

IS ESG „OVERHYPED“ IN THE U.S. STOCK MARKET?

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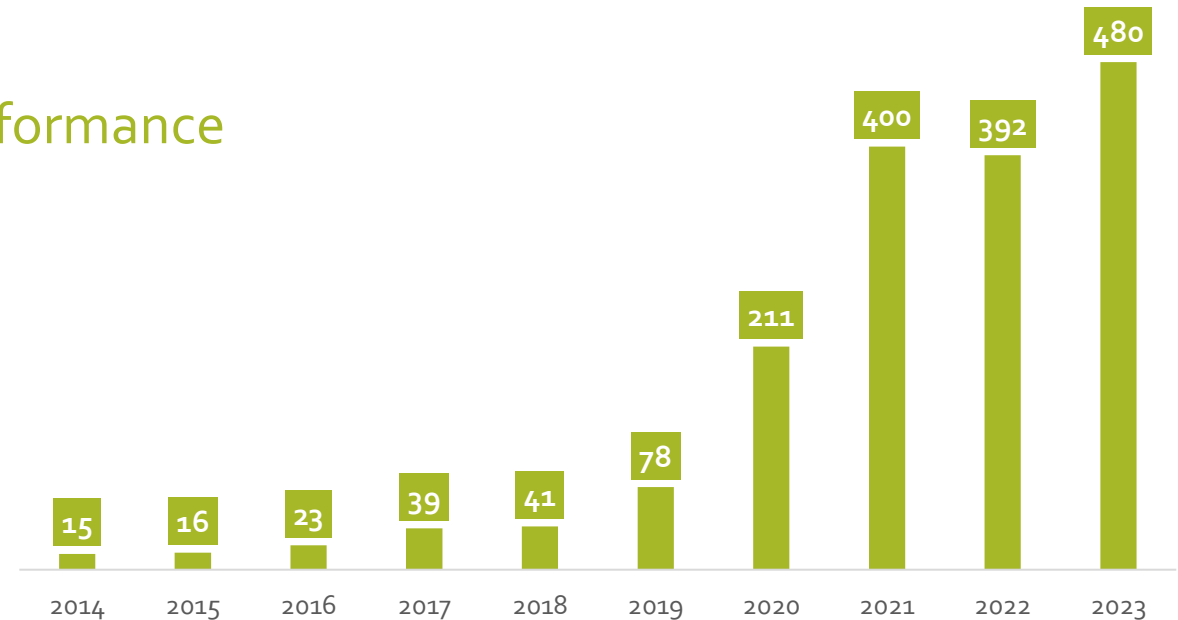
Introduction

- ESG: Environmental, Social and Governance
- Investors increasingly demand better ESG performance
- Are they outperforming the market?
- Or is the market overvaluing them?
- Tobin's Q: Degree of overvaluation of a stock

$$Q = \frac{\text{Market Value of the Firm}}{\text{Replacement Cost of Assets}}$$

- Return on Assets (RoA)

ESG ETFs Total AUM per year (in USD bn)



Source: ETFGI,
2023

Past literature

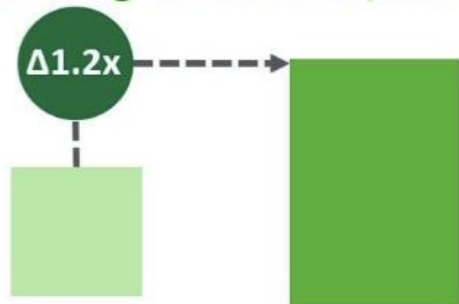
ESG and Market Valuation: Overvalued or Undervalued?

Deloitte Switzerland. (2022). *The relationship between ESG ratings and company market valuation*

The higher the ESG score at a point in time...



the higher is the EV/EBITDA

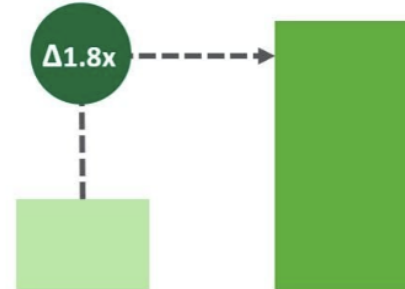


A 10-point ESG score increase boosts EV/EBITDA multiples by approximately 1.2x

The higher the **change** in ESG score...



the higher is the impact on EV/EBITDA



A 10-point ESG improvement raises EV/EBITDA by 1.8x

Past literature

ESG and Market Valuation: Overvalued or Undervalued?

Gregory, R. P. (2022). *A meta-analysis of third-party ESG ratings' impact on Tobin's Q, ROA, and ROE*

Variable	Coefficient (Std. Error)
Constant	0.292182 (0.441176)
Bloomberg	0.240229 (0.466619)
CSRHub	0.715223 (0.805154)
Emerging Market	-0.121962 (0.428200)
Endogeneity	-0.753586*** (0.250044)
Global	-0.498315 (0.305616)
MSCI	1.476078*** (0.472770)
Pub	-0.125325 (0.243460)
Refinitiv	0.730595* (0.437600)
Size	-1.40E-05 (2.15E-05)
Sustainalytics	0.434888 (0.640428)
Adj. R ²	0.093424

Regression on Point Estimates for Tobin's Q

Higher ESG scores positively impact
Tobin's Q

Variable	Coefficient (Std. Error)
Constant	0.977272** (0.482554)
Bloomberg	2.057764*** (0.637291)
CSRHub	-1.433427 (1.006403)
Emerging Market	-0.364449 (0.582243)
Endogeneity	-1.051806*** (0.383814)
Global	0.617897 (0.437479)
MSCI	1.104954* (0.620983)
Pub	-0.136075 (0.405271)
Refinitiv	-0.437442 (0.447128)
Size	-8.22E-05* (4.35E-05)
Adj. R ²	0.117413

Regression on Point Estimates for ROA

ESG ratings show a mixed impact on ROA

Past literature

Does ESG performance vary across industries? Do the impacts of E, S, and G dimensions differ?

Hogenmuller, E., Tuvache, L., & Schrapffer, A. (2024).

Exploring the link between ESG ratings and financial performance: A sector-by-sector analysis

Variable	Finance	Real Estate & Construction	Trade & Services	Energy & Transportation	Manufacturing	Life Sciences	Technology	Industrial Applications and Services
dividendYield	0.14 ***	0.1 ***	0.10	-0.02	0.26 ***	-0.12	0.12	0.02
payoutRatio	0.13 ***	0.11 ***	-0.01	0.34 ***	0.19 ***	0.03	-0.01	0.04
dividendPaidAndCapexCoverageRatio	-0.02	-0.22 ***	0.16 *	0.24 ***	0.25 ***	0.12	-0.4 ***	0.37 ***
daysOfInventoryOutstanding	-0.43 ***	-0.05 *	0.04	0.22 ***	-0.01	-0.06	-0.14 ***	-0.04
priceEarningsToGrowthRatio	0.04 *	0.03	-0.04	0.12 ***	-0.05	0.02	-0.02	-0.09 *
priceToFreeCashFlowsRatio	0.05 ***	0.08 ***	0.2 ***	0.19 ***	0.29 ***	0.14 ***	0.12 ***	-0.05
priceEarningsRatio	0.04 *	0.19 ***	0.16 ***	0.34 ***	0.28 ***	0.06	0.11 ***	0.05
priceBookValueRatio	0.11 ***	-0.00	0.18 ***	0.23 ***	0.16 ***	0.06	0.13 ***	0.00
priceToSalesRatio	0.07 ***	0.02	-0.08 ***	-0.14 ***	-0.24 ***	-0.22 ***	0.05	-0.08 *
enterpriseValueMultiple	-0.02	0.12 ***	0.17 ***	0.34 ***	0.29 ***	0.08 *	0.19 ***	0.05
daysOfSalesOutstanding	-0.24 ***	0.19 ***	-0.05	0.04	0.13 ***	0.09 *	0.08 *	0.1 ***
debtEquityRatio	0.02	0.22 ***	0.09 ***	0.37 ***	0.21 ***	0.06	0.1 ***	-0.09 ***
payablesTurnover	0.11 ***	-0.13 ***	0.07 ***	0.15 ***	0.17 ***	0.12 ***	-0.01	0.12 ***
interestCoverage	0.16 ***	0.02	0.12 ***	0.32 ***	0.18 ***	-0.04	0.05	0.13 ***

Spearman correlation between ESG scores and financial variables corresponds to a confidence of 95%, (**) to a confidence of 99% and (***) to a confidence level higher than 99.9%.

ESG ratings have stronger correlations with financial performance in the energy and transportation sectors

(a) governanceLevel				(b) environmentalLevel			
Major_Industry	1	2	3	Major_Industry	1	2	3
Energy & Transportation	0.95	0.74	0.76	Energy & Transportation	-5.64	-1.80	1.09
Finance	0.78	8.00	5.71	Finance	2.27	3.02	3.90
Industrial Applications and Services	-3.82	-1.34	-1.28	Industrial Applications and Services	-2.38	-1.15	-1.34
Life Sciences	-3.03	-2.49	-1.91	Life Sciences	-1.90	-2.57	-5.49
Manufacturing	-4.94	-2.74	-0.13	Manufacturing	-2.15	-1.57	-1.51
Real Estate & Construction	-7.09	-1.31	5.92	Real Estate & Construction	-0.17	5.19	4.59
Technology	-6.72	-4.26	-1.00	Technology	-4.12	-3.38	-2.32
Trade & Services	-3.20	-2.69	-0.34	Trade & Services	-2.55	-0.66	-1.28

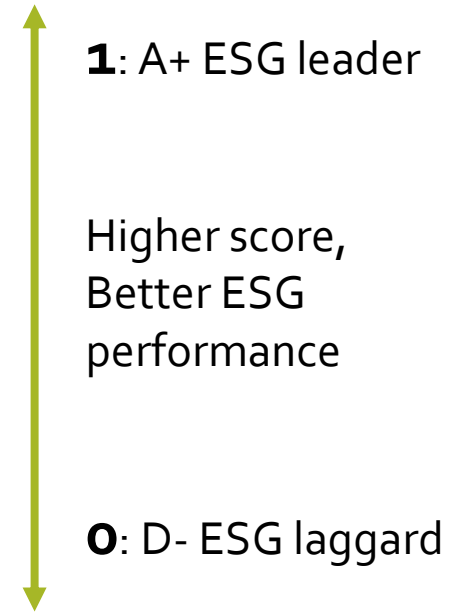
(c) socialLevel				(d) ESGLevel			
Major_Industry	1	2	3	Major_Industry	1	2	3
Energy & Transportation	-0.36	0.89	2.45	Energy & Transportation	-3.12	0.95	3.24
Finance	6.33	1.02	1.04	Finance	1.03	4.76	2.15
Industrial Applications and Services	-1.32	-1.77	-2.31	Industrial Applications and Services	-1.37	-2.07	-1.17
Life Sciences	-2.81	-1.93	-1.67	Life Sciences	-2.81	-2.12	-1.22
Manufacturing	-4.21	-0.91	-0.03	Manufacturing	-4.30	-1.32	-0.36
Real Estate & Construction	-0.51	3.05	6.71	Real Estate & Construction	-2.26	-0.07	7.98
Technology	-3.34	-3.46	-3.06	Technology	-4.76	-3.38	-1.89
Trade & Services	-2.25	-1.87	-1.21	Trade & Services	-2.76	-1.04	-1.20

Level of the ESG variables against Price Earning Ratio across sectors

E, S, G Components have distinct impacts

Data

- ESG-Scores :Refinitiv
- Firms financial data: Compustat
- Criteria for inclusion:
 - Main listing on NYSE and/or NASDAQ
 - Market Cap \geq USD 1 Bn.
- ESG-Scores are lagged by 1 year



REFINITIV



S&P Global
Market Intelligence

Hypothesis and Method 1

- H1: Firms with higher ESG-Ratings are more overvalued.
- Baseline Regression Analysis
- Controls: Equity, Market Value, Liabilities, CF-Asset-Ratio, CAPEX-Asset-Ratio

$$Y_{it} = \beta_0 + \beta_1 \text{ESG}_{it} + \mathbf{X}'_{it}\beta + \epsilon_{it}$$

Hypothesis and Method 2

- H1: Firms in the Energy and Materials Industry, with higher ESG-Ratings, are less overvalued than Firms from other Industries.
- Implementation of Dummy variables

$$Y_{it} = \beta_0 + \beta_1 \text{ESG}_{it} + \sum_j \delta_j \text{Industry}_j \times \text{ESG}_{it} + \mathbf{X}'_{it} \beta + \epsilon_{it}$$

Hypothesis and Method 3

- H1: Firms with higher ESG-Ratings are more overvalued in Periods with better overall Market Performance
- Fixed-Effects Model
- Perform Analysis for different Quantiles of Quarterly Market Returns

$$\tilde{y}_{it} = \beta_1^q E\tilde{S}G_{it} + \sum_{j=1}^J \gamma_j^q \tilde{X}_{jit} + \tilde{\epsilon}_{it}^q$$

Results 1: Total ESG rating

```
. reg tobinsq ESGCombinedScore equity_mv liabilities cfassets capxassets
```

Source	SS	df	MS	Number of obs	=	49,232
Model	22850.547	5	4570.10939	F(5, 49226)	=	844.27
Residual	266466.101	49,226	5.41311708	Prob > F	=	0.0000
Total	289316.648	49,231	5.87671687	R-squared	=	0.0790
				Adj R-squared	=	0.0789
				Root MSE	=	2.3266

tobinsq	Coefficient	Std. err.	t	P> t	[95% conf. interval]
ESGCombinedScore	-2.116154	.0582922	-36.30	0.000	-2.230407 -2.0019
equity_mv	6.47e-06	1.39e-07	46.53	0.000	6.20e-06 6.75e-06
liabilities	-.0000412	1.12e-06	-36.81	0.000	-.0000434 -.000039
cfassets	.8580632	.1224623	7.01	0.000	.6180356 1.098091
capxassets	-7.895599	.3379633	-23.36	0.000	-8.558011 -7.233186
_cons	3.493429	.0289339	120.74	0.000	3.436718 3.55014

Firms with higher ESG ratings are undervalued by the market!

```
. reg roa ESGCombinedScore equity_mv liabilities cfassets capxassets
```

Source	SS	df	MS	Number of obs	=	49,228
Model	34.8359026	5	6.96718052	F(5, 49222)	=	5428.48
Residual	63.1739717	49,222	.00128345	Prob > F	=	0.0000
Total	98.0098743	49,227	.001990978	R-squared	=	0.3554
				Adj R-squared	=	0.3554
				Root MSE	=	.03583

roa	Coefficient	Std. err.	t	P> t	[95% conf. interval]
ESGCombinedScore	.0185629	.0008976	20.68	0.000	.0168036 .0203222
equity_mv	1.33e-08	2.14e-09	6.22	0.000	9.12e-09 1.75e-08
liabilities	-2.88e-08	1.72e-08	-1.67	0.095	-6.26e-08 4.99e-09
cfassets	.29592	.0018857	156.93	0.000	.292224 .2996159
capxassets	-.1417118	.005204	-27.23	0.000	-.1519118 -.1315119
_cons	-.010861	.0004456	-24.38	0.000	-.0117343 -.0099878

And have higher Returns on Assets!

Results 1: Dissagregating ESG ratings

```
. reg tobinsq EnvironmentPillarScore SocialPillarScore GovernancePillarScore equity_mv liabilities cfassets c
> apxassets
```

Source	SS	df	MS	Number of obs	=	49,232
Model	34104.5341	7	4872.07631	F(7, 49224)	=	939.70
Residual	255212.114	49,224	5.18470897	Prob > F	=	0.0000
				R-squared	=	0.1179
				Adj R-squared	=	0.1178
Total	289316.648	49,231	5.87671687	Root MSE	=	2.277

tobinsq	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
EnvironmentPillarScore	-2.448138	.0563956	-43.41	0.000	-2.558674	-2.337602
SocialPillarScore	1.763006	.0709249	24.86	0.000	1.623993	1.90202
GovernancePillarScore	-1.154118	.0515281	-22.40	0.000	-1.255113	-1.053122
equity_mv	6.61e-06	1.36e-07	48.46	0.000	6.34e-06	6.88e-06
liabilities	-.0000341	1.12e-06	-30.38	0.000	-.0000363	-.0000319
cfassets	1.373693	.1203067	11.42	0.000	1.137891	1.609496
capxassets	-6.165841	.3325521	-18.54	0.000	-6.817647	-5.514035
_cons	3.044768	.0339588	89.66	0.000	2.978209	3.111328

But, firms with higher Social scores are more overvalued

```
. reg roa EnvironmentPillarScore SocialPillarScore GovernancePillarScore equity_mv liabilities cfassets capxa
> ssets
```

Source	SS	df	MS	Number of obs	=	49,228
Model	35.4151464	7	5.05930663	F(7, 49220)	=	3978.28
Residual	62.5947279	49,220	.001271734	Prob > F	=	0.0000
				R-squared	=	0.3613
				Adj R-squared	=	0.3613
Total	98.0098743	49,227	.001990978	Root MSE	=	.03566

roa	Coefficient	Std. err.	t	P> t	[95% conf. interval]	
EnvironmentPillarScore	.0183857	.0008833	20.82	0.000	.0166545	.0201169
SocialPillarScore	-.0145717	.0011108	-13.12	0.000	-.0167489	-.0123945
GovernancePillarScore	.010445	.0008071	12.94	0.000	.0088631	.0120268
equity_mv	1.24e-08	2.14e-09	5.78	0.000	8.17e-09	1.65e-08
liabilities	-7.44e-08	1.76e-08	-4.23	0.000	-1.09e-07	-3.99e-08
cfassets	.2923699	.0018842	155.17	0.000	.2886769	.296063
capxassets	-.1569601	.0052084	-30.14	0.000	-.1671686	-.1467517
_cons	-.0065676	.0005319	-12.35	0.000	-.0076101	-.0055251

And have lower Returns on Assets

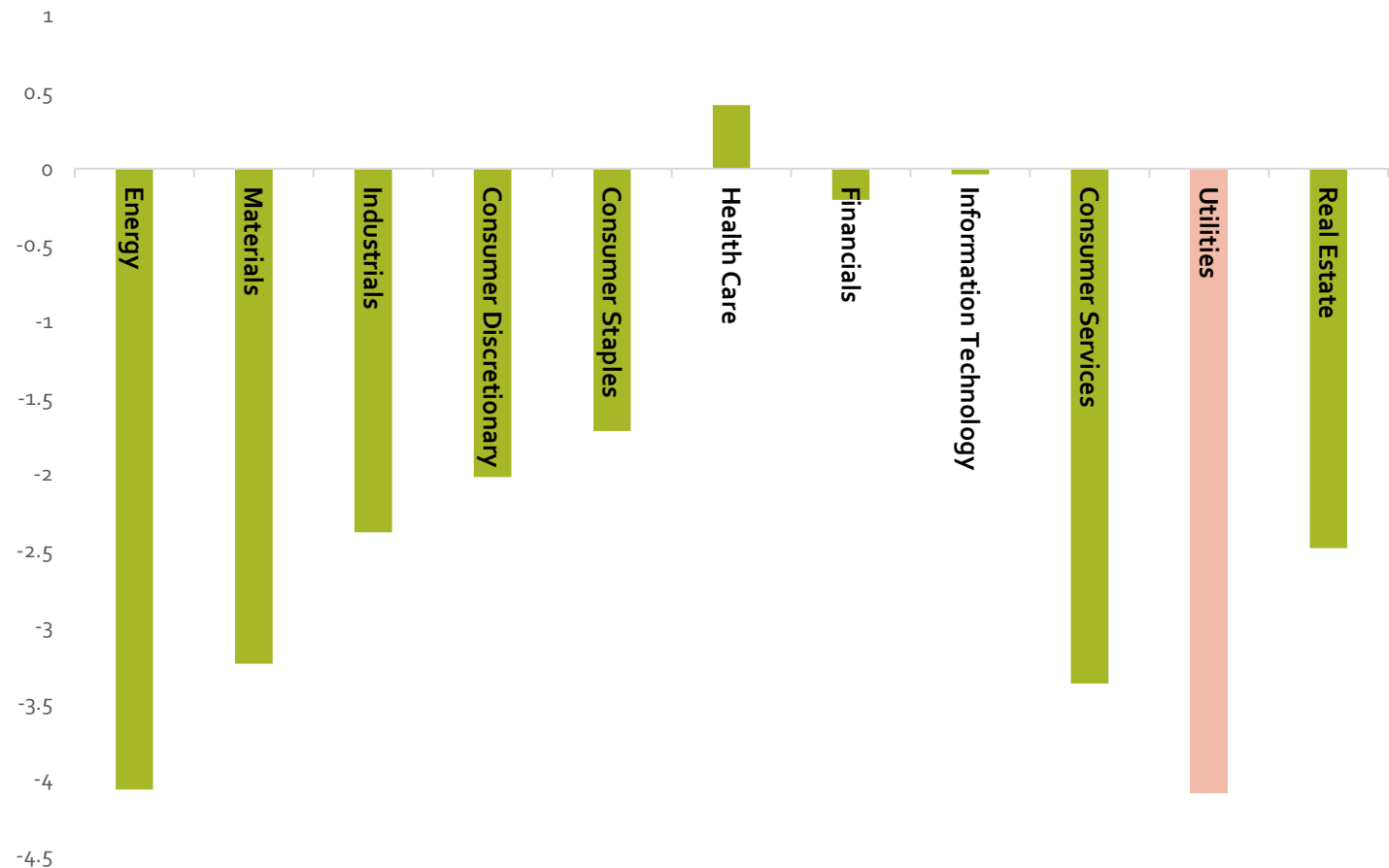
Results 2: ESG ratings effect per sector

Total Effect of ESG Combined Ratings on Tobins Q - per sector

```
. reg tobinsq ESGCombinedScore c.ESGCombinedScore#i.gsector equity_mv liabilities cfassets capxassets
```

Source	SS	df	MS	Number of obs	=	49,231
Model	45945.9336	15	3063.06224	F(15, 49215)	=	619.42
Residual	243370.451	49,215	4.94504625	Prob > F	=	0.0000
				R-squared	=	0.1588
				Adj R-squared	=	0.1586
Total	289316.385	49,230	5.87683089	Root MSE	=	2.2237

	tobinsq	Coefficient	Std. err.	t	P> t	[95% conf. interval]
ESGCombinedScore		-4.016365	.1001163	-40.12	0.000	-4.212594 -3.820136
gsector#c.ESGCombinedScore						
15		.8252342	.1081835	7.63	0.000	.6131933 1.037275
20		1.685987	.098073	17.19	0.000	1.493763 1.878211
25		2.048893	.1019187	20.10	0.000	1.849131 2.248655
30		2.349499	.1169058	20.10	0.000	2.120363 2.578636
35		4.485454	.1048087	42.80	0.000	4.280028 4.690881
40		3.864873	.1593147	24.26	0.000	3.552614 4.177132
45		4.031014	.1022272	39.43	0.000	3.830648 4.231381
50		.6950196	.1517354	4.58	0.000	.3976163 .9924228
55		-.0208734	.1190639	-0.18	0.861	-.2542401 .2124933
60		1.581727	.1665899	9.49	0.000	1.255209 1.908245
equity_mv		5.90e-06	1.34e-07	44.08	0.000	5.64e-06 6.16e-06
liabilities		-.0000399	1.08e-06	-36.83	0.000	-.000042 -.0000377
cfassets		.8233422	.1195197	6.89	0.000	.5890821 1.057602
capxassets		-1.992793	.3402601	-5.86	0.000	-2.659707 -1.325879
_cons		3.174188	.0283788	111.85	0.000	3.118565 3.229811



- Firms in Energy and Materials sectors are **the most undervalued**

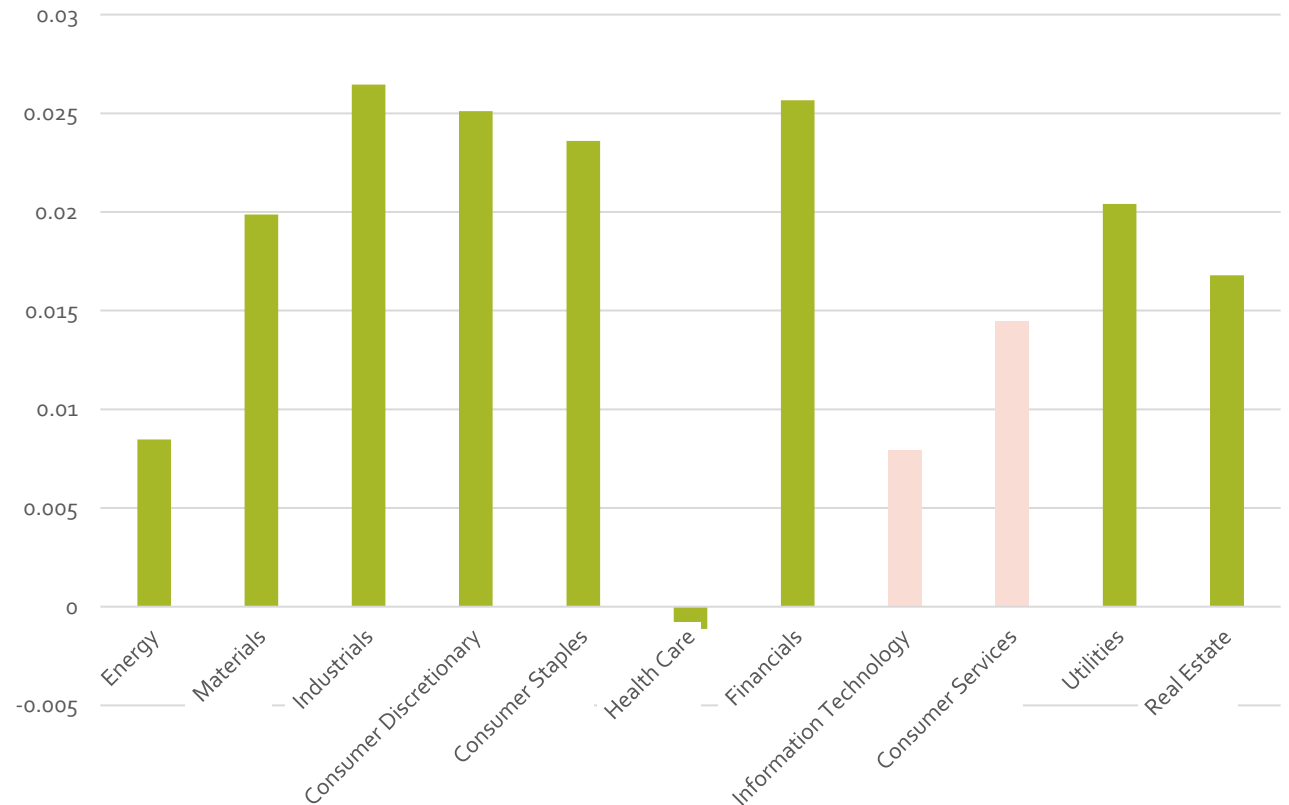
Results 2: ESG ratings effect per sector

```
. reg roa ESGCombinedScore c.ESGCombinedScore#i.gsector equity_mv liabilities cfassets capxassets
```

Source	SS	df	MS	Number of obs	=	49,227
Model	35.8746757	15	2.39164504	F(15, 49211)	=	1899.78
Residual	61.9519012	49,211	.001258904	Prob > F	=	0.0000
				R-squared	=	0.3667
				Adj R-squared	=	0.3665
Total	97.8265769	49,226	.001987295	Root MSE	=	.03548

	roa	Coefficient	Std. err.	t	P> t	[95% conf. interval]
ESGCombinedScore		.0084661	.0015974	5.30	0.000	.0053352 .0115971
gsector#c.ESGCombinedScore						
15		.0114091	.0017261	6.61	0.000	.0080259 .0147924
20		.0179858	.0015648	11.49	0.000	.0149187 .0210529
25		.0166441	.0016262	10.23	0.000	.0134567 .0198314
30		.0151317	.0018653	8.11	0.000	.0114757 .0187877
35		-.0095919	.0016723	-5.74	0.000	-.0128696 -.0063142
40		.017191	.002542	6.76	0.000	.0122087 .0221732
45		-.0005118	.0016311	-0.31	0.754	-.0037088 .0026851
50		.0060017	.002421	2.48	0.013	.0012565 .0107469
55		.0119354	.0018997	6.28	0.000	.008212 .0156589
60		.0083245	.002658	3.13	0.002	.0031147 .0135342
equity_mv		1.81e-08	2.14e-09	8.48	0.000	1.39e-08 2.23e-08
liabilities		-4.28e-08	1.73e-08	-2.48	0.013	-7.67e-08 -8.98e-09
cfassets		.2907634	.001907	152.47	0.000	.2870256 .2945011
capxassets		-.1485161	.0054291	-27.36	0.000	-.1591572 -.1378749
_cons		-.0095408	.0004528	-21.07	0.000	-.0104283 -.0086532

Total Effect of ESG Combined Rating on Returns on Assets (ROA) for different sectors



But, ESG ratings have more **moderate** impact on ROA for Energy and Materials stocks

Results 3: ESG ratings and Market Returns

```
. xtreg tobinsq c.ESGCombinedScore##i.fyear equity_mv liabilities cfsassets capxassets, fe cluster (gvkey)
```

```
Fixed-effects (within) regression      Number of obs   =   11,755
Group variable: gvkey                 Number of groups =    2,152
```

```
W-squared:                             Obs per group:
    Within = 0.1201                     min =      1
    Between = 0.0022                     avg =     5.5
    Overall = 0.0368                     max =     10
```

```
corr(u_i, Xb) = -0.0460                F(23, 2151)      =    21.05
                                         Prob > F         =    0.0000
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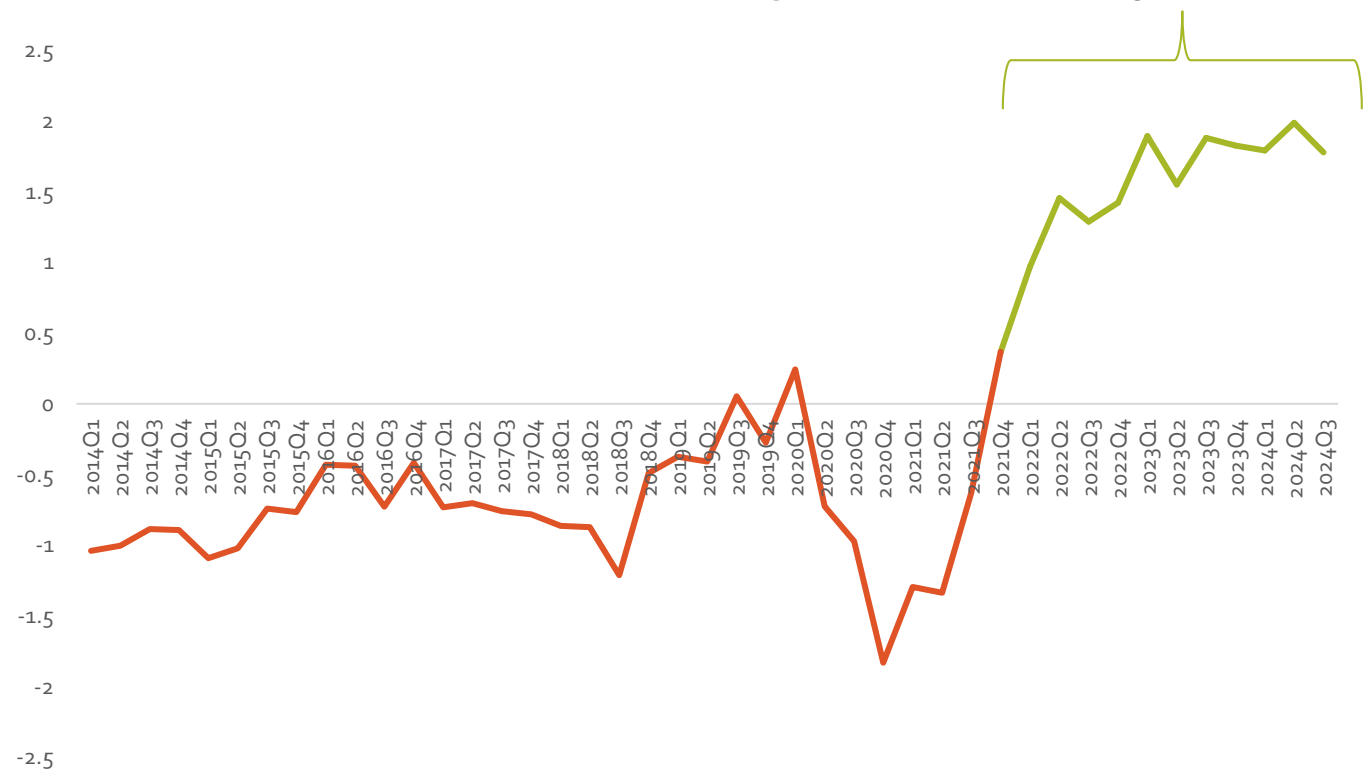
(Std. err. adjusted for 2,152 clusters in gvkey)

	tobinsq	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]
ESGCombinedScore		-.9211113	.335299	-2.75	0.006	-1.578655 - .2635674
fyear						
2015		-.0908783	.1155855	-0.79	0.432	-.3175493 .1357927
2016		-.2256688	.1348449	-1.67	0.094	-.4901088 .0387713
2017		.2060017	.1609461	1.28	0.201	-.1096246 .5216279
2018		-.2178963	.1565607	-1.39	0.164	-.5249224 .0891298
2019		-.1681952	.1654814	-1.02	0.310	-.4927154 .156325
2020		.9835915	.2125995	4.63	0.000	.5666695 1.400514
2021		-.0807519	.1993956	-0.40	0.686	-.4717802 .3102764
2022		-1.490421	.2065301	-7.22	0.000	-1.895441 -1.085402
2023		-1.458095	.2199873	-6.63	0.000	-1.889505 -1.026685
fyear#c.ESGCombinedScore						
2015		-.0462221	.2186052	-0.21	0.833	-.4749216 .3824774
2016		.3985925	.267602	1.49	0.137	-.1261931 .9233781
2017		-.0352639	.3223621	-0.11	0.913	-.6674377 .5969099
2018		.351259	.3059205	1.15	0.251	-.2486718 .9511898
2019		.6037458	.3261819	1.85	0.064	-.0359189 1.24341
2020		-.9676471	.4018173	-2.41	0.016	-1.755638 -.1796563
2021		1.041127	.3761146	2.77	0.006	.3035406 1.778713
2022		2.388189	.3641948	6.56	0.000	1.673979 3.1024
2023		2.658702	.3999822	6.65	0.000	1.87431 3.443094
equity_mv		4.74e-06	1.09e-06	4.35	0.000	2.60e-06 6.87e-06

fyear#c.ESGCombinedScore				
2015	-.0462221	.2186052	-0.21	0.833
2016	.3985925	.267602	1.49	0.137
2017	-.0352639	.3223621	-0.11	0.913
2018	.351259	.3059205	1.15	0.251
2019	.6037458	.3261819	1.85	0.064
2020	-.9676471	.4018173	-2.41	0.016
2021	1.041127	.3761146	2.77	0.006
2022	2.388189	.3641948	6.56	0.000
2023	2.658702	.3999822	6.65	0.000

Total Effect of ESG Ratings on Tobins Q

Significant!



Results 3: ESG ratings and Market Returns

Q1

tobinsq	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]	
ESGCombinedScore	-.591698	.2178879	-2.72	0.007	-1.019003	-.164393
equity_mv	4.58e-06	9.51e-07	4.81	0.000	2.71e-06	6.44e-06
liabilities	-.0000187	5.75e-06	-3.26	0.001	-.00003	-7.47e-06
cfassets	.9364354	.4716118	1.99	0.047	.0115467	1.861324
capxassets	-.4652659	.7099182	-0.66	0.512	-1.857503	.926971
_cons	2.521279	.1022739	24.65	0.000	2.320707	2.721851

Q2

tobinsq	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]	
ESGCombinedScore	.0265999	.156015	0.17	0.865	-.2793724	.3325722
equity_mv	6.13e-06	1.66e-06	3.70	0.000	2.88e-06	9.38e-06
liabilities	-.0000387	.0000124	-3.12	0.002	-.000063	-.0000143
cfassets	1.201242	.4258402	2.82	0.005	.3660964	2.036389
capxassets	.9389192	.6316607	1.49	0.137	-.2998765	2.177715
_cons	2.1303	.0759737	28.04	0.000	1.981302	2.279297

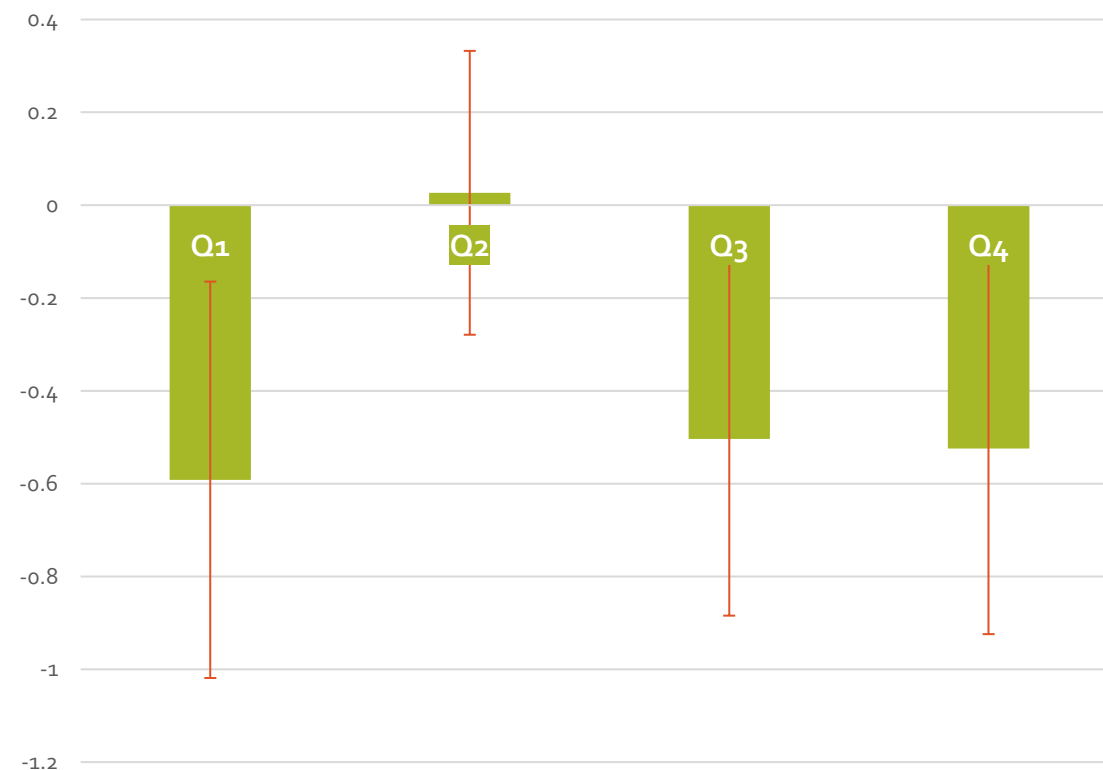
Q3

tobinsq	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]	
ESGCombinedScore	-.5037768	.1941885	-2.59	0.010	-.8845885	-.1229652
equity_mv	5.78e-06	1.26e-06	4.58	0.000	3.31e-06	8.26e-06
liabilities	-.0000335	8.70e-06	-3.85	0.000	-.0000505	-.0000164
cfassets	.3873221	.4676589	0.83	0.408	-.5297764	1.304421
capxassets	-.5704143	.6224927	-0.92	0.360	-1.791148	.6503196
_cons	2.674625	.0917707	29.14	0.000	2.494659	2.854591

Q4

tobinsq	Coefficient	Robust std. err.	t	P> t	[95% conf. interval]	
ESGCombinedScore	-.5243083	.2045049	-2.56	0.010	-.9253796	-.123237
equity_mv	6.43e-06	1.63e-06	3.94	0.000	3.23e-06	9.62e-06
liabilities	-.0000349	9.75e-06	-3.58	0.000	-.000054	-.0000158
cfassets	1.021443	.5211793	1.96	0.050	-.0006843	2.043571
capxassets	2.231966	.8532981	2.62	0.009	.5584932	3.905439
_cons	2.681684	.1020141	26.29	0.000	2.481616	2.881753

Effect of ESG Ratings on Tobins Q per Market Return Quantile



Conclusions

- ESG seems to decrease overvaluation for US listed large firms
- Also firms with higher ESG ratings seem to have higher Returns on Assets
- Firms in Energy and Materials Sectors are especially sensitive to ESG ratings
- However:
- When performing Fixed Effect Analysis, relationship is less clear and ESG ratings have more moderate impact
- In the last 2 years, firms with higher ESG ratings have higher overvaluation
- Effect of ESG ratings seems to be independent from Market Return

Thank you for listening!

- Sources:
 - Compustat – Capital IQ data, 2014-2024, accessed through Wharton Research Data Services (WRDS)
 - Refinitiv data, 2013-2023, accessed through Wharton Research Data Services (WRDS)
 - Market Returns: S&P500 returns, accessed through: <https://macrotrends.net/2526/sp-500-historical-annual-returns>
 - ESG ETFs data: ETFGI <https://etfgi.com/news/press-releases/2023/12/etfgi-reports-assets-invested-esg-etfs-listed-globally-have-increased>
 - Deloitte Switzerland. (2022). The relationship between ESG ratings and company market valuation
 - Gregory, R. P. (2022). A meta-analysis of third-party ESG ratings' impact on Tobin's Q, ROA, and ROE
 - Hogenmuller, E., Tuvache, L., & Schrapffer, A. (2024). Exploring the link between ESG ratings and financial performance: A sector-by-sector analysis