DISCUSSION OF "IS THE KOREAN GREEN PREMIUM IN EQUILIBRIUM?" BY EOM, KANG, & SOHN

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DISCUSSION

AGENDA

Idea

Findings

Discussion 1

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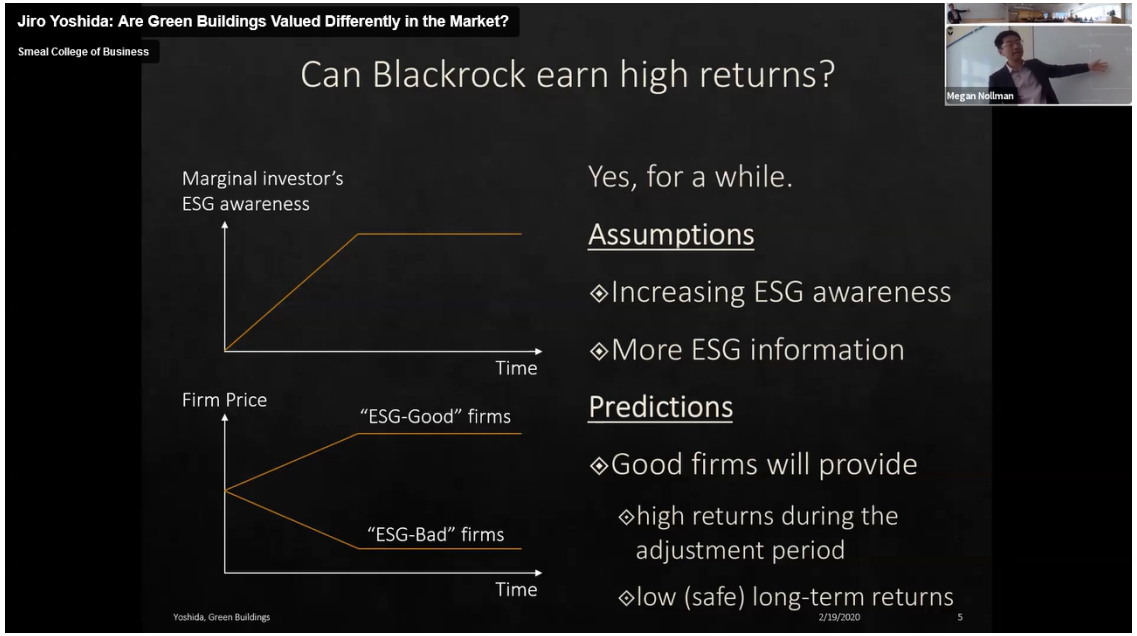
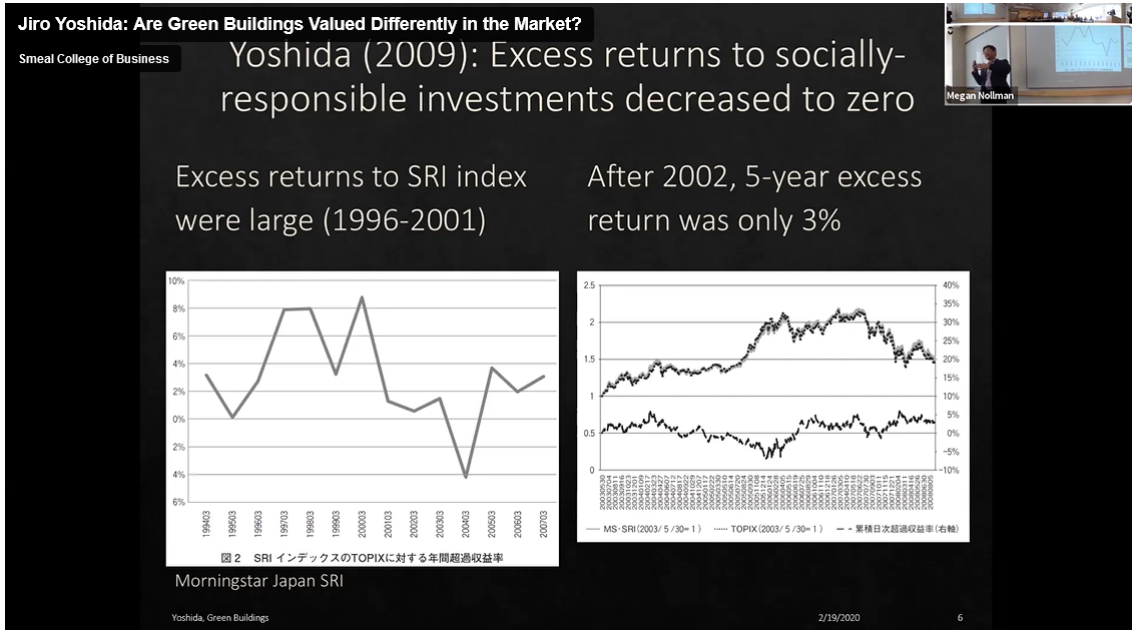
Discussion 3

Conclusion

Idea: low returns for green stocks





Pastor, Stambaugh, and Taylor (2021) develop a formal model:

Corollary 2. The CAPM alpha of stock n is given by

$$\alpha_n = -\frac{\bar{d}}{a} g_n. \tag{10}$$

If $\bar{d} > 0$, green stocks have negative alphas, and brown stocks have positive alphas. Moreover, greener stocks have lower alphas.

$$\tilde{r} = \beta_m \tilde{r}_m + g\tilde{f}_g + \tilde{\nu}. \tag{32}$$

Assets' loadings on the ESG factor, their ESG betas, are simply their ESG characteristics, g. A higher-than-expected realization of $\tilde{f}_g$ boosts the returns on green stocks and depresses those on brown ones. From Eqs. (23) and (31), the ESG factor's premium is negative:

$$\mathrm{E}\{\tilde{f}_g\} = -\bar{d}/a. \tag{33}$$

Findings

- For the Korean stock market between 2012-2020,
  - A green factor premium is negative
  - Realized green factor returns recently shifted upward

- Green factor
  - A long-short portfolio based on KCGS scores
  - Alternative indexes for CO2 and total energy usage

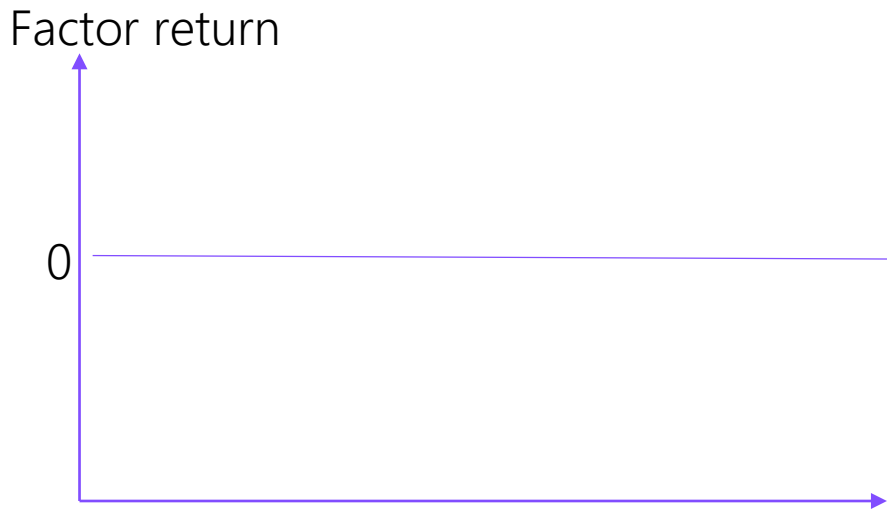
Comment 1

- Better to show periodic returns than cumulative returns
  - Cumulative returns are a price index
    - Negative slope -> consistently negative periodic returns
    - Flat segment -> no return

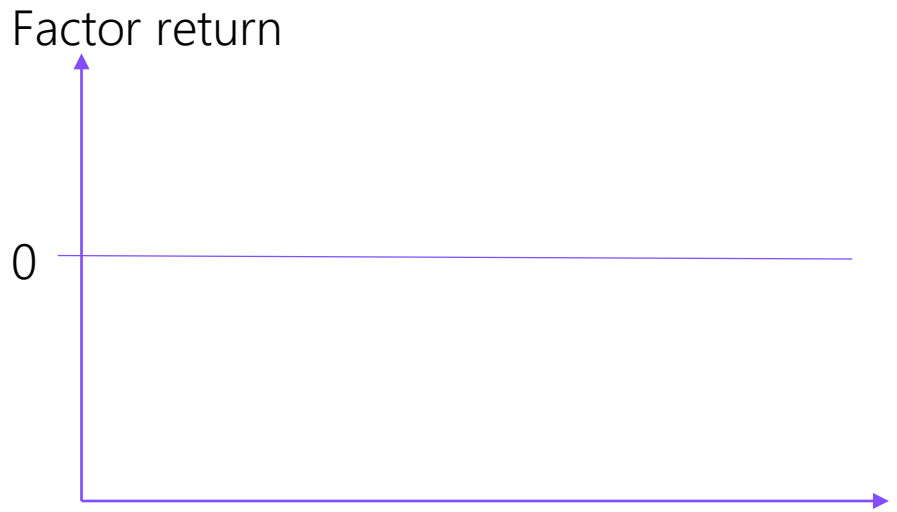
<Figure 1> Cumulative returns of the Green factor portfolio

Comment 2

- Theoretical dynamics



Finding for Korea



- Was the upward shift caused by greater ESG attention?—but factor returns were already negative.
- A few possibilities: 1. Multiple waves, 2. “Nirvana”

Comment 3

- "Nirvana" in Pastor, Stambaugh, and Taylor (2021)

Corollary 4. If there is no dispersion in ESG tastes across agents, then all agents hold the market portfolio.

For example, all agents hold the market portfolio when none of them have ESG concerns, as in the familiar CAPM. All agents also hold the market, however, when they have strong but equal ESG tastes. The reason is that stock prices then fully adjust to reflect those tastes, again making the market everybody's optimal choice. Dispersion in ESG tastes is necessary for an ESG investment industry to exist.

If investors have equally strong ESG tastes, a green discount will disappear.

- The following argument assumes further widening of ESG tastes and inconsistent with the equilibrium interpretation.
  - (Conclusion) "As the implementation of the carbon neutral policy is in full swing, there is a chance that the stock returns of the Korean Green companies will show a positive excess return in the future."

Comment 4

- Actual cashflow changes would not affect returns
  - (Conclusion) “Considering the fact that the Green factor return rises during the period when the greenhouse gas emissions of listed companies decline, we can infer that strengthening environmental **policies** may **lead** to decreasing stock **returns** of Brown companies due to the increased costs for controlling green-house-gas emissions.”
- Returns are driven by surprises, not by actual changes
- To argue causality, better identification is needed.

Comment 5

- Detail of the green factor?
  - Table 3 shows KCGS scores vary by industry
  - The robustness result with the industry-adjusted KCGS scores is assuring (Table 8)
  - Still suspecting that the result can be driven by the industry performance for display, shipbuilding, banking, energy, software, medical, semiconductor, etc.
  - Can you obtain similar results for top industry groups and bottom industry groups?

	# of observations	Greenness	Excess return (%)
Communications service	324	1.40	-0.01
Display	108	1.23	-0.38
Shipbuilding	1,013	0.73	-1.05
Banking	733	0.72	-0.49
Energy	1,746	0.59	-0.22
Transportation	1,655	0.58	-0.09
Hardware	2,238	0.45	0.86
Automobiles and parts	4,226	0.44	-0.24
Chemical	5,123	0.44	0.34
Construction	2,898	0.43	0.29
Metals and minerals	3,440	0.41	-0.05
Other materials	2,570	0.29	0.45
Household goods	799	0.26	-0.02
Utility	1,261	0.23	0.05
Other capital goods	4,839	0.12	0.21
Distribution	1,153	0.05	-0.42
Food and Tobacco	3,523	-0.01	0.25
Commercial service	436	-0.04	-0.37
Semiconductor	932	-0.08	1.66
Insurance	1,214	-0.16	-0.80
Medical	4,152	-0.34	1.88
Consumer service	1,055	-0.38	-0.14
Durable consumer goods and clothing	4,396	-0.43	0.62
Software	885	-0.50	1.02
Media	974	-0.80	0.05
Securities	2,315	-1.13	0.17
Other finance	393	-1.43	0.23

Comment 6

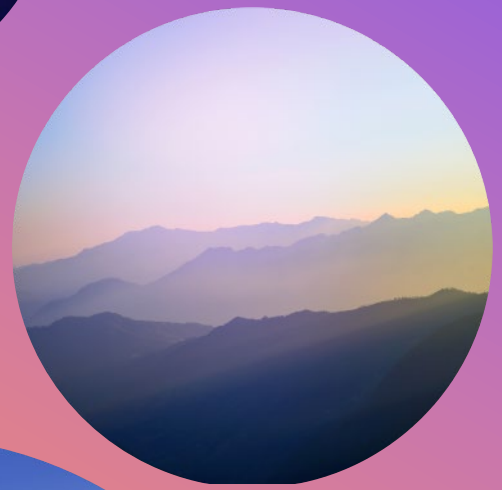
- Sample period and size (2012-2020)
  - 96-100 months
  - Small for estimating asset pricing model
- Are the CO2 and total energy data available longer than KCGS?
- Can you observe a previous price adjustment period?

Comment 7

- Need standard errors to tell whether changes in factor returns are statistically significant
  - Tables 4, 5, 8
  - Figures 1, 2, 3, 4

Conclusion

- A nice paper that applies Pastor, Stambaugh, and Taylor's study to the Korean stock market.
- Significantly negative green returns between 2012-2015, followed by smaller green returns
- The paper needs more careful interpretations
- Consider extending the sample period by using alternative green indicators



THANK YOU

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