


# Material ESG in Frontier Markets - New Survey Evidence



# Motivation

- Most of the ESG - CFP cross-country literature concentrate on developed markets
- Most of the ESG - CFP literature do not adequately adjust for (forward looking) materiality - albeit indirectly when using scores or focusing on a specific sector or externality
- Limited awareness on investors ability to evaluate frontier market (material) ESG practices
- MSCI barely covers frontier markets (40% of sample covered by MSCI)
- BIG QUESTION: Is Material ESG being valued by the market?

# Questions

- Do investors reward high ESG firms in frontier markets (i.e. Tobin's Q)? Or, are investors missing out (i.e. Alpha or ROA)?
- Do investors reward high material ESG firms in frontier markets? Or, are investors missing out?
- Do investors punish high immaterial ESG firms in frontier markets? Or, are investors missing out?
- Does firm size (i.e. increased transparency and resources) mediate these relationships?

# Summary of Findings

- Do investors reward high ESG firms in frontier markets (i.e. Tobin's Q)? Or, are investors missing out (i.e. Alpha or ROA)?
- Do investors reward high material ESG firms in frontier markets? Or, are investors missing out?
- Do investors punish high immaterial ESG firms in frontier markets? Or, are investors missing out?
- **RESULT: Investors are not rewarding ESG, nor material ESG. Investors are not punishing immaterial ESG either. Surprisingly, results above are not conditioned by firm size (i.e. larger companies, with greater pre-existing transparency & resources are not differentially evaluated). We find no evidence of "missing out" either.**
- **PUZZLE -> Why are investors not pricing material over immaterial information? Is it because of lack of information or it is not financially significant? (i.e. no impact on bottom line). Other studies suggest ESG is material. If true in these markets, how can one test the information channel?**

# Data Collection

1. The data for the paper draws on a novel proprietary dataset collected by Terra Nova Capital. It is collected through means of surveys to top executives of firms in emerging markets.
2. So far they have sent out 1300 surveys (1 round) starting Feb 2020 and have received a completed survey from 850 of those companies
3. Approx. 50 - 150 surveys per month
4. Terra Nova Capital has in the past sent multiple surveys with the aim of collecting and analyzing data for investment.
5. The present survey incorporates elements from the Materiality Map as is defined by SASB. It asks companies to rank their investment into general sustainability issues over the last four quarters.

## Example Survey Question

1.1 Compared to the previous 3 years, how much has the company invested in the following sustainability categories over the past four quarters?

(expenditures with expectation of future return on investment; see appendix 1 for definitions of each sustainability category)

### Environment

## GHG Emissions

## Air Quality

## Energy Management

## Water & Wastewater Management

## Waste & Hazardous Materials Management

### Ecological Impact

Page 1 of 1

**If significantly more, describe investment (including amount)**

1.1 Compared to the previous 3 years, how much has the company invested in the following sustainability categories over the past four quarters?

(expenditures with expectation of future return on investment; see appendix 1 for definitions of each sustainability category).

### Environment

## GHG Emissions

## Air Quality

## Energy Management

## Water & Wastewater Management

## Waste & Hazardous Materials Management

### Ecological Impact

Similar  
Significant  
Significant  
No invest

If significantly more, describe investment (including amount)

# Summary Statistics

- Total ESG was created by rewarding companies a one for each “Significantly Higher” regardless of the materiality of the issue to the company’s industry with a zero rewarded otherwise - with all the ones and zeros added up.
- Sum materiality was created where a company which responded “Significantly Higher” to material categories were awarded a one with the field taking on the value of zero otherwise - with all the ones and zeros added up.
- Sum immateriality was created by awarding one to companies which had invested significantly higher in immaterial categories with a value of zero otherwise.
- Materiality Ratio was created by dividing Sum materiality by the total possible material categories to get a score for each company between zero and one
- Immateriality ratio was created by dividing “Sum immateriality” with the total number of immaterial categories.

# SASB Mapping Example (60 industries & all 26 Issues)

		Consumer Goods	Extractives & Minerals Processing								Financials	Food & Beverage	Health Care	Infrastructure
Dimension	General Issue Category <sup>①</sup>	Click to expand	Coal Operations	Construction Materials	Iron & Steel Producers	Metals & Mining	Oil & Gas – Exploration & Production	Oil & Gas – Midstream	Oil & Gas – Refining & Marketing	Oil & Gas – Services	Click to expand	Click to expand	Click to expand	Click to expand
Environment	GHG Emissions													
	Air Quality													
	Energy Management													
	Water & Wastewater Management													
	Waste & Hazardous Materials Management													
Social Capital	Ecological Impacts													
	Human Rights & Community Relations													
	Customer Privacy													
	Data Security													
	Access & Affordability													
Human Capital	Product Quality & Safety													
	Customer Welfare													
	Selling Practices & Product Labeling													
	Labor Practices													
	Employee Health & Safety													
Business Model & Innovation	Employee Engagement, Diversity & Inclusion													
	Product Design & Lifecycle Management													
	Business Model Resilience													
	Supply Chain Management													
	Materials Sourcing & Efficiency													
Leadership & Governance	Physical Impacts of Climate Change													
	Business Ethics													
	Competitive Behavior													
	Management of the Legal & Regulatory Environment													
	Critical Incident Risk Management													
	Systemic Risk Management													



# Summary Statistics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	N	mean	sd	min	max	p25	p50	p75
totalesg	331	1.529	1.997	0	10	0	1	3
matratio	331	0.253	0.302	0	1	0	0.125	0.444
sumimmateriality	331	3.622	4.688	0	22	0	1	6
immatratio	331	0.182	0.234	0	1	0	0.0625	0.300
materialandnoinvestment	331	1.529	1.997	0	10	0	1	3

# Summary Statistics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	N	mean	sd	min	max	p25	p50	p75
Total Assets	331	6,688	24,736	7.458	315,783	274.5	917.3	4,565
Beta	330	1.054	0.599	-0.652	3.382	0.650	0.963	1.363
Company Leverage	331	97.63	226.3	0.0532	3,294	17.84	56.52	108.2
Sales Growth	331	0.264	3.458	-0.921	61.89	-0.195	-0.00760	0.149
capexoverassets	331	0.0390	0.0446	-0.0139	0.336	0.00755	0.0255	0.0529
cashoverassets	331	0.146	0.145	2.27e-06	0.885	0.0423	0.0986	0.206
Return on Assets	331	5.027	8.247	-24.74	67.69	1.660	3.820	7.113
Tobins Q	331	1.608	2.897	0.0358	31.75	0.441	0.866	1.644
Abnormal Rerturn	320	20.545	74.726	-87.392	548.345	-23.669	-0.0086	38.877

# Main Findings - Total ESG & Firm Value (Firm Size)

Aggregate ESG is (kind of / not really) rewarded by investors & is not influenced by firm size either

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Tobins Q	Tobins Q	Tobins Q	Tobins Q	Tobins Q
totalesg	0.123*	0.302	0.000	-0.000	-0.055
	(0.074)	(0.304)	(0.056)	(0.106)	(0.076)
Observations	331	80	86	83	82
R-squared	0.317	0.455	0.831	0.785	0.756
Total Assets	All	<25	>25<50	>50<75	>75
Robust standard errors in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					

## Main Findings - Material ESG & Firm Value (Firm Size)

Material ESG is not rewarded by investors & is not influenced by firm size either

[illegible]

## Main Findings - Immaterial ESG & Firm Value (Firm Size)

Immaterial ESG is not rewarded by investors & is not influenced by firm size either

[illegible]

# Additional Findings - Lack of Material ESG & Firm Value

Lack of Material ESG is not rewarded by investors & is not influenced by firm size either

	(1)
VARIABLES	Tobins Q
materialandnoinvestment	0.041 (0.057)
logtotalassets	-0.307** (0.126)
Return on Assets	0.089* (0.050)
Company Leverage	-0.000 (0.000)
capexoverassets	-3.749 (2.859)
cashoverassets	1.774 (1.873)
Sales Growth	-0.130* (0.067)
Observations	331
R-squared	0.314
Total Assets	All
Robust standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

# Total ESG and abnormal returns

	(1)	(2)	(3)	(4)	(5)
VARIABLES	Abnormal Return				
totalesg	-1.335 (2.618)	-17.309** (6.997)	-0.306 (6.449)	-0.994 (5.910)	0.821 (4.794)
Observations	320	73	84	81	82
R-squared	0.276	0.676	0.488	0.611	0.752
Total Assets	All	<25	>25<50	>50<75	>75
Robust standard errors in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					

## Size)

firm size either

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Abnormal Return									
summateriality	2.959 (2.492)	4.076 (6.456)	-1.200 (7.397)	2.193 (4.997)	5.948 (3.576)	21.264 (18.046)	44.803 (41.727)	4.392 (34.621)	27.464 (28.181)	57.845** (25.472)
matratio										
Beta	29.926*** (10.622)	5.944 (20.203)	32.301 (21.021)	2.694 (23.797)	19.468 (16.239)	29.294** (10.373)	7.303 (20.996)	30.821 (21.563)	2.880 (23.574)	16.829 (16.106)
logtotalassets	0.790 (3.349)	0.337 (17.875)	41.302 (31.080)	-11.542 (20.556)	-5.585 (8.689)	0.934 (3.316)	-0.189 (17.648)	42.780 (30.388)	-11.249 (19.915)	-3.714 (8.055)
Return on Assets	0.486 (0.836)	1.744** (2.288)	0.056 (2.288)	1.029 (2.184)	-4.428** (2.062)	0.475 (0.840)	1.722** (0.746)	0.108 (2.286)	1.119 (2.178)	-4.256** (1.977)
Company Leverage	-0.010 (0.016)	0.389* (0.216)	-0.165 (0.130)	0.070 (0.045)	-0.040*** (0.009)	-0.010 (0.017)	0.414* (0.219)	-0.163 (0.131)	0.071 (0.045)	-0.043*** (0.009)
capexoverassets	41.271 (107.659)	-92.073 (234.746)	91.903 (274.250)	-219.423 (256.485)	119.638 (233.160)	37.167 (107.777)	-83.528 (223.463)	74.561 (271.705)	-209.832 (260.038)	118.198 (225.863)
cashoverassets	54.183 (59.084)	106.492* (62.900)	94.357 (64.739)	-195.270** (92.084)	446.042*** (140.523)	51.880 (56.494)	95.102 (58.315)	93.916 (65.576)	-199.432** (91.987)	417.397*** (127.402)
Sales Growth	1.974*** (0.704)	1.935 (1.334)	-3.703 (16.778)	3.781 (9.352)	54.595*** (13.911)	2.031*** (0.692)	1.754 (1.423)	-5.404 (16.156)	5.118 (9.470)	57.425*** (12.992)
Observations	320	73	84	81	82	320	73	84	81	82
R-squared	0.280	0.617	0.488	0.612	0.776	0.281	0.622	0.488	0.619	0.790
Total Assets	All	<25	>25<50	>50<75	>75	All	<25	>25<50	>50<75	>75

Robust standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1



(Firm Size)

Immaterial ESG not generating short-term (1 year) alpha & is not influenced by firm size either

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# Main Findings - Materiality Effort and Abnormal Returns

Material ESG not generating short-term (1 year) alpha

VARIABLES	(2) Abnormal Return
materialityeffort	5.648 (8.812)
Beta	29.171*** (10.371)
logtotalassets	1.250 (3.494)
Return on Assets	0.458 (0.844)
Company Leverage	-0.010 (0.016)
capexoverassets	45.969 (108.744)
cashoverassets	57.334 (60.216)
Sales Growth	2.110*** (0.675)
Observations	320
R-squared	0.276
No Controls	
CountryControls	Yes
Robust standard errors in parentheses	
*** p<0.01, ** p<0.05, * p<0.1	

# Main Findings - Materiality Effort and Tobins Q

## Material ESG not generating Tobins Q

VARIABLES	(3) Tobins Q	(4) tobinqdiff
materialityeffort	0.148 (0.296)	0.013 (0.396)
Beta	0.465 (0.337)	0.252 (0.423)
logtotalassets	-0.282** (0.119)	-0.222 (0.171)
Return on Assets	0.097** (0.049)	0.094* (0.054)
Company Leverage	-0.000 (0.000)	0.000 (0.000)
capexoverassets	-3.430 (2.924)	-5.891 (3.979)
cashoverassets	1.775 (1.845)	3.300 (2.186)
Sales Growth	-0.153** (0.073)	-0.176** (0.077)
Observations	330	301
R-squared	0.319	0.280
NoControls		
No Controls		
CountryControls	Yes	Yes
Robust standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		

# Additional Findings - Lack of Material ESG & Abnormal Return

Lack of Material ESG is not generating short-term (1 year) alpha & is not influenced by firm size either

VARIABLES	(1)	(2)	(3)	(4)	(5)
	Abnormal Return				
materialandnoinvestment	2.959 (2.492)	4.076 (6.456)	-1.200 (7.397)	2.193 (4.997)	5.948 (3.576)
Beta	29.926*** (10.622)	5.944 (20.203)	32.301 (21.021)	2.694 (23.797)	19.468 (16.239)
logtotalassets	0.790 (3.349)	0.337 (17.875)	41.302 (31.080)	-11.542 (20.556)	-5.585 (8.689)
Return on Assets	0.486 (0.836)	1.744** (0.738)	0.056 (2.288)	1.029 (2.184)	-4.428** (2.062)
Company Leverage	-0.010 (0.016)	0.389* (0.216)	-0.165 (0.130)	0.070 (0.045)	-0.040*** (0.009)
capexoverassets	41.271 (107.659)	-92.073 (234.746)	91.903 (274.250)	-219.423 (256.485)	119.638 (233.160)
cashoverassets	54.183 (59.084)	106.492* (62.900)	94.357 (64.739)	-195.270** (92.084)	446.042*** (140.523)
Sales Growth	1.974*** (0.704)	1.935 (1.334)	-3.703 (16.778)	3.781 (9.352)	54.595*** (13.911)
Observations	320	73	84	81	82
R-squared	0.280	0.617	0.488	0.612	0.776
Total Assets	All	<25	>25<50	>50<75	>75
Robust standard errors in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					

# Additional Findings - ROA & ESG

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Return on Assets						
summateriality	0.172 (0.259)						
matratio		0.757 (1.744)					
matbylogassets			4.210 (12.314)				
sumimmateriality				0.022 (0.099)			
immatratio					0.433 (1.966)		
immatbylogassets						0.709 (11.950)	
materialandnoinvestment							0.172 (0.259)
Observations	358	358	358	358	358	358	358
R-squared	0.142	0.142	0.142	0.142	0.142	0.141	0.142
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Robust standard errors in parentheses							
*** p<0.01, ** p<0.05, * p<0.1							

# Appendix - Link to excel file w sumstats to all independent ESG variables

VARIABLES	(1) N	(2) mean	(3) sd	(4) min	(5) max	(6) p25	(7) p50	(8) p75
GHG latest	289	145,759	1.185e+06	0	1.597e+07	2,600	58.50	578
Water latest	259	45,711	490,846	0	6.177e+06	0.200	3,500	50.38
Waste latest	222	2.694e+06	2.858e+07	0	3.871e+08	7,900	243.7	3,174
C satisfaction index	269	82.86	18.82	0	100	80	88	93
C NPS	127	51.43	25.69	-18	100	29.40	57	74
C turnover	147	16.74	23.42	0	100	1.860	8,500	20
L satisfaction index	269	76.39	17.31	0	100	71	78	87
L NPS	71	53.94	35.95	-28	100	20	62	85
If yes, what is the most recent annual measurement	486	12.00	11.51	0	79	4.720	9	15
GPHW rank	25	232.8	994.2	1	5,000	7	13	54
GPHW out of	19	320.2	965.6	10	4,026	22	100	150
Financial	194	3.371	4.744	0	20	1	2	3
Operational	175	3.519	4.839	0	25	1	2	4
Shareholder return	128	2.857	5.357	0	20	1	1	2
Measures	87	513.9	4,748	1	44,289	3	4	7
Vesting	184	3.461	2.515	0	25	3	3	4
CEO ownership	539	8.169	15.05	0	83	0	0.170	9.090
Tenure limit	561	5.612	3.621	0	25	3	5	7.500
Board women	554	18.48	15.16	0	100	8	16.66	28
Exec women	535	24.47	17.86	0	100	11	24	34.60
Workforce women	519	36.91	18.85	0	100	22.60	37	50.70
Board minority	307	8.060	18.69	0	100	0	0	0
Exec minority	283	7.230	18.76	0	100	0	0	0
Workforce minority	252	12.06	24.75	0	98	0	0.960	6
d_transport	552	0.458	0.499	0	1	0	0	1
d_food	556	0.640	0.480	0	1	0	1	1
d_fitness	556	0.532	0.499	0	1	0	1	1
d_childcare	548	0.268	0.443	0	1	0	0	1
d_wellnessfacility	554	0.632	0.483	0	1	0	1	1
d_mentalwellness	548	0.551	0.498	0	1	0	1	1
d_educational	560	0.821	0.383	0	1	1	1	1
d_loans	548	0.578	0.494	0	1	0	1	1
d_specialrates	550	0.584	0.493	0	1	0	1	1
d_esop	554	0.415	0.493	0	1	0	0	1
d_profitsharing	548	0.372	0.484	0	1	0	0	1
d_wards	556	0.793	0.405	0	1	1	1	1
d_volunteering	547	0.676	0.468	0	1	0	1	1
d_teambuilding	557	0.781	0.414	0	1	1	1	1
d_clubs	551	0.583	0.494	0	1	0	1	1
d_telecommuting	553	0.894	0.320	0	1	1	1	1
d_flexiblehours	555	0.723	0.448	0	1	0	1	1
d_abovemarketcomp	539	0.299	0.458	0	1	0	0	1
d_insurance	559	0.485	0.500	0	1	0	0	1
d_pension	551	0.766	0.424	0	1	1	1	1
d_pto	556	0.691	0.463	0	1	0	1	1
d_maternity	559	0.816	0.388	0	1	1	1	1
d_overtimepay	554	0.921	0.271	0	1	1	1	1
d_inclusivity	550	0.820	0.385	0	1	1	1	1
d_classified	561	0.661	0.474	0	1	0	1	1
d_agreements	543	0.919	0.273	0	1	1	1	1
d_policiespill	555	0.906	0.292	0	1	1	1	1
d_mergers	556	0.777	0.417	0	1	1	1	1
d_charter	558	0.735	0.442	0	1	0	1	1
d_bylaws	551	0.840	0.367	0	1	1	1	1
eindextotal	602	4.449	1.840	0	6	3	5	6
lowerthreshold	602	0.380	0.486	0	1	0	0	1
upperthreshold	602	0.419	0.494	0	1	0	0	1

# Appendix - Companies with investments only in material categories

	(1)	(2)	(3)
VARIABLES	abnormal Return	Tobins Q	tobinqdiff
onlymaterial	17.841 (17.390)	-0.327 (0.326)	-0.373 (0.666)
Beta	18.213** (9.165)		
logtotalassets	-1.316 (3.025)	-0.301** (0.116)	-0.264* (0.155)
Return on Assets	0.689 (0.897)	0.087 (0.055)	0.092 (0.061)
Company Leverage	0.003 (0.023)	-0.000 (0.000)	0.000 (0.000)
capexoverassets	33.699 (110.407)	-1.810 (2.516)	-3.654 (3.303)
cashoverassets	49.617 (61.276)	2.238 (1.829)	3.338 (2.074)
Sales Growth	2.781*** (0.596)	-0.086 (0.061)	-0.110* (0.066)
Observations	316	327	299
R-squared	0.143	0.243	0.210
RegionControls	Yes	Yes	Yes
Robust standard errors in parentheses			
*** p<0.01, ** p<0.05, * p<0.1			

# Appendix - Companies with investments only in immaterial categories

	(1)	(2)	(3)
VARIABLES	Abnormal Return	Tobins Q	tobinqdiff
onlyimmaterial	-4.682 (10.942)	-0.468 (0.303)	-0.776 (0.532)
Beta	18.066* (9.185)		
logtotalassets	-1.493 (3.052)	-0.286** (0.112)	-0.250 (0.154)
Return on Assets	0.708 (0.890)	0.093* (0.054)	0.093 (0.060)
Company Leverage	0.003 (0.023)	-0.000 (0.000)	0.000 (0.000)
capexoverassets	28.236 (111.031)	-1.644 (2.573)	-3.622 (3.309)
cashoverassets	48.176 (61.724)	2.184 (1.828)	3.230 (2.114)
Sales Growth	2.753*** (0.594)	-0.104 (0.066)	-0.117 (0.072)
Observations	316	326	298
R-squared	0.141	0.251	0.214
RegionControls	Yes	Yes	Yes
Robust standard errors in parentheses			
*** p<0.01, ** p<0.05, * p<0.1			