significant differences. We estimate an SDG disclosure-choice model and integrate the results into a firm-value model. Our results reveal the impact on firm value of specific SDGs; for example "combating hunger", "attaining gender equality", and "optimizing material use" have a significantly negative, whereas "ensuring health" and "mitigating climate change" have a significantly positive impact. The results remain robust after controlling for firms' environmental, social und governance (ESG) scores and countries' SDG performance. We recommend including a firm's SDG performance to more precisely assess its value.

Keywords: Corporate finance, Firm value, Tobin's Q, Non-financial disclosures, Sustainable finance, Sustainable Development Goals

JEL Classification: G14, G30, G32, Q56

Motivation: Sustainability, the SDGs and firms

Source: UN (2020)

"I believe we are on the edge of a fundamental reshaping of finance." (Larry Fink, 2020)

Beyond achieving a global climate policy to successfully combat climate change as expressed in the Paris Agreement, the world agreed on adopting the Sustainable Development Goals (SDGs) outlined by the UN in 2015. Their introduction marks the challenging start of a worldwide societal and economic transition towards a sustainable future. Despite the fact, that the 13th objective of the SDGs is to take urgent action on climate change and its impacts, there is no formal interrelationship between the SDGs and the Paris Agreement. However, both agendas intersect in many ways. But the SDGs are encompassing also diverse objectives as the fight against poverty, hunger and inequality who may be in dispute over the fight against climate change. As the SDGs primarily target states and the public sector, not all of the goals are relevant for firms; however SDG 17 does aim to strengthen and revitalize partnerships between governments, the private sector and civil society in building sustainable development. Indeed, it is essential to incorporate corporations and capital markets into efforts to achieve the 17 SDGs for sustainable development by 2030.

This insight is currently gaining ground in capital markets. Ever more asset managers consider SDGs to be an important investment aspect and plan to integrate SDGs into their investment processes. Many investors are currently exploring how to embed the goals into their ESG frameworks. SDGs have thus become a highly relevant investment consideration. The Global Impact Investing Network states in its 2019 whitepaper that over 1,340 active impact-investing organizations across the world intend to achieve positive changes towards sustainability goals. These organizations collectively manage USD 502 billion in investments. In addition, 29% of the Principles of Responsible Investment (PRI) signatories mentioned SDGs in their 2019 PRI reporting. Beyond this, data providers are addressing SDGs by adding such data to their databases and conducting respective analyses. For example, MSCI recently analyzed the alignment of all 1,600 constituents of the MSCI World Index with SDGs by providing a detailed overview of listed firms' status with regard to each SDG.

In the last years, many investors are exploring how to embed the SDGs into their ESG frameworks. Until recently, an investor has focused primarily on establishing ESG policies and processes and providing basic reporting, either qualitative or through a selection of ESG-related KPIs. However, when measuring a firm's sustainability, the investor limits his/her assessment to the conduct dimension of sustainability. When an investor wants to look also at the sustainability of a firm's product and services, the SDGs allow him to measure their impact towards achieving sustainability targets that have been globally agreed and quantitatively defined. By considering this product dimension, the investor can therefore obtain a more holistic picture of the sustainability of a firm.

Contribution: Impact of SDGs on firm value

- Discuss the differences between SDG information disclosing and non-disclosing firms
- Analyze the impact of different SDG performance measures on firm value
- Provide first insights into the relationship between ESG and SDGs in a corporate finance analysis
- Help investors to consider SDGs in their investment decisions to achieve not only a more holistic sustainability but also better financial performance

Data: Sustainability and Financial Data

Sustainable Development Objectives and Descriptive Statistics	SDG	Mean	Standard Deviation
Sustainable Development Objectives		0.34	3.74
Social Objectives		0.71	2.89
Alleviating poverty	SDG 1	-0.02	0.42
Combating hunger and malnutrition	SDG 2	-0.19	1.22
Ensuring health	SDG 3	0.56	2.64
Delivering education	SDG 4	0.05	0.52
Attaining gender equality	SDG 5	0.01	0.20
Providing basic services	SDG 6	0.24	0.81
Safeguarding peace	SDG 16	-0.01	0.41
Environmental Objectives		-0.31	2.46
Achieving sustainable agriculture & forestry	SDG 2, SDG 13, SDG 15	0.03	0.44
Conserving water	SDG 6, SDG 14	-0.03	0.76
Contributing to sustainable energy use	SDG 7	-0.37	2.01
Promoting sustainable buildings	SDG 11, SDG 12	0.10	0.67
Optimizing material use	SDG 12	0.04	0.42
Mitigating climate change	SDG 13	-0.35	2.03
Preserving marine ecosystems	SDG 14	-0.05	0.33
Preserving terrestrial ecosystems	SDG 15	-0.10	1.01

We use a unique SDG dataset from ISS-oekom to assess the SDGs performance of over 5,800 firms. We analyze the aggregated SDG performance scores (based on a number of performance measures) as well as the contribution of a firm towards each SDG objective (Sustainable Objective Score, SOS). In doing so, we address the pronounced conflict involved in the pursuit of SDGs objectives. In many times, pursuing social goals is often associated with higher environmental impacts. Studies have shown e.g., that eliminating extreme poverty and reducing income inequality often leads to higher environmental impacts (Scherer et al., 2018). We also add ESG data from ISS ESG to provide insights on the relationship between the conduct versus the product dimensions of sustainability. Throughout all our analyses, we match financial and accounting data from Refinitiv Datastream and Worldscope to compile a global firm data sample of more than 28,000 firms. Furthermore, we use ownership data from Refinitiv Eikon and ESG disclosure variables from MSCI ESG, Refinitiv ESG, Sustainalytics and CDP to gain further insights on the decision of a firm to disclose sustainability data.

Main Result I: SDGs disclosing firms are on average higher valued and more profitable

Mean comparison of SDGs disclosure	SDGs disclosing firm	Non-disclosing SDGs firm	Difference	Standard error	Observations
Tobin's Q	1.3730	1.2182	0.1548***	0.0112	75,131
Total assets	22.5669	20.1344	2.4325***	0.0198	51,063
Net sales	20.4017	19.2459	1.1557***	0.0439	45,401
Book-to-market	0.6022	0.8116	-0.2093***	0.0092	49,309
Return on assets	18.6039	16.1393	2.4646***	0.0238	36,192
EBIT	19.8590	17.5106	2.3485***	0.0208	40,539
EBITDA	20.2177	17.8045	2.4132***	0.0207	41,741
Cash flow	19.8764	17.4108	2.4656***	0.0220	39,723
Cash	19.3888	16.8298	2.5589***	0.0295	49,129
R&D	18.0635	15.6199	2.4437***	0.0349	21,378
Dividends	0.0693	0.0506	0.0187***	0.0006	51,317
Leverage	0.6702	0.6147	0.0555***	0.0089	49,467
Institutional ownership	0.6779	0.3754	0.3025***	0.0033	83,911
Individual investors	0.0466	0.1233	-0.0767***	0.0019	68,084

Let us consider the differences between firms that provide SDGs information and those that do not. For this purpose, we perform two mean comparison tests. First, we find that firms that disclose SDGs information have a significantly higher Tobin's Q than non-disclosing firms. Furthermore, they are significantly larger and have higher net sales on average. Firms disclosing SDGs information are more profitable, having a higher return on assets, a higher EBIT and a higher EBITDA. In contrast, we find that non-disclosers tend to have a higher book-to-market ratio. When looking at other financials, the disclosers also have higher cash flows, cash holdings and pay more dividends. They also spend more on research and development and have a higher leverage ratio. Looking at their ownership structure, firms disclosing SDGs information are owned by a higher proportion of institutional investors than individual investors. We conclude that firms disclosing SDG data are fundamentally different from non-disclosing ones, and that this difference may influence its decision to disclose SDGs information Moreover, this difference is an indicator for a self-selection bias that can have a distorting influence on the estimation of a firm-value model.

Main Result II: Specific SDGs have a significant impact on firm value

Impact of the Sustainable Objective Scores on firm value	(1) Tobin's Q	(2) Tobin's Q	(3) Tobin's Q	(4) Tobin's Q	(5) Tobin's Q	(6) Tobin's Q
Alleviating poverty	-0.11***	-0.10***	-0.0086	-0.015	-0.087***	-0.010
	(-3.48)	(-3.04)	(-0.26)	(-0.44)	(-3.02)	(-0.30)
Combating hunger and malnutrition	-0.087***	-0.084***	-0.044***	-0.047***	-0.072***	-0.030***
	(-8.97)	(-9.03)	(-3.71)	(-4.05)	(-7.52)	(-2.70)
Ensuring health	0.063***	0.060***	0.025**	0.030**	0.052***	0.020*
	(10.50)	(10.43)	(2.05)	(2.57)	(8.96)	(1.80)
Delivering education	0.012	0.016	0.028	0.028	0.0029	0.017
	(0.46)	(0.63)	(0.91)	(0.92)	(0.12)	(0.62)
Attaining gender equality	-0.0081	0.00078	-0.29**	-0.28**	-0.028	-0.25**
	(-0.05)	(0.01)	(-2.00)	(-1.99)	(-0.20)	(-2.07)
Providing basic services	-0.059***	-0.041***	0.0031	0.0030	-0.057***	-0.0019
	(-3.76)	(-2.68)	(0.17)	(0.17)	(-3.84)	(-0.11)
Safeguarding peace	-0.063**	-0.037	-0.042	-0.025	-0.028	-0.0045
	(-2.08)	(-1.28)	(-1.17)	(-0.73)	(-0.95)	(-0.13)
Achieving sustainable agr. and forestry	0.0071	0.018	0.0038	0.019	0.010	0.017
	(0.21)	(0.55)	(0.10)	(0.51)	(0.33)	(0.49)
Conserving water	-0.058***	-0.038**	-0.048**	-0.023	-0.049***	-0.015
	(-3.11)	(-2.11)	(-2.29)	(-1.12)	(-2.81)	(-0.76)
Contributing to sustainable energy use	-0.0075	0.0020	-0.028	-0.013	-0.0078	-0.017
	(-0.37)	(0.10)	(-1.35)	(-0.67)	(-0.42)	(-0.92)
Promoting sustainable buildings	-0.065***	-0.059***	-0.0095	-0.011	-0.038**	-0.0016
	(-3.76)	(-3.56)	(-0.56)	(-0.64)	(-2.31)	(-0.10)
Optimizing material use	-0.067**	-0.088***	-0.068**	-0.070**	-0.070***	-0.079***
	(-2.46)	(-3.38)	(-2.28)	(-2.45)	(-2.82)	(-3.10)
Mitigating climate change	0.047**	0.036*	0.045**	0.037**	0.045**	0.038**
	(2.33)	(1.87)	(2.35)	(1.98)	(2.42)	(2.19)
Preserving marine ecosystems	-0.11**	-0.12***	0.046	0.029	-0.097**	0.018
	(-2.57)	(-3.01)	(1.17)	(0.75)	(-2.35)	(0.50)
Preserving terrestrial ecosystems	-0.030*	-0.030*	-0.036**	-0.024	-0.024*	-0.020
	(-1.88)	(-1.94)	(-2.30)	(-1.55)	(-1.69)	(-1.41)
Controls	yes	yes	yes	yes	yes	yes
Country fixed effects	no	yes	no	yes	no	yes
Industry fixed effects	no	no	yes	yes	no	yes
Heckman	no	no	no	no	yes	yes
adj. R^2	0.44	0.50	0.56	0.60		
within R^2		0.44	0.34	0.33		
log likelihood					-10,794	-10,114
Wald test of independence					3,593	6,376
p-value					0.00	0.00
N	4,418	4,412	4,417	4,411	14,861	14,861
N uncensored					4,269	4,269

Disclosure-choice Model

$$Disclosing\_SDGs_i = \alpha_i + \beta_{1,i}\, Size_i + \beta_{2,i}\, Value_i + \beta_{3,i}\, Profitability_i + \beta_{4,i}\, Leverage_i + \beta_{5,i}\, Dividends_i + \beta_{6,i}\, Sector\ disc.proportion_i + \beta_{7,i}\, Institutional\ investors_i + \beta_{8,i}\, Individual\ investors_i + \beta_{9,i}\, Reporting\ databases_i + \varepsilon_i \quad (1)$$

Firm Value Model:

$$Tobin's\ Q_i = \alpha_i + \beta_i\, SDG_i + \gamma_i\, Controls_i + \delta_i\, FE_i + \theta_i\, Heckmann_i + \varepsilon_i \quad (2)$$

From the social SDGs, only "ensuring health" has a positive significant impact on Tobin's Q. With regard to the environmental SDGs, only "mitigating climate change" leads to a significant increase in Tobin's Q. In the former case, we see a high "ensuring health" SOS as the essential business model for healthcare firms. A firm that is particularly committed to contributing to this SOS is also able to offer excellent products and services that ensure its future financial success across a number of sectors. For the target of mitigating climate change, the literature has shown that it is cost-effective to minimize emissions, thereby reducing, inter alia, the level and likelihood of physical and transitory risks. Both effects result in an increase in the value of a firm and lead firms to engage in policies that improve this SOS.

Next, we look at the SOSs with a negative impact on firm value. Both a contribution to the objectives of "combating hunger and malnutrition" and to "attaining gender equality" are significantly associated with a reduction in Tobin's Q. For the first SOS, combating hunger and malnutrition, it can be assumed that a firm's commitment may involve providing certain products and services at lower profit margins, such as fruits and vegetables. In addition, the production of financially profitable products such as alcohol or red meat is rated very negatively in a firm's SDG performance and hence have a negative impact on firm value. A high SDG- performance score in attaining gender equality, as applied to a firm's products, is currently only achieved by providing specific products, such as female sanitary products or financial services targeted at women. On the one hand, only a few firms offer such products, and on the other, a statement on the value enhancement of such products cannot be made here easily, since many sector-specific factors play a large role. To contribute to the SOS of attaining gender equality, it seems to be more important to address gender-related issues within the organization of a firm – represented by the conduct dimension of sustainability and captured in ESG scores – rather than providing certain products and services. The SOS of "optimizing material use" has a significant, negative impact on Tobin's Q. To investigate this counterintuitive effect, we consider products and activities that contribute to this SOS. These are mainly waste recycling services and reusable packaging, which are only offered by a few specialized firms. To draw a conclusion for all firms on the overall relationship between optimizing material use and firm value is only limitedly possible since again many sector-specific factors play dominant roles.

Main Result III: ESG has only small influence on the impact of a firm's SDGs performance on its value

Impact of the Sustainable Objective Scores and the ESG Performance Score on firm value	(1) Tobin's Q	(2) Tobin's Q	(3) Tobin's Q	(4) Tobin's Q	(5) Tobin's Q	(6) Tobin's Q
Alleviating poverty	-0.11***	-0.11***	-0.0081	-0.021	-0.090***	-0.014
	(-3.68)	(-3.29)	(-0.25)	(-0.59)	(-3.11)	(-0.40)
Combating hunger and malnutrition	-0.086***	-0.082***	-0.044***	-0.046***	-0.071***	-0.030***
	(-8.81)	(-8.82)	(-3.71)	(-4.02)	(-7.45)	(-2.69)
Ensuring health	0.059***	0.054***	0.025**	0.029**	0.051***	0.019*
	(9.83)	(9.41)	(2.06)	(2.53)	(8.58)	(1.77)
Delivering education	0.0019	-0.0024	0.029	0.023	-0.0020	0.015
	(0.07)	(-0.10)	(0.92)	(0.78)	(-0.08)	(0.52)
Attaining gender equality	-0.023	-0.028	-0.29**	-0.28**	-0.035	-0.25**
	(-0.14)	(-0.19)	(-2.00)	(-2.00)	(-0.25)	(-2.08)
Providing basic services	-0.062***	-0.045***	0.0032	0.0023	-0.059***	-0.0024
	(-3.97)	(-2.96)	(0.17)	(0.13)	(-3.95)	(-0.14)
Safeguarding peace	-0.065**	-0.043	-0.042	-0.024	-0.029	-0.0035
	(-2.15)	(-1.50)	(-1.18)	(-0.69)	(-0.99)	(-0.10)
Achieving sustainable agr. and forestry	-0.0079	0.00031	0.0046	0.012	0.0038	0.013
	(-0.23)	(0.01)	(0.12)	(0.33)	(0.12)	(0.38)
Conserving water	-0.067***	-0.052***	-0.048**	-0.025	-0.053***	-0.016
	(-3.55)	(-2.90)	(-2.27)	(-1.19)	(-3.04)	(-0.81)
Contributing to sustainable energy use	-0.0095	0.00040	-0.028	-0.015	-0.0088	-0.018
	(-0.47)	(0.02)	(-1.34)	(-0.72)	(-0.47)	(-0.95)
Promoting sustainable buildings	-0.073***	-0.072***	-0.0089	-0.017	-0.042**	-0.0055
	(-4.24)	(-4.36)	(-0.51)	(-1.00)	(-2.58)	(-0.34)
Optimizing material use	-0.085***	-0.12***	-0.068**	-0.074**	-0.078***	-0.082***
	(-3.10)	(-4.64)	(-2.27)	(-2.56)	(-3.14)	(-3.18)
Mitigating climate change	0.043**	0.028	0.045**	0.035*	0.043**	0.037**
	(2.14)	(1.43)	(2.35)	(1.88)	(2.33)	(2.13)
Preserving marine ecosystems	-0.10**	-0.11***	0.046	0.032	-0.094**	0.021
	(-2.46)	(-2.78)	(1.16)	(0.83)	(-2.27)	(0.55)
Preserving terrestrial ecosystems	-0.032**	-0.033**	-0.036**	-0.024	-0.025*	-0.019
	(-2.02)	(-2.15)	(-2.30)	(-1.54)	(-1.78)	(-1.40)
ESG performance score	0.0046***	0.0081***	-0.00020	0.0022**	0.0023**	0.0014
	(4.98)	(8.08)	(-0.23)	(2.19)	(2.53)	(1.42)
Controls	yes	yes	yes	yes	yes	yes
Country fixed effects	no	yes	no	yes	no	yes
Industry fixed effects	no	no	yes	yes	no	yes
Heckman	no	no	no	no	yes	yes
adj. R^2	0.44	0.51	0.56	0.60		
within R^2		0.45	0.34	0.33		
log likelihood					-10,791	-10,113
Wald test of independence					3,615	6,389
p-value					0.00	0.00
N	4,418	4,412	4,417	4,411	14,861	14,861
N uncensored					4,269	4,269

We can show that the firm's ESG score has a positively significant effect in four out of the six model specifications. Only if industry fixed effects are included in the panel regression and if both industry and country fixed effects are included in the Heckman correction model do the effects become non-significant. Let us now examine the impact of the ESG measure on the SOSs. We see that no sign changes were induced nor were there any shifts in significance. The magnitude or significance of the impact of individual SOSs on firm value were only marginal. Overall, we therefore conclude that SDGs and ESGs essentially measure different dimensions of sustainability – conduct versus product dimension – and have a heterogeneous impact on firm values.

Key Takeaways

- The SDG performance of a firm has an impact on its value
- The Sustainable Objective Scores "combating hunger", "attaining gender equality", & "optimizing material use" have a significantly negative impact on firm value
- The Sustainable Objective Scores "ensuring health" and "mitigating climate change" have a significantly positive impact on firm value
- ESG and SDGs performance are correlated, but only together they can represent the sustainability of a firm holistically

Implications for Investors: Integration of a SDGs framework into asset Management

- Firms aligning their products and services towards certain SDGs have a higher Tobin's Q
- Investors can allocate their capital towards firms with a high SDG performance to achieve a more holistic sustainability performance
- An integration of a SDGs framework into asset management is the next step to combine sustainability and sustainable financial performance

Conclusion: SDGs performance can also be financially rewarding

Our findings reveal that certain SDG-aligned products and services have a significant impact on the value of a firm. We provide some first insights into why firms disclose SDG data and how they differ from non-disclosing firms. Overall, we contribute to a better understanding of the relationship between SDGs and firm values, even after considering a firm's ESG performance. Our results encourage asset managers, investors and firms to contribute to SOSs and achieve a high sustainability performance, which can also be financially rewarding. Our findings give rise to the question, to what extent firms should offer SDG-aligned products and services in order to both improve their overall sustainability performance and to generate a higher firm value. We show that currently the engagement of a firm towards SDGs has a significant impact on the firm value only with regard to a few, mostly also materially important, SDGs. We state that a firm achieves a more holistic sustainability performance if, in addition to aligning its organization with ESG criteria, it also includes sustainable products and services. Nevertheless, the sustainability of a firm also depends on the economic sustainability of its business. Here it is important to pay attention to which SDGs represent a profitable firm policy and which ones can only be become so through new framework and market conditions. Indeed, some SDGs may be met more efficiently through philanthropic action than through interventions in markets. Overall, some questions remain open for research and society, namely how the fulfillment of SDGs can be promoted efficiently from the point of view of both firms and capital markets.

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