Corporate sustainability, externalities, and firms' market value

Marco Wilkens*, Andreas Gintschel**, Jan Mellert**, and Christian Wiehenkamp**

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Abstract: We provide empirical evidence that externalities are priced into companies' market values to an economically and statistically significant degree. Externalities are uncompensated costs and benefits to the environment and society due to corporates' activities. Using a proprietary, large, global database for externalities of companies with publicly listed securities, we show that, on average over the sample period from 2015 to 2024, c. 7% of a company's present value of externalities is reflected in the market value of the company. This means that, e.g., negative expected future externalities are associated with a discount in securities prices of 7% of the social cost. As social cost of individual companies can be large, the discounts in market value can also be quite large. The magnitude of this effect increases significantly over time, from c. 1.5% in 2015 to c. 20% in 2024. Our findings are consistent with the market expecting, to a significant and increasing degree, the internalization of externalities, through government action, such as regulation or Pigouvian taxation, or consumer activism.

* Chair of Finance and Banking, Board member Center for Climate Resilience, University of Augsburg, Universitätsstr. 16, 86159 Augsburg, marco.wilkens@wiwi.uni-augsburg.de.
** Effectual Capital, Bruderstr. 1, 80538 München, andreas.gintschel@effctl.com.
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1. Introduction

Are a company's externalities, the economic metric of sustainability, "priced", i.e., reflected in its market value? If so, to what extent and has this changed over time? These are the questions we want to answer, and for which we present a summary of the results in this research note.

Why are these questions important? Firstly, because they directly relate to several important "real world" issues, such as climate change and other environmental problems, overall economic efficiency (including the use of scarce natural resources) and how to adequately define and measure "sustainability" (a central, unresolved problem in sustainable finance). But, most of all, "Do externalities matter to markets?" Secondly, there is significant academic interest, debate, and work around sustainability, sustainable investing and potential impacts on prices in financial markets.

Our metric of companies' sustainability is their externalities, i.e., uncompensated cost and benefits (measured in currency) to society and the environment. Our key finding is that companies' externalities are reflected in their market value to a statistically and economically significant degree.

The contributions of this note, to the best of our knowledge, are:

1) providing direct and straightforward evidence on externalities' significant impact on market values;[1,2]

2) providing evidence that is highly suggestive of sustainability impacting market values via expected future profitability rather than through cost of capital,[3] because internalization affects cash flows and because of the empirical magnitude of the impact; and

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[1] Previous academic work is mostly using time-series analysis to study a link between sustainability and future realized returns, as proxy for expected returns, finding conflicting results. Eskildsen et al. (2024) provide an extensive review and critique of this literature. They further show that, in the cross-section, their "robust greenness" measure is negatively associated with expected returns. Interestingly, one of their (alternate) proxies for expected returns is the ratio of book value to market value. They regress (the inverse of) market value (scaled by book value as a proxy for firm size) on their robust greenness measure. This regression is similar to our main regression. They report a coefficient corresponding to a 17% increase in market value per standard deviation of greenness, and statistically significant. This is consistent with our findings.

[2] Freiberg et al. (2021) report a regression of Tobin's q on the present value of environmental cost scaled by revenues, or alternatively operating income, which is similar to our basic regression. They document a statistically negative coefficient estimate, consistent with our findings. Due to their different scaling of the dependent variable and independent variable of interest, the magnitude of the coefficient estimate cannot readily be interpreted.

[3] Beginning with Heinkel et al. (2001) and, more recently, for example Pastor et al. (2021) and Pedersen et al. (2021), the academic focus has been on investor preferences and expected returns, i.e. cost of capital, as transmission mechanism of sustainability. Given the indirectness of that mechanism, the expected impact on cost of capital, if statistically significant, tends to be of limited magnitude: Berk and van Binsbergen (2021) estimate 0.35 bps p.a., Eskildsen et al. (2024) 25bps p.a., and Scherer and Scherer (2025) 2.5bps. While also being principally concerned with expected returns, Pastor et al. (2022) attribute, in passing, the positive performance of green stocks in the 2010s to changes in expectations about future cash flows. Atilgan et al. (2023) suggest the alternative transmission via cash flows and study the association between CO2 emissions and future earnings surprises.

3) advancing methods by using a measure of sustainability that, despite its apparent appeal, has rarely been used in academic finance studies before (and is also not common in the financial industry).[4] Among other aspects, the fact that externalities are so significantly associated with market values suggests that they are a suitable and useful measure of sustainability.

The rest of the paper is organized as follows. Section 2 describes the data. Section 3 introduces the hypotheses and reports results. Section 4 provides an outlook.

2. Data

We use externalities as a measure of sustainability. Externalities are uncompensated costs and benefits, measured in currency units, to third parties due to economic agents' activities.[5] Relevant in the present context are companies' external effects to the environment and society.

Externalities were introduced by Marschall[6] and developed by Pigou[7] into an important part of welfare economics. Ever since, externalities have been fundamental in environmental economics[8] and public economics[9], both in theory and applied work. In particular, it is a standard tool in cost-benefit analysis[10], applied by government agencies around the world to evaluate public infrastructure projects, proposed legislation and regulatory measures.[11] These agencies have also developed, and made public, methods for estimation and valuation of external effects.[12]

The estimation of externalities is straightforward: a physical quantity, the likely cause of the external effect, such as greenhouse gas emissions in a given period, is multiplied with an estimate of the damage, or benefit, per physical quantity.

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[4] Berg et al. (2022) and Chatterji et al. (2016) show that ESG scores and ESG ratings (for the same firm) have a low correlation across commercial rating providers. As Eskildsen et al. (2024) point out, these and other proxies used in the literature imply a likely serious errors-in-variables problem, which they reduce by aggregating across proxies to introduce a "robust greenness" measure. Externalities, as a comprehensive and theory-based measure of sustainability, have been, in the context of accounting research, proposed by Serafim et al. (2019) and applied by Freiberg et al. (2021) and Greenstone et al. (2023). Finance research has only recently started to work with externalities: Pastor et al. (2025) estimate the carbon externalities of US firms and show that they are significantly associated with implied cost of capital. Pedersen (2025) regresses implied cost of capital on carbon emission quantities to estimate the internalized Social Cost of Carbon.

[5] See, e.g., Chapter 11 of Mas-Colell et al. (1995).

[6] As „external economies", see p. 266 and further Chapter 10, Marschall (1890,1920).

[7] See Part 2, Chapter 6, in Pigou (1920). The statement of the problem is on p. 159.

[8] Henley et al. (2013) is a textbook treatment and Mäler et al. (2003) is a four volume collection of articles summarizing the state of the discipline.

[9] See, for example, Laffont (1994) or Auerbach and Hines (2002).

[10] See, e.g., Boardman et al. (2018) for a textbook treatment of cost-benefit analysis and its history. Dreze and Stern (1987) review the economic theory underlying it.

[11] Prominent examples include EU Commission (1995), UK Treasury (2022), or U.S. Government (1958).

[12] See U.S. EPA (2014), EU Commission (2014), UK Treasury (2022), Umweltbundesamt (2018, 2012).

The physical quantities are reported by companies in their sustainability reports for past fiscal years. Valuations are available from several types of sources. Most government agencies make publicly available the valuations they apply.[13] In addition, there are available academic research papers that contain valuations. Some papers are directly interested in generating a valuation, usually because they have been commissioned by a government agency for their purposes, others are concerned with more academic questions, such as method improvements, but incidentally produce relevant valuations. The prime example for the latter is Nordhaus' Nobel-prize winning work on climate change and his "discovery" of the social cost of carbon.[14]

We use a proprietary database of companies' externalities that are derived from publicly available data on physical quantities[15] and valuations derived from meta analysis of publicly available valuation estimates.

In constructing the quantities' data base, standard methods for cleaning and augmenting missing data are applied. In particular, missing values are substituted based on potentially available data for prior periods and known firm characteristics.

Market values are usually considered to be discounted expected cash flows. Thus, we calculate a corresponding measure for externalities. We use a simple univariate, time-series model to project real future externalities for each firm, a time horizon of 30 years and a real discount rate based on USD swap rates and expected inflation at the valuation date.[16]

Further data we use are companies' market value as dependent variable and financials as control variables. Market value of a company is calculated as the market value of equity (incl. preferred) plus the book value of bonds and any other claims such as loans, other liabilities, etc.[17] All other variables are their standard definitions. All data are from Bloomberg as at year end for years 2015 to 2024 (i.e., fiscal year-end of most companies). The sample is based on Bloomberg's global developed markets equity index constituents, excluding financials, an average of more than 7,500 firms per year.

Table 1 provides summary statistics for the data. Notably, the average present value of total externalities is c. USD -9bn against an average company market value of c. USD 15bn. The

[13] Examples are Umweltbundesamt (2023) and U.S. EPA (2023).
[14] Nordhaus' (2018) Nobel Prize lecture summarizes his work and historical development.
[15] We use only data on companies' own operations (Scope 1) and purchased electricity (Scope 2), not effects occurring elsewhere in the value chain. Firstly, data on up- or downstream effects is usually only available for GHG emissions (Scope 3), but generally not for other variables. We intend to study value-chain effects in future work.
[16] Pastor et al. (2025) use similar methods to estimate their "carbon burden" metric, the present value of externalities associated with future carbon emissions.
[17] Specifically, we use the product of Tobin's q as reported on Bloomberg and total assets (book value) as an estimate of a company's market value.

largest single externality is CO2 emissions, with an average present value of c. USD -3.8bn, followed by other air pollutants, incl. e.g. NOx emissions, with an average c. USD -1.9bn, and then the remainder. A notable positive externality is training with an average present value of c. USD 0.7bn.

					Percentiles	
		Mean	Median	Std Dev	5th	95th
Present value of externalities	GHG Scope 1	-3,488	-55	20,631	-13,269	-0.4
	GHG Scope 1+2	-3,838	-141	21,483	-14,539	-2.2
	Air pollutants	-1,906	-27	12,777	-6,982	-0.1
	Waste	-1,426	-8	15,835	-3,162	-0.1
	Water	-1,019	-15	31,065	-1,303	-0.2
	Accidents	-92	-15	591	-330	0
	Training	685	110	2,784	3	2,695
	Donations	6	0	134	0	0
	Tax compliance	-1,440	-270	13,263	-8,610	2,589
	Aggregate	-9,030	-710	52,421	-40,501	1,632
Financials (controls)	Total assets (book value)	9,849	2,638	28,519	439	39,130
	EBIT	590	141	3,154	-164	2,368
	Revenues	6,073	1,541	20,060	121	23,090
Dependent variable	Market value (total firm)	15,465	4,123	59,644	1,136	57,427

Table 1. Summary statistics on present values of externalities and financial variables, in current USD million. The data is pooled across years and companies. The sample covers the years 2015-2024.

Also notable are the significant standard deviations, i.e., there is significant variation in externalities. The empirical distributions of externalities are highly skewed and have fat tails: The median total externalities are much smaller at USD -710mn than the mean. Also, the median externalities account for a much smaller fraction of median market value (USD 4.1bn). The 5th percentile of aggregate externalities is c. USD -40.5bn, whereas the 95th percentile is c. USD 1.6bn. At the level of individual externalities components, similar patterns are evident. Overall, aggregate externalities, and their variation, are due to a few components, notably CO2 emissions, air pollutants, waste, water (net consumption and cooling water emissions), training and tax compliance. Donations and accidents are, on average, of limited importance, but show considerable variation, and, hence, may be important for some firms or sectors.

3. Analysis

Our key question is if and how much of a company's market value can be explained by the present value of the company's externalities. To answer this question, we run pooled panel regressions of market value on the present value of externalities, and control variables for other determinants of a company's value:[18,19,20]

$$Market\ value_{i,t} = a + b \times Externalities_{i,t} + \sum c_k \times Controls_{k,i,t} + e_{i,t}$$

The coefficient of interest is *b*. It estimates how much, on average, of the present value of externalities is already reflected in the market value of companies.[21] In other words, *b* is the valuation multiple for externalities.

A coefficient estimate $b = 0$ would mean that companies' market valuations did not at all reflect externalities, i.e., the market would appear to attach no relevance to externalities. A coefficient estimate $b > 0$ indicates that externalities are positively associated with market valuations. In particular, firms with negative externalities have lower market values (all else equal). A coefficient estimate $b = 1$ would indicate that 100% of externalities' value is reflected in market value, consistent with the market expecting a full internalization.

A coefficient $b < 0$ would indicate that externalities are inversely associated with market valuations, i.e., firms with negative externalities are valued higher (all else equal). This is consistent with firms exploiting externalities and the market not expecting internalization (or at least not in a degree sufficient to offset the private benefits of exploiting externalities).

[18] The generic regression specification is the price regression of value relevance studies in accounting research, see, e.g., Barth et al. (2023) and Dunham and Grandstaff (2021). In particular, using book value of assets and earnings is the most common specification as they have the most explanatory power. A recent application including sustainability-related information is Migliavacca (2024). Our estimates of missing externalities' values are relying on industry-specific intensities and companies' revenues. Thus, adding revenues as a control should ensure that the missing value estimates do not simply capture a revenue effect.

[19] The base specification using just the controls is Regression 0, with controls Total assets (book value), EBIT and Revenues.

[20] Annex 1 contains scaled specifications (where market values and the value of externalities are normalized by total assets), as a robustness check because they are sometimes seen to be more econometrically robust, while the interpretation of the coefficient is not as straight-forward as in a levels specification, The results are similar.

[21] The magnitude of the coefficient *b* has that straightforward interpretation because the dependent variable, market value, and the explanatory variable of interest, externalities, are both present values measured in currency (USD). The auxiliary hypothesis underlying the interpretation of the coefficient magnitude is that the estimate of the present value of externalities is reasonably good. If, for example, the damage estimate for a particular external effect is too low or the market fears a considerably larger impact of internalization, the coefficient estimate would be correspondingly larger (than if the true present value were known and used in the regression), and could exceed one.

The basic test, Regression 1 in Table 2, regresses market value of the company on the present value of externalities and on the financial control variables.

		Regression				
Explanatory variables		0	1	2	3	4
PV of Externalities	Aggregate		0.068**			
			(0.029)			
	GHG Scope 1			0.246***		
				(0.074)		
	GHG Scope 1+2				0.249***	0.210***
					(0.075)	(0.069)
	Air pollutants					0.169***
						(0.062)
	Waste					-0.002
						(0.006)
	Water					0.002
						(0.035)
	Accidents					-0.574
						(2.210)
	Training					-0.242
						(0.513)
	Donations					1.025
						(2.206)
	Tax compliance					-0.022
						(0.206)
Control variables	Total assets	0.826***	0.832***	0.864***	0.865***	0.883***
		(0.121)	(0.120)	(0.118)	(0.118)	(0.135)
	EBIT	9.904***	9.706***	9.822***	9.819***	9.928***
		(2.226)	(2.194)	(2.163)	(2.155)	(2.314)
	Revenues	0.150	0.230	0.202	0.211	0.195
		(0.212)	(0.222)	(0.209)	(0.210)	(0.315)
Statistics	Observations	75832	75832	75832	75832	75832
	R^2	0.756	0.759	0.761	0.762	0.763
	Sector FE	Yes	Yes	Yes	Yes	Yes
	Year FE	Yes	Yes	Yes	Yes	Yes

Table 2. Pooled panel regressions of the market value of companies on the present value of externalities and control variables. The table reports coefficient estimates and standard errors clustered at the company level in parantheses below. ***, **, * indicates statistical significance at the 1%, 5% and 10% level, respectively.

The central result is that externalities are reflected in market values to an economically and statistically significant degree: the coefficient on the present value of externalities, *b*, in Table 2, Regression 1, is c. +0.068, with a standard error of 0.029. This means that USD 1 of the present value of externalities is associated with roughly 7 cents impact on market value, on average over the entire sample period. In particular, negative externalities are associated with a

corresponding discount in market value. This supports the notion that markets appear to expect externalities to affect cash flows and do so to a significant degree.

Regression 2 in Table 2 uses only the present value of Scope 1 greenhouse gas emissions (instead of aggregate externalities). The coefficient estimate is 0.246 and highly significant. This shows that externalities of greenhouse gas emissions, as probably the most prominent environmental external effect, are priced at c. 25%.[22] The result is robust to the inclusion of Scope 2 emissions with the coefficient remaining virtually unchanged and highly significant.[23]

To study whether other externalities are priced as well and, if so, whether they are priced differently, we run a multi-variate regression on the *n* individual externalities' components:

$$Market\ value_{i,t} = a + \sum b_n \times Externality_{n,i,t} + \sum c_k \times Controls_{k,i,t} + e_{i,t}$$

The results are reported as Regression 4 in Table 2. Of the eight externalities components, only greenhouse gas emissions and air pollution are economically and statistically significant different from zero. Greenhouse gas emissions have, at 0.21, a slightly smaller coefficient estimate as in the univariate Regression 2. The decrease in coefficient estimate is likely caused by including other air pollutants, which are positively correlated with CO2 emissions, in the regression. The coefficients on waste, water and tax compliance are virtually zero and insignificant. While accidents and training have economically significant negative coefficients, they are not statistically significant. Charitable donations has a coefficient almost equal to one, although again not statistically significant.

The panel structure of our dataset allows the study of the evolution of the relationship between externalities and the market valuation of companies over time. We approach the evolution of time trends from two angles. First, regression 5 in table 3 adds a time trend interacted with aggregate externalities to directly estimate the time trend of this relationship. The coefficient of 0.02 is highly significant and implies that, in our sample, the expected internalization rate progressed by two percentage points per year.

[22] As a further robustness check, given the significant amount of estimated data in the externalities database and the concerns raised by Aswani et al. (2024) with respect to estimated emissions data, we have run regressions on the individual externality components (and controls) separately for the sub-sample with only observed data and the sub-sample with only estimated data. The coefficient estimates on externalities across the two sub-samples are generally close and also close to the multivariate results using the full sample, i.e. estimated data are not driving the results.
[23] We focus on Scope 1 and Scope 2 greenhouse gas emissions, as comparability of Scope 3 greenhouse gas emissions across companies remains limited. The Greenhouse Protocol for example states in its that 'this standard is intended to enable comparisons of a company's GHG emissions over time. It is not designed to support comparisons between companies based on their scope 3 emissions.' (World Resources Institute 2011, 6).

$$Market\ value_{i,t} = a + b_0 \times Externalities_{i,t} + b_1 \times t \times Externalities_{i,t} + \sum c_k \times Controls_{k,i,t} + e_{i,t}$$

In a second step, table 3 shows Regression 1 estimated separately, in the cross-section, for each individual year. The coefficients are all statistically significant and, broadly, increase from about 1.5% at the beginning of the sample period to around 20% at the end, consistent with markets increasingly expecting internalization. Figure 1 summarizes the evolution of the coefficients.

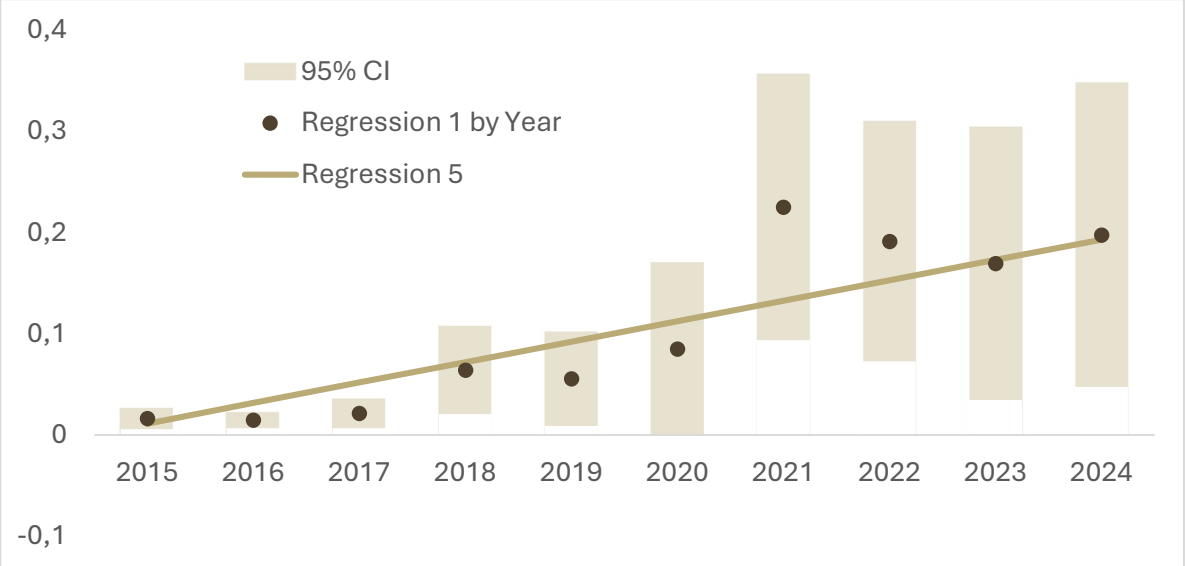

Figure 1. Time variation in the coefficient estimates on the present value of externalities

Next, we analyse whether externalities are priced differently for various sectors, and, if so, how. We re-run a version of Regression 1 allowing for sector-specific coefficients on the present value of externalities:

$$Market\ value_{i,t} = a + \sum b_s \times I_{i \in S} \times Externalities_{i,t} + \sum c_k \times Controls_{k,i,t} + e_{i,t}$$

The results are reported in Table4, Regression 6, showing that the market indeed appears to price externalities differently across different sectors: The coefficients vary significantly across the different sectors. Consistent with the internalization hypothesis, six of ten coefficients are positive and statistically significant.

		Regression											
		0	5	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
PV of Externalities	Aggregate		0.011	0.017***	0.015***	0.022***	0.064***	0.056**	0.085*	0.225***	0.191***	0.170**	0.198***
			(0.012)	(0.005)	(0.004)	(0.008)	(0.022)	(0.024)	(0.044)	(0.067)	(0.061)	(0.069)	(0.077)
	Aggregate x Years		0.020***										
			(0.006)										
Control variables	Total assets	0.826***	0.819***	1.037***	0.955***	0.891***	0.746***	0.753***	0.840***	0.740***	0.932***	0.652***	0.444*
		(0.121)	(0.122)	(0.057)	(0.061)	(0.084)	(0.103)	(0.074)	(0.140)	(0.214)	(0.124)	(0.168)	(0.269)
	EBIT	9.904***	9.618***	5.581***	7.444***	8.875***	8.535***	10.100***	12.903***	8.803***	5.903***	11.231***	15.603***
		(2.226)	(2.184)	(0.733)	(0.809)	(1.554)	(2.066)	(0.913)	(2.041)	(2.226)	(1.624)	(3.185)	(5.036)
	Revenues	0.150	0.293	0.035	0.009	-0.001	0.138	0.182	0.535	0.760**	0.338	0.417	0.424
		(0.212)	(0.227)	(0.072)	(0.081)	(0.109)	(0.135)	(0.163)	(0.380)	(0.352)	(0.210)	(0.305)	(0.376)
Statistics	Observations	75832	75832	6682	6833	7407	7373	7570	7935	8559	8114	8012	7347
	R^2	0.756	0.761	0.888	0.887	0.850	0.825	0.869	0.771	0.730	0.764	0.787	0.782
	Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 3. Pooled regression of the market value of companies on the present value of externalities, interacted with a time trend and control variables, as well as year specific cross-sectional regressions of the market value on the present value of externalities and control variables. The table reports coefficient estimates and standard errors clustered at the company level in parantheses below. ***, **, * indicates statistical significance at the 1%, 5% and 10% level, respectively.

		Regression	
	Sector	0	6
PV of Externalities	Communications		0.914
			(0.587)
	Consumer Discretionary		-1.234
			(1.038)
	Consumer Staples		0.086
			(0.155)
	Energy		0.301***
			(0.090)
	Health Care		0.472*
			(0.241)
	Industrials		0.103***
			(0.024)
	Materials		0.088***
			(0.021)
	Real Estate		-0.606***
			(0.209)
	Technology		1.468**
			(0.652)
	Utilities		0.015**
			(0.006)
Control variables	Total assets	0.826***	0.816***
		(0.121)	(0.149)
	EBIT	9.904***	9.149***
		(2.226)	(2.003)
	Revenues	0.150	0.394
		(0.212)	(0.259)
Statistics	Observations	75832	75832
	R^2	0.756	0.776
	Sector FE	Yes	Yes
	Year FE	Yes	Yes

Table 4. Pooled panel regressions of the market value of companies on the present value of externalities by sector (using sector indicators) and control variables. The table reports coefficient estimates and standard errors clustered at the company level in parantheses below. ***, **, * indicates statistical significance at the 1%, 5% and 10% level, respectively.

The coefficient for the Real Estate sector is significantly negative with an economically meaningful point estimate of -0.61, i.e. the market does seem to inversely price externalities in this sector.

Sectors with large negative environmental externalities, such as industrial, materials and utilities, have statistically significant, but economically rather low coefficients. One possible explanation could be that the market judges elasticity of demand for these sectors' products to be sufficiently low so that firms are able to largely pass on internalization effects (such as carbon taxes) on to customers and, hence, cash flow effects are minimal

Interestingly, and almost in a sort of mirror image, for sectors with low negative environmental externalities coefficients tend to be quite high, in particular, communications and technology. In other words, market valuations appear to be, in general, relatively less sensitive to externalities for sectors associated with significant negative externalities. Possibly, these sectors may be less subject, or able to withstand, public pressure due to a large, fixed asset base and large workforce.

In summary, the results show that:

(1) the present value of externalities is reflected in companies' market value to a significant degree at c. 15% to 20% in recent years (and this is also statistically highly significant as well as robust to various specifications);

(2) the sensitivity has increased over time in the sample. This increase is economically and statistically significant.

(3) there is interesting variation across the types of externalities and also across economic sectors, albeit mostly consistent with the overall findings in (1).

4. Outlook

This note gives an answer to the fundamental question of whether externalities are priced and to what extent. There are further interesting and related questions that we are currently working on:

(1) Do sensitivities vary depending on firm characteristics such as size or the jurisdiction of the company, reflecting, for example, the likely impact of different regulatory regimes?

(2) Are the values of financial instruments across the capital structure affected differently by externalities?

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Annex 1

The annex reports in Tables A1, A2 and A3 regression results for the ratio specification, e.g., for the main regression (1a):

$$\frac{Market\ value_{i,t}}{Total\ assets_{i,t}} = a + b \times \frac{Externalities_{i,t}}{Total\ assets_{i,t}} + \sum c_k \times Controls_{k,i,t} + e_{i,t}$$

and correspondingly for the regressions 2a through 6a.

Explanatory variables		Regression 0a	1a	2a	3a	4a
PV of Externalities	Aggregate		0.051***			
			(0.007)			
	GHG Scope 1			0.052***		
				(0.010)		
	GHG Scope 1+2				0.054***	0.027**
					(0.011)	(0.011)
	Air pollutants					0.029*
						(0.015)
	Waste					0.013*
						(0.007)
	Water					-0.023*
						(0.013)
	Accidents					-0.097
						(0.108)
	Training					0.178
						(0.141)
	Donations					3.278
						(3.579)
	Tax compliance					0.736***
						(0.083)
Control variables	EBIT / Total asset	1.562	1.498	1.558	1.557	0.539
		(1.335)	(1.332)	(1.335)	(1.335)	(1.323)
	ln Revenues	-0.077	-0.050	-0.071	-0.070	0.149**
		(0.059)	(0.058)	(0.059)	(0.059)	(0.063)
	ln Total assets	-0.604***	-0.634***	-0.609***	-0.611***	-0.825***
		(0.063)	(0.063)	(0.063)	(0.063)	(0.070)
	Leverage	-0.001	-0.001	-0.001	-0.001	-0.001
		(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Statistics	Observations	75372	75372	75372	75372	75372
	R^2	0.077	0.078	0.078	0.078	0.085
	Sector FE	Yes	Yes	Yes	Yes	Yes
	Year FE	Yes	Yes	Yes	Yes	Yes

Table A1. Pooled panel regressions of the market value of companies on the present value of externalities, both scaled by the book value of total assets, and control variables. The table reports coefficient estimates and standard errors clustered at the company level in parantheses below. ***, **, * indicates statistical significance at the 1%, 5% and 10% level, respectively.

		Regression											
		0a	5a	2015a	2016a	2017a	2018a	2019a	2020a	2021a	2022a	2023a	2024a
PV of Externalities	Aggregate		0.037***	0.023***	0.028***	0.100**	0.036***	0.026**	0.065***	0.087***	0.063***	0.058***	0.039***
			(0.009)	(0.007)	(0.009)	(0.040)	(0.007)	(0.011)	(0.010)	(0.012)	(0.012)	(0.012)	(0.015)
	Aggregate x Years		0.003										
			(0.002)										
Control variables	EBIT / Total asset	1.562	1.504	4.635**	5.716***	-4.046	3.779**	-2.101	0.343	0.714	2.440**	2.001	3.970*
		(1.335)	(1.333)	(2.019)	(1.911)	(8.091)	(1.784)	(3.478)	(1.308)	(1.182)	(1.238)	(2.216)	(2.127)
	ln Revenues	-0.077	-0.050	-0.166**	-0.096	0.024	-0.137*	0.219	-0.169***	0.056	-0.097**	-0.066	-0.057
		(0.059)	(0.058)	(0.082)	(0.074)	(0.332)	(0.075)	(0.195)	(0.063)	(0.120)	(0.043)	(0.054)	(0.105)
	ln Total assets	-0.604***	-0.633***	-0.478***	-0.432***	-0.871**	-0.417***	-0.816***	-0.695***	-0.918***	-0.574***	-0.475***	-0.503***
		(0.063)	(0.063)	(0.089)	(0.094)	(0.382)	(0.065)	(0.216)	(0.081)	(0.157)	(0.096)	(0.047)	(0.110)
	Leverage	-0.001	-0.001	-0.000	0.001	0.000	-0.000	-0.003**	-0.002	-0.002**	0.000	-0.001***	-0.006**
		(0.001)	(0.001)	(0.001)	(0.001)	(0.003)	(0.000)	(0.001)	(0.001)	(0.001)	(0.001)	(0.000)	(0.002)
Statistics	Observations	75372	75372	6656	6806	7379	7345	7533	7858	8485	8067	7952	7291
	R^2	0.077	0.078	0.235	0.195	0.040	0.173	0.142	0.188	0.045	0.081	0.158	0.154
	Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table A2. Pooled panel regression of the market value of companies on the present value of externalities, both scaled by the book value of total assets, interacted with a time trend and control variables, as well as year specific cross-sectional regressions of the market value on the present value of externalities, both scaled by the book value of total assets, and control variables. The table reports coefficient estimates and standard errors clustered at the company level in parantheses below. ***, **, * indicates statistical significance at the 1%, 5% and 10% level, respectively.

		Regression	
	Sector	0a	6a
PV of Externalities	Communications		0.149
			(1.080)
	Consumer Discretionary		0.307***
			(0.108)
	Consumer Staples		0.146***
			(0.041)
	Energy		0.105***
			(0.027)
	Health Care		0.660***
			(0.155)
	Industrials		0.062***
			(0.016)
	Materials		0.036***
			(0.008)
	Real Estate		-0.153
			(0.328)
	Technology		0.598***
			(0.117)
	Utilities		0.017**
			(0.007)
Control variables	EBIT / Total asset	1.562	1.234
		(1.335)	(1.192)
	ln Revenues	-0.077	0.009
		(0.059)	(0.055)
	ln Total assets	-0.604***	-0.690***
		(0.063)	(0.062)
	Leverage	-0.001	-0.001
		(0.001)	(0.001)
Statistics	Observations	75372	75372
	R^2	0.077	0.080
	Sector FE	Yes	Yes
	Year FE	Yes	Yes

Table A3. Pooled panel regressions of the market value of companies on the present value of externalities, both scaled by the book value of total assets, by sector (using sector indicators) and control variables. The table reports coefficient estimates and standard errors clustered at the company level in parantheses below. ***, **, * indicates statistical significance at the 1%, 5% and 10% level, respectively.

Overall, the results are qualitatively similar across levels and scaled specifications, and most coefficient estimates are also quantitatively close. Differences in estimates could be due to potential estimation issues given the highly skewed distribution of both independent and

explanatory variables. Alternatively, the differences may be due to levels specification giving (implicitly) more weight to larger companies (since the squared errors are larger in absolute magnitude than for smaller companies).