Impact of Environmental, Social and Governance (ESG) on the Performance of Listed Real Estate Firms

Presenter: Jan Muckenhaupt; Co-Authors: Badr Hayar & Bing Zhu

Technical University of Munich

TUM School of Engineering and Design

Professorship of Real Estate Development

Uhrenturm der TUM

Introduction

UN meeting 2015 in Paris

↓

regulations to steer investors toward this goal

↳ **ESG ratings make investor's efforts measurable**

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companies that score well on ESG criteria are more likely to be sustainable, have lower risk and may perform better over the long-term

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Ideas from literature

Subcomponents of ESG were studied intensively

↳ the **environmental component** (Fuerst and McAllister, 2011; Ferrell et al., 2016; Eichholtz et al., 2019a; Eichholtz et al., 2019b, Morri et al., 2021; etc.)

↳ the **social component** (Cannon and Vogt, 1995; Bauer et al., 2010; Geiger et al., 2016; Erol et al., 2021; etc.)

↳ the **corporate governance component** (Israelsen, 2005; Campbell et al., 2011; Lecomte and Ooi, 2013; etc.)

less evidence on the overall analysis of ESG metrics

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Ideas from literature / contribution

Relationship between ESG ratings and the operational, financial and market performance of Public Real Estate Companies (PRECs)

Country Policies as an instrumental variable in a 2SLS framework

➜ Reduce the concern of an endogeneity biased analysis

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Data

Data for 342 International PRECs between 2015 and 2021

Data on ESG is obtained from Bloomberg Professional

Data on company characteristics are from S&P Global Market Intelligence Database

further data on control variables are compiled from Refinitiv Datastream

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Data

Market capitalization increased from approximately 47 billion U.S. Dollar in 2015 to 110 billion U.S. Dollar in 2021

Key explanatory variables are:

➟ Net operating income (NOI)

➟ Funds from operations (FFO)

➟ G&A expenses

➟ Interest expenses

➟ Tobin's Q

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Data

ESG score

➡ derived from the three corresponding subcomponents (E, S, and G)

➡ calculated by the weighted average of the subcomponents

➡ effects of each subcomponent separately are considered

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Descriptive Statistics

	Mean	SD	Max	Min
ESG data				
ESG Disclosure	33.26	13.91	61.16	3.31
ESG Score	52.72	19.43	99.38	6.20
E Score	54.57	28.43	100.00	2.90
S Score	52.91	28.49	100.00	3.80
G Score	51.99	24.17	100.00	0.00
Performance data				
NOI/TA	3.45	5.19	111.80	-26.24
FFO/TA	9.24	12.23	141.05	-60.31
G&A/TA	1.57	1.69	11.84	-1.55
IE/TA	66.01	205.34	3,737.80	-8.52
Tobin's Q	0.95	0.45	3.68	0.14

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Method

Two-stage least squares approach (2SLS) is used

Instrument called Country's Policy
→ SDG rating score

$$ESG_{it} = \beta_0 + \beta_{\mathrm{CP}}\, CP_{i,t} + \sum_{k=1}^{K} c_k X_{k,i,t} + \varepsilon_{i,t} \qquad (1)$$

$$y_{i,t} = \beta_0 + \beta_{\widehat{ESG}}\, \widehat{ESG} + \sum_{k=1}^{K} c_k X_{k,i,t} + \varepsilon_{i,t} \qquad (2)$$

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Empirical Results

Panel A

	Model 1 NOI/TA	Model 2 G&A/TA	Model 3 IE/TA	Model 4 FFO/TA	Model 5 Tobin's Q
ESG Score	-1.565***	-0.322	-6.789***	2.423	0.452***
	(0.352)	(0.237)	(0.936)	(1.494)	(0.302)
Size	0.135*	0.125***	0.374***	-0.388	-0.226***
	(0.067)	(0.038)	(0.110)	(0.263)	(0.011)
Age	0.238***	0.122	0.087	-0.135	0.144***
	(0.046)	(0.079)	(0.182)	(0.161)	(0.020)
Leverage	0.005	0.015***	-0.052***	0.005	0.013***
	(0.003)	(0.003)	(0.008)	(0.004)	(0.001)
Asset growth	-0.003***	0.000	-0.015***	-0.001	0.001*
	(0.001)	(0.001)	(0.003)	(0.002)	(0.0005)
Time FE	Yes	Yes	Yes	Yes	Yes
IV	0.548***	0.548***	0.548***	0.548***	0.548***
	(0.080)	(0.080)	(0.080)	(0.080)	(0.080)
Observations	909	544	1017	515	1390
R^2	0.337	0.181	0.531	0.317	0.501

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Empirical Results

Panel B

	Model 6 NOI/TA	Model 7 G&A/TA	Model 8 IE/TA	Model 9 FFO/TA	Model 10 Tobin's Q
E Score	-0.754***	-0.135	-5.533***	2.058*	0.234***
	(0.182)	(0.227)	(0.843)	(0.940)	(0.053)
Other Controls	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
IV	0.740***	0.740***	0.740***	0.740***	0.740***
	(0.121)	(0.121)	(0.121)	(0.121)	(0.121)
Observations	1038	646	1146	522	1573
R2	0.306	0.126	0.508	0.317	0.507

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Empirical Results

Panel C

	Model 11 NOI/TA	Model 12 G&A/TA	Model 13 IE/TA	Model 14 FFO/TA	Model 15 Tobin's Q
S Score	-1.505**	0.007	-8.881***	0.398	0.367***
	(0.494)	(0.242)	(2.271)	(0.424)	(0.087)
Other Controls	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
IV	0.399**	0.399**	0.399**	0.399**	0.399**
	(0.123)	(0.123)	(0.123)	(0.123)	(0.123)
Observations	1048	646	1150	527	1590
R2	0.300	0.149	0.544	0.310	0.486

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Empirical Results

Panel D

	Model 16 NOI/TA	Model 17 G&A/TA	Model 18 IE/TA	Model 19 FFO/TA	Model 20 Tobin's Q
G Score	-0.964**	-0.677*	-5.694***	-2.156.	0.702***
	(0.298)	(0.302)	(1.111)	(1.141)	(0.180)
Other Controls	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
IV	0.459***	0.459***	0.459***	0.459***	0.459***
	(0.116)	(0.116)	(0.116)	(0.116)	(0.116)
Observations	956	575	1111	550	1552
R2	0.322	0.100	0.518	0.320	0.463

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Extension / Robustness

since not all PRECs have an ESG score, we conduct a Heckman correction based on a two stage model

Google Index as instrumental variable

mostly insignificant I.M. ratio is indicating a low likelihood of selection bias

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Extension / Robustness

Panel A	Model 21 NOI/TA	Model 22 G&A/TA	Model 23 IE/TA	Model 24 FFO/TA	Model 25 Tobin's Q
I.M. Ratio	-0.064	-0.106	0.417	0.263	-0.432
	(0.113)	(0.241)	(0.317)	(0.216)	(0.072)
ESG Score	-0.202**	-0.643***	-0.295	-0.075	0.167***
	(0.064)	(0.154)	(0.199)	(0.113)	(0.033)
Size	-0.137**	0.078	-0.182	0.182.	-0.379***
	(0.052)	(0.108)	(0.133)	(0.103)	(0.030)
Age	-30.68***	-14.01	-7.973	-17.60	-13.54***
	(4.797)	(9.311)	(12.11)	(11.68)	(3.165)
Leverage	0.016***	0.016***	-0.039***	0.000	0.016***
	(0.002)	(0.005)	(0.004)	(0.003)	(0.001)
Asset growth	-0.001	0.002	-0.004	-0.003	0.004***
	(0.001)	(0.003)	(0.004)	(0.002)	(0.001)
Time FE	Yes	Yes	Yes	Yes	Yes
IV	0.026***	0.021***	0.025***	0.029***	0.025***
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Observations	408	298	519	211	625
R^2	0.315	0.157	0.169	0.074	0.545

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Extension / Robustness

Panel B

	Model 26 NOI/TA	Model 27 G&A/TA	Model 28 IE/TA	Model 29 FFO/TA	Model 30 Tobin's Q
I.M. Ratio	-0.104	0.095	-0.190	0.252	-0.458***
	(0.110)	(0.245)	(0.361)	(0.213)	(0.071)
E Score	-0.067*	-0.383***	-0.068	0.012	0.077***
	(0.033)	(0.088)	(0.132)	(0.061)	(0.020)
Other Controls	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
IV	0.025***	0.019***	0.024***	0.029***	0.025***
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Observations	464	349	577	214	704
R2	0.2709	0.107	0.104	0.076	0.548

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Extension / Robustness

Panel C

	Model 31 NOI/TA	Model 32 G&A/TA	Model 33 IE/TA	Model 34 FFO/TA	Model 35 Tobin's Q
I.M. Ratio	-0.095	-0.002	0.235	0.250	-0.365***
	(0.113)	(0.238)	(0.351)	(0.210)	(0.071)
S Score	-0.028	-0.427***	0.755***	0.039	0.082***
	(0.030)	(0.076)	(0.109)	(0.054)	(0.184)
Other Controls	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
IV	0.025***	0.019***	0.024***	0.029***	0.025***
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Observations	471	350	578	216	709
R2	0.264	0.133	0.165	0.076	0.516

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Extension / Robustness

Panel D

	Model 36 NOI/TA	Model 37 G&A/TA	Model 38 IE/TA	Model 39 FFO/TA	Model 40 Tobin's Q
I.M. Ratio	-0.104	0.268	0.438	0.235	-0.483***
	(0.106)	(0.235)	(0.286)	(0.184)	(0.070)
G Score	-0.002	-0.033	-0.289***	-0.246***	0.034.
	(0.033)	(0.066)	(0.085)	(0.053)	(0.020)
Other Controls	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
IV	0.025***	0.020***	0.026***	0.031***	0.025***
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Observations	438	318	579	232	709
R2	0.299	0.105	0.187	0.159	0.506

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Main findings

significant negative relationship between ESG scores and the operating performance and cost of debt

positive significant link between ESG scores and PREC's firm value

similar effects for the subcomponents of ESG

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Thank you for listening!

Jan Muckenhaupt

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