The Emerging Greenium

Boyuan LI, University of Florida
Baolian Wang, University of Florida
Jiawei Yu, Renmin University of China

Motivation

- Are investors willing to pay a higher price for Environmental, Social, and Governance (ESG) investments than non-ESG investments?
- The answer to this question is at the core of the discussion of how the financial markets can contribute to ESG issues.
- One widely argued role of the financial markets in solving ESG issues is that investors with ESG preferences can lower green assets' cost of capital relative to brown assets and increase green investments.

A little theory

- No doubt that most people have ESG preferences
- No doubt that some are willing to pay for ESG

- However, if green assets are overvalued relative to brown assets, investors unwilling to pay will switch to brown assets.
  - The standard free-rider problem.

Greenium and green bonds

- "greenium," or green premium, is the amount by which the yield on a green bond is lower than an otherwise identical conventional bond.

- Green bonds are debt instruments designated to finance environmentally friendly projects.

- Green preferences affect asset prices, in the absence of physical risk and transition risk?

Municipal bonds – an example

$30,415,000
GENERAL RECEIPTS BONDS,
SERIES 2014C
(Green Bonds)

Year (June 1)	Amount	Rate	Yield	CUSIP*
2021	$ 445,000	4.00%	1.79%	914119ZR6
2022	440,000	4.00	2.05	914119ZS4
2023	450,000	4.00	2.23	914119ZT2
2024	475,000	5.00	2.35	914119ZU9
2025	505,000	5.00	2.50	914119ZV7
2026	625,000	5.00	2.64	914119ZW5
2027	515,000	5.00	2.71	914119ZX3
2028	1,075,000	5.00	2.78	914119ZY1
2029	1,250,000	3.25	3.25	914119ZZ8
2030	1,290,000	5.00	2.91	914119A28
2031	1,360,000	5.00	2.96	914119A36
2032	1,430,000	3.50	3.50	914119A44
2033	1,485,000	5.00	3.06	914119A51
2034	1,560,000	3.65	3.65	914119A69
2035	1,615,000	3.70	3.70	914119A77

$54,130,000
GENERAL RECEIPTS BONDS,
SERIES 2014D

Year (June 1)	Amount	Rate	Yield	CUSIP*
2019	$ 4,155,000	5.00%	1.24%	914119B27
2020	4,915,000	5.00	1.53	914119B35
2021	4,870,000	5.00	1.81	914119B43
2022	5,305,000	5.00	2.05	914119B50
2023	6,520,000	5.00	2.23	914119B68
2024	14,170,000	5.00	2.35	914119B76
2025	6,825,000	5.00	2.50	914119B84
2032	1,685,000	5.00	3.01	914119B92
2033	1,775,000	5.00	3.06	914119C26
2035	1,900,000	5.00	3.15	914119C34
2036	2,010,000	5.00	3.19	914119C42

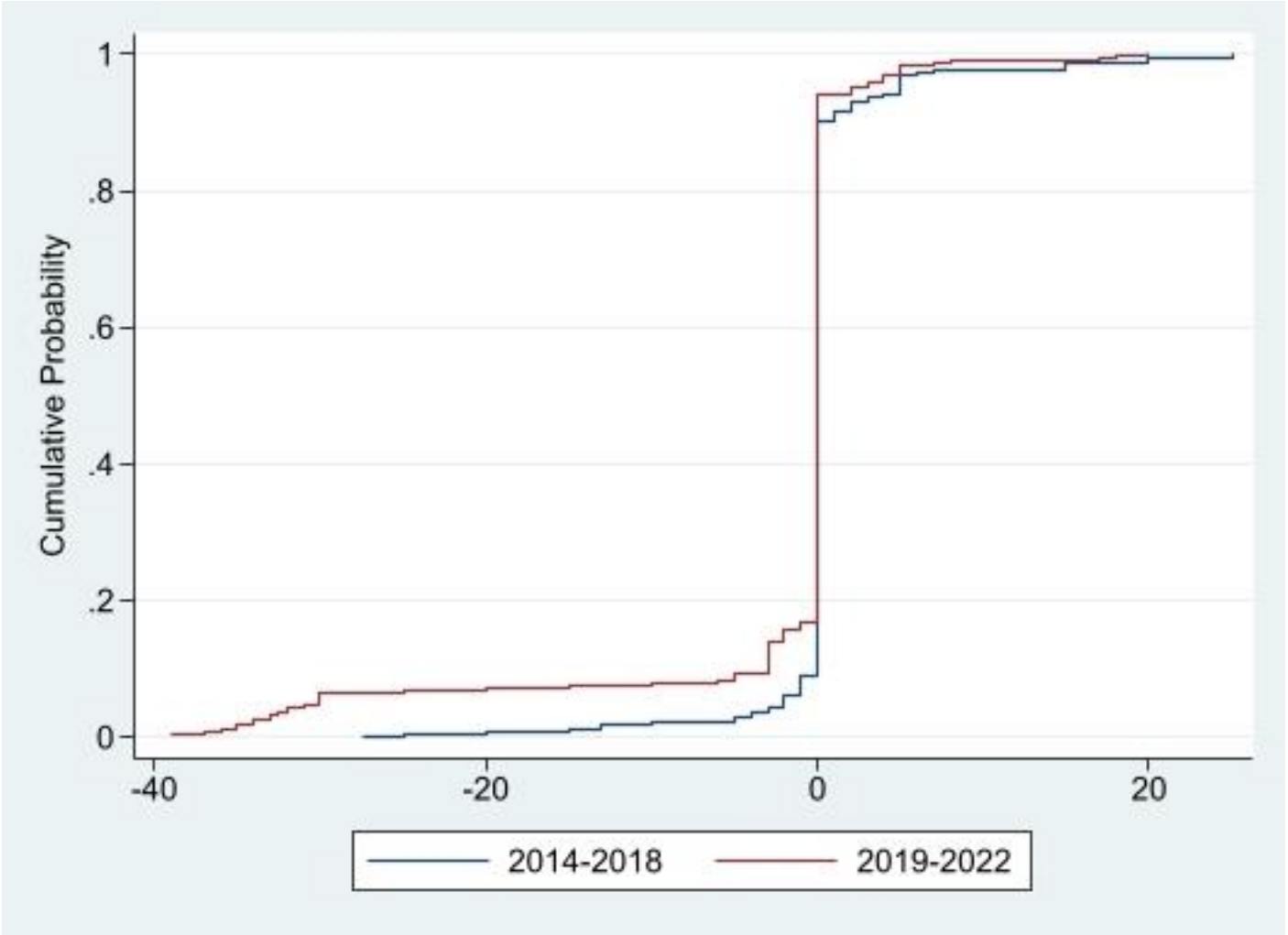
Exact matches

- Issuer
- issuance date
- maturity date
- credit ratings
- call dates
- source of repayment (revenue or general obligation)
- Not federally taxable.

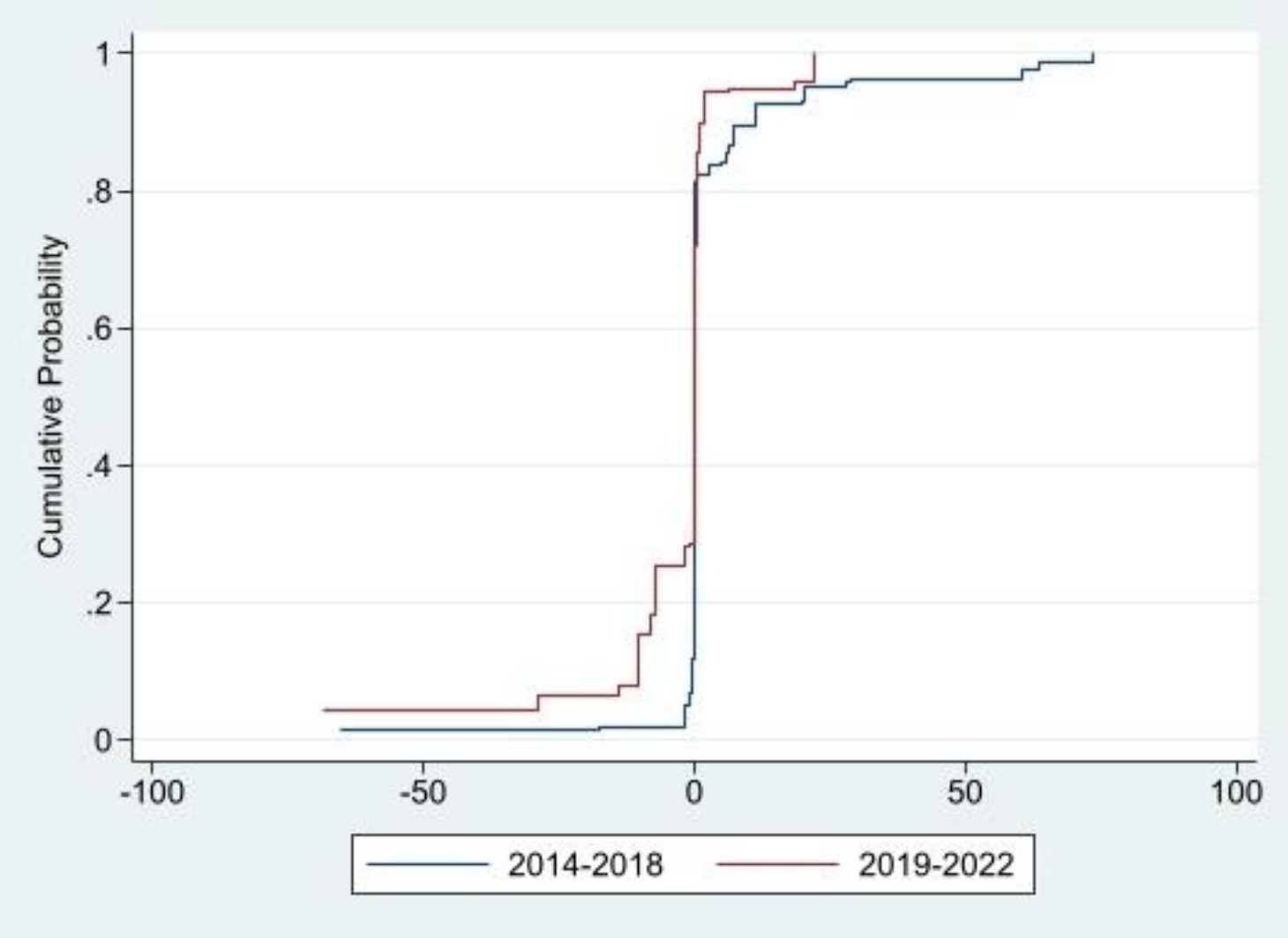
- ~80% GO; ~80% same coupon.

- 687 till 2018; 340 post-2018

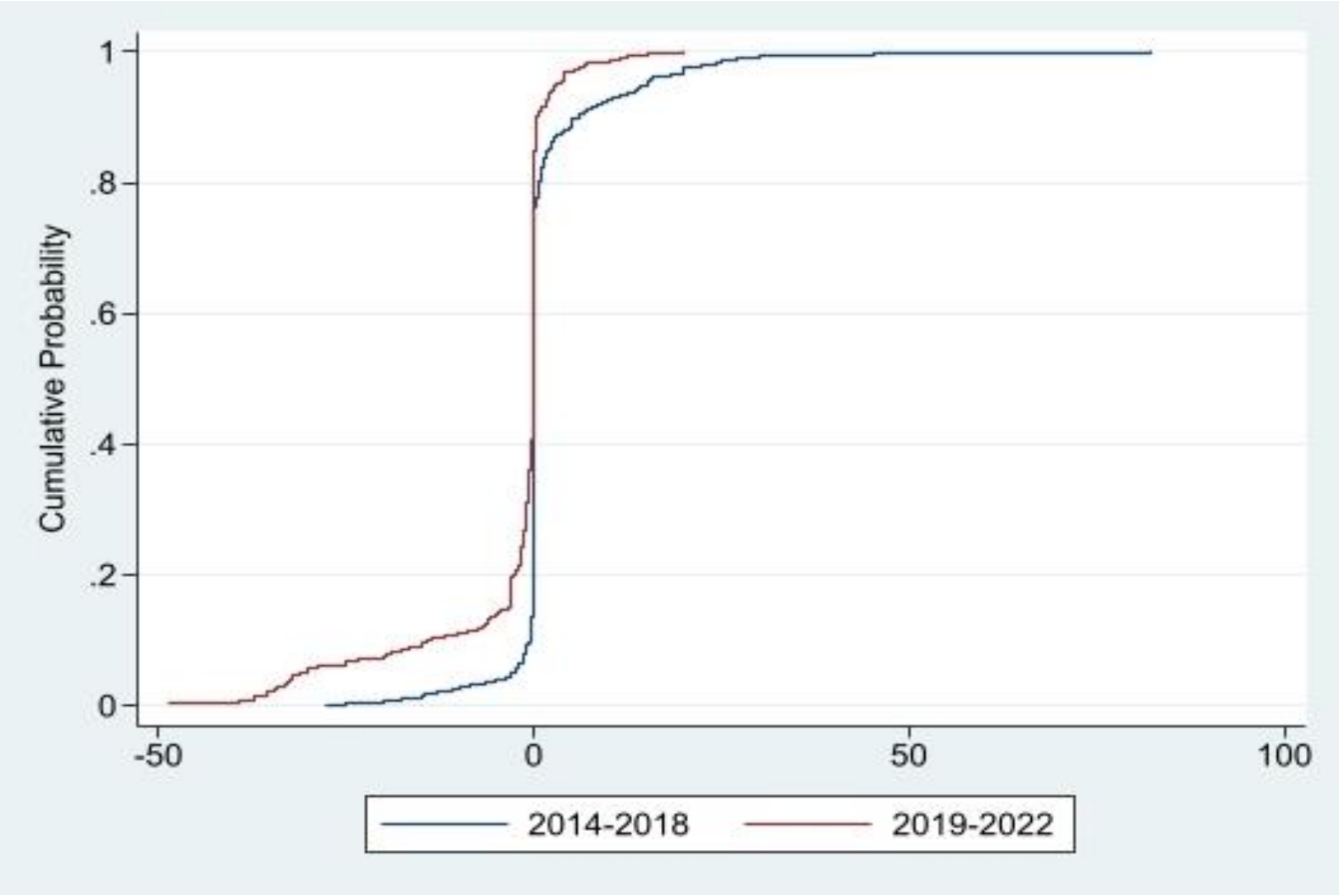
$Yield_{Green} - Yield_{Non\text{-}Green}$



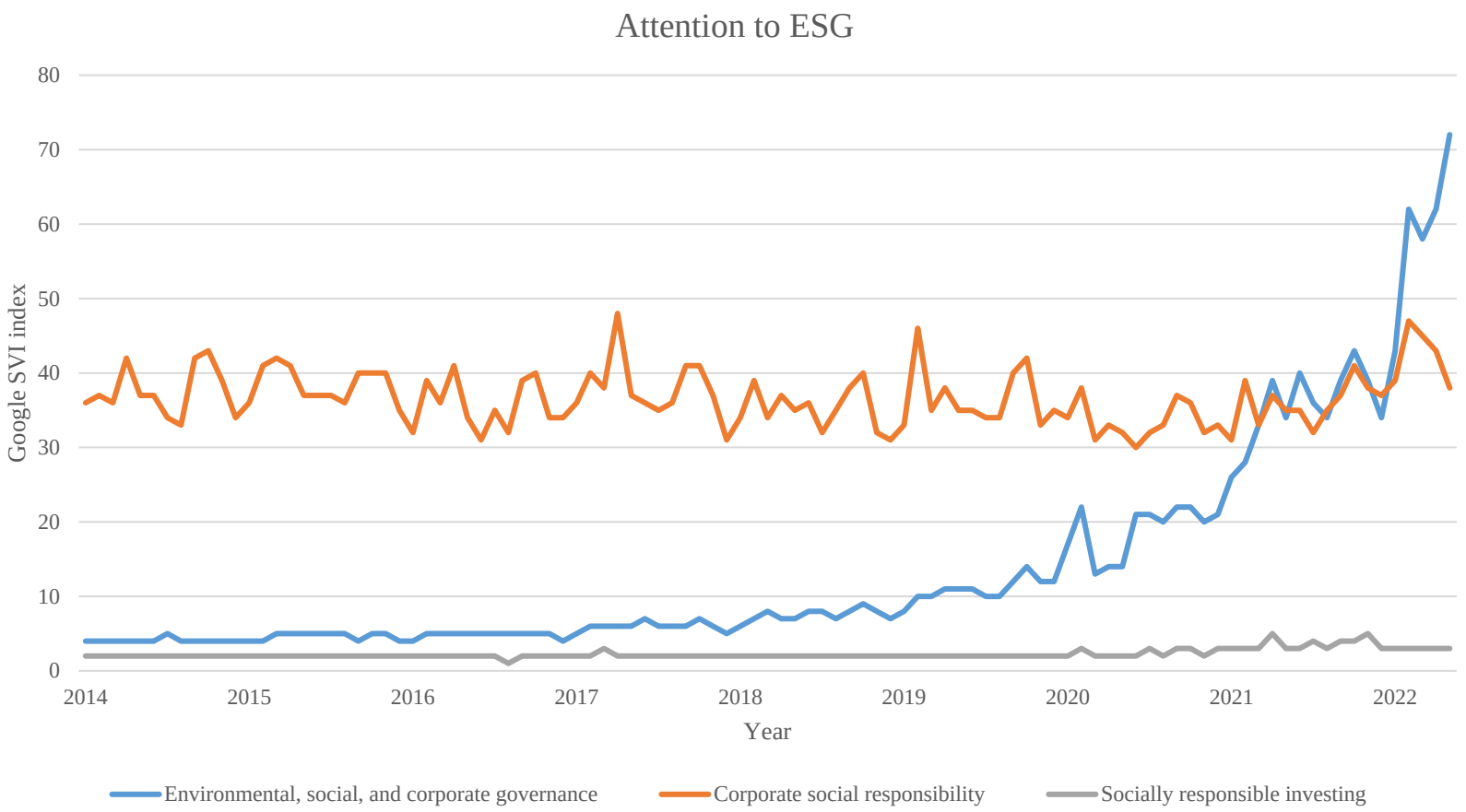
$UnderwriterDiscount_{Green}$ — $UnderwriterDiscount_{Non\text{-}Green}$



Total issuance costs



Attention to ESG



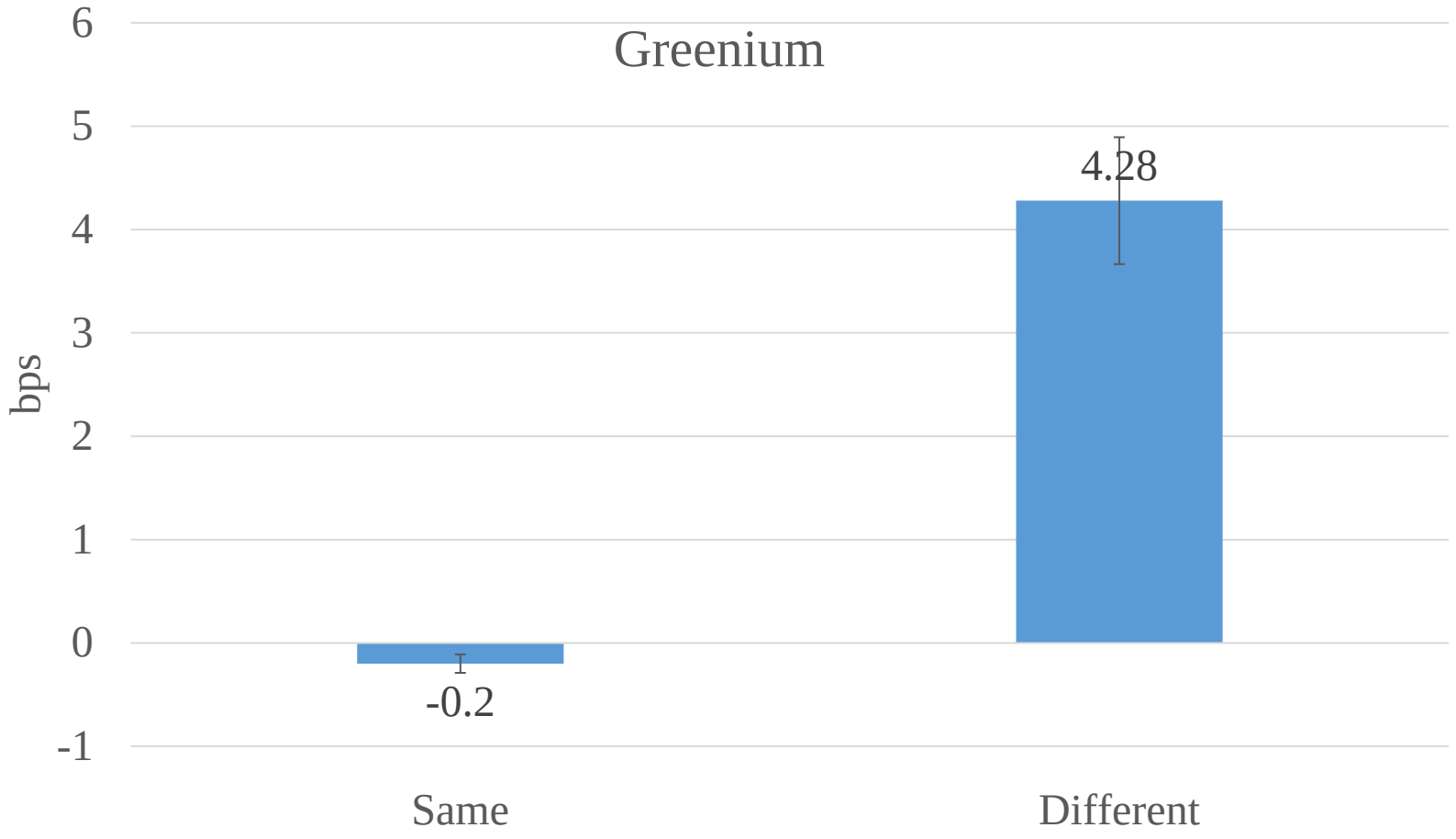
Headline numbers (post-2018)

- Greenium: 2.3 bps (yield ~ 200 bps; credit spread ~20bps)
- Underwriter discount difference: 3.9 bps (underwriter discount ~ 50 bps)
- Total issuance cost: 4 bps

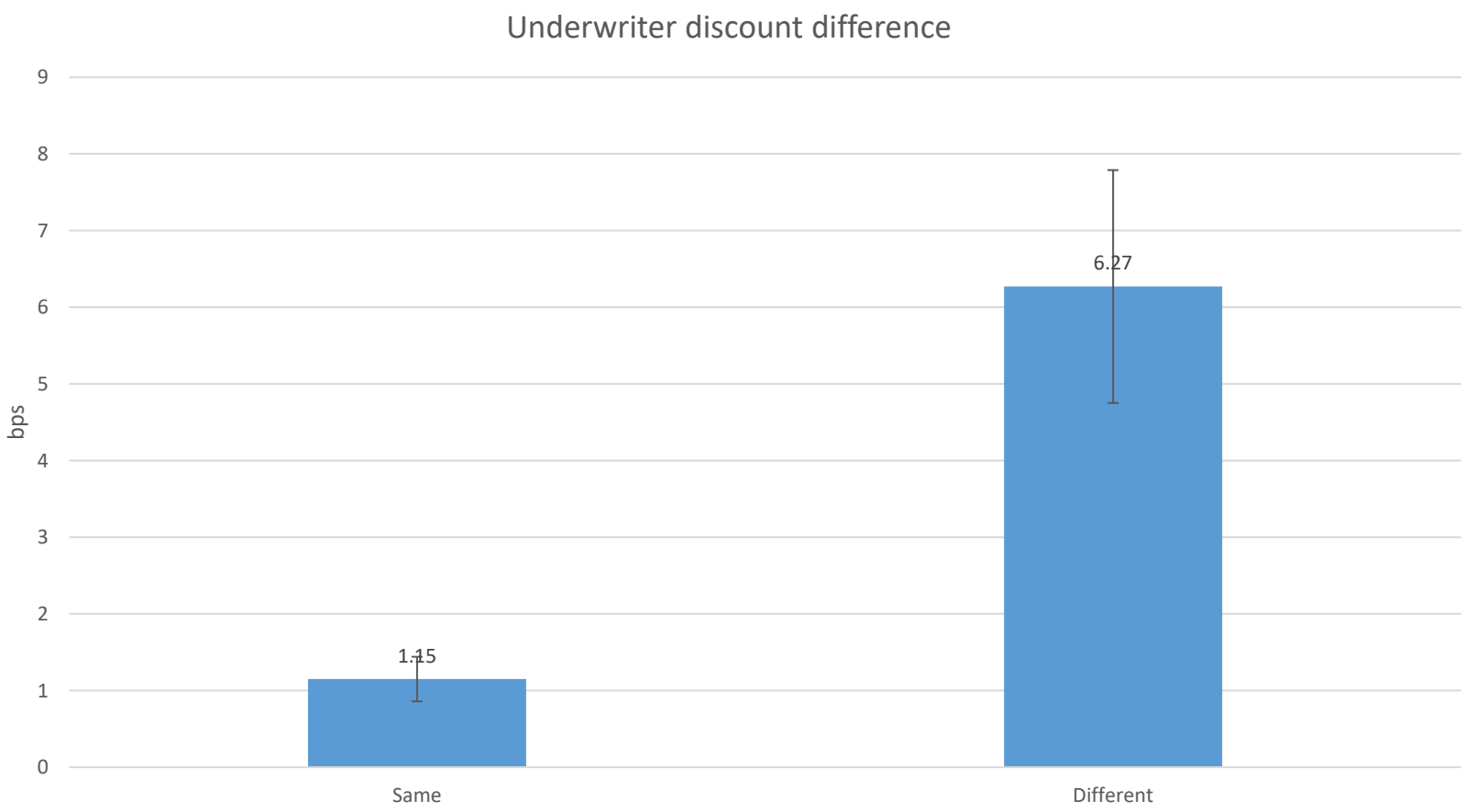
Use of proceeds

- University of Cincinnati
  - The 2014C Green bond: a portion of the Scioto Hall Renovation Project
  - 2014D bonds: a portion of the Medical Sciences Building Rehabilitation Project
- Dormitory Authority of the State of New York Columbia University Revenue Bonds, Series 2016
  - Subseries 2016A-1: used toward the construction of the Jerome L. Greene Science Center
  - Subseries 2016A-2: used to finance various design, construction and renovation projects throughout the university system… including expenditures for Jerome L. Greene Science Center…

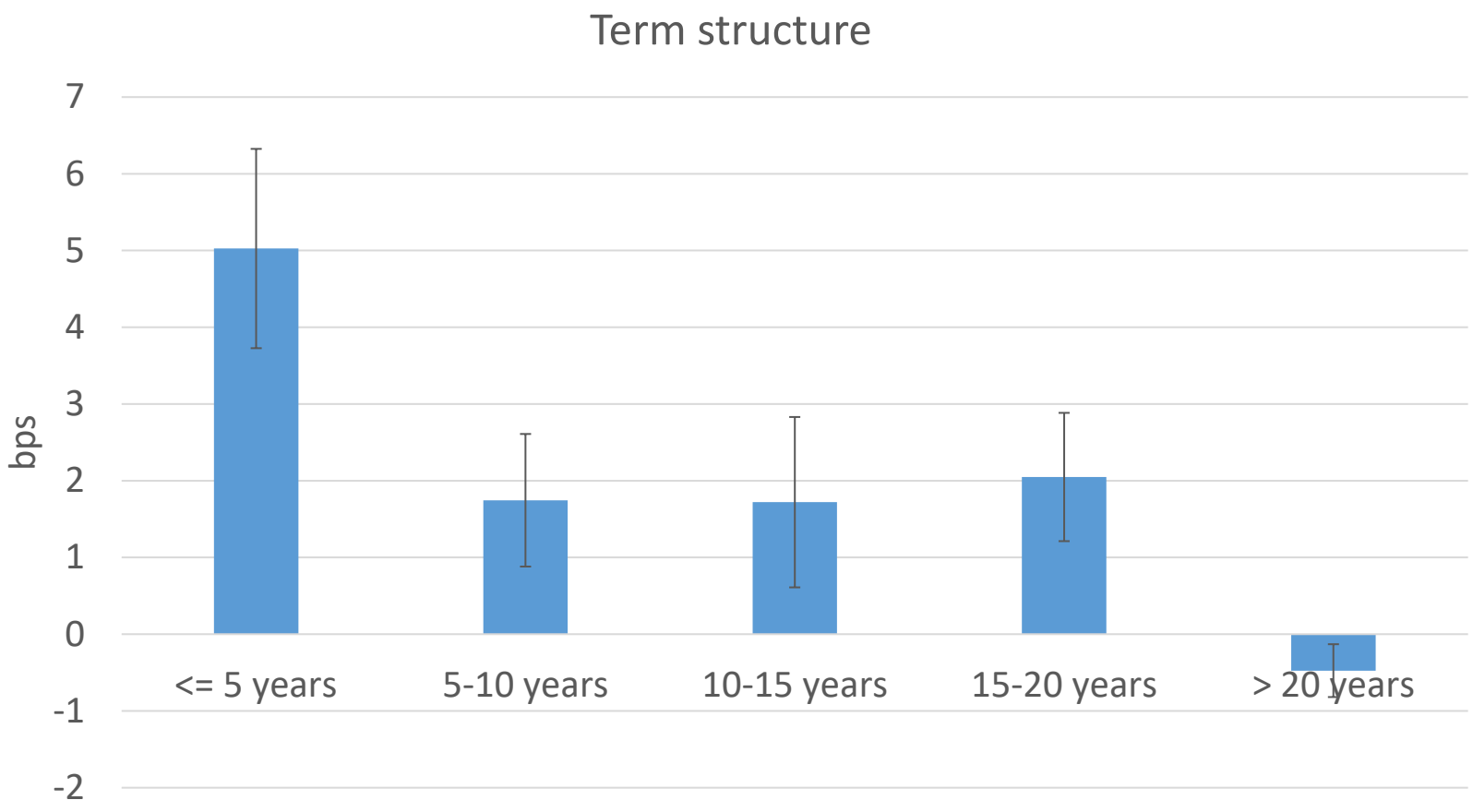
Use of proceeds -- greenium



Use of proceeds – underwriter discount difference



Term structure of greenium



Conclusions

- An average greenium of 2.3 bps post-2018 in contrast to a 0 bps greenium prior to that time period.
- After 2018, issuers charged an average of 4bps less for the issuance of green bonds.
- Conditional on different uses of proceeds, magnitudes double.
- The term structure of greenium is downward sloped.