Markup or Markdown: National Underwriters' Exit and the Changing Landscape of Municipal Finance

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July 13, 2024

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- Underwriters less able to raise investor markups, issuer costs

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- Bank didn't respond to AG's request for information on ESG

This Paper

Municipal Bond Market:

- $3.8 trillion market for funding public infrastructure and services.
- Underwriters organize bond issuance and resell to investors.

Recent Changes:

- Exits of major underwriters (UBS, Citigroup) in 2023.
- Concerns about access to finance and costs for municipalities.

Possible Explanations:

- Rising "anti-ESG sentiment" by some state legislatures.
- Changes in market microstructure.
- Decline in profits for dealers, especially for large underwriters.

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Summary of the Paper

Data:

- Mergent, MSRB, SDC Platinum, Bloomberg (2005-2023).

Model by Green (2007):

- Dealer-underwriters as Bertrand competitors.
- Price dispersion due to limited price transparency.

Key Findings:

- Increased institutionalization and transparency.
- Large decline in primary market markups.
  - Decline in markups for large underwriters.
  - Nearly 50% reduction in underwriter profits from markups.
- Decline in likelihood of encountering uninformed investors.
- Markups charged to uninformed investors have fallen.

Recent exits might more reflect the decline in profitability than anything else, consistent with what Citi cited in internal memos.

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Theoretical Model

Theoretical Model Overview

Key Components from Green (2007)

- Strategic interaction among issuers, underwriters, and investors.
- Focus on profit function of municipal underwriters.
- Two intermediaries: underwriter-dealers.
- Compete in Bertrand manner for issuer's business.
- Sell securities to retail and institutional investors.

Secondary Market:

- Retail investors: high valuation and search costs.
- Institutional investors: infinitely elastic demand at a lower price.
- Prioritization: most profitable retail trades first.
- Capacity constraint: limited reach to retail investors.

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Profit Maximization

Underwriter-Dealer's Profit:

- Balance between aggressive bidding and capacity constraints
- Equilibrium: fully utilize retail capacity at institutional price

Profit Equation:

$$\pi(b_i, Q_i) = (\bar{p} - v)q\mu + (v - b_i)Q_i \tag{1}$$

- b_i: bid price
- Q_i: allocated quantity
- μ: mass of retail customers
- q: probability retail customer is uninformed
- $\bar{p}$: reservation price for retail investors
- v: institutional price

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Empirical Implications

Underwriting Spread and Markup:

- $(v - b_i)$: underwriting spread.
- $(\bar{p} - v)$: markup per bond in new issue market.
- Lower μ: fewer retail customers.
- Decreased profits for underwriters.

Impact on Profitability:

- Combined markups charged to uninformed customers.
- Spread earned on amount underwritten.
- Rise of separately-managed accounts and muni mutual funds.
- Decline in direct muni retail assets.

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Data and Methodology

Data Sources and Issuance Information

Data Sources:

- Mergent Municipal Fixed Income Securities database.
- Municipal Securities Rule Making Board (MSRB) trade data.
- SDC Platinum database and Bloomberg for underwriting spreads.

Issuance Information:

- Total issue size, offering date, issuer name.
- Type of offering (competitive vs. negotiated).
- Agents involved in the sale, bond characteristics (coupon rate, maturity, etc.).

Trade Data (MSRB):

- Timestamp, trade size, trade type, and trade price.
- Focus on customer buy trades within 14 days of offering date.

Markup Calculation:

- Difference between customer purchase price and offering price.
- Expressed as a percentage of the offering price.
- Trade-size-weighted average markup for each bond.

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Summary Statistics and Trends

Sample Period: 2005-2023

- 183,502 issues and 2,076,767 bonds.
- 12,389,917 new issue trades.
- 132,588 issues with underwriting spreads data.

Underwriting Activity:

- National underwriters account for nearly 50% of total volume.
- Large regional underwriters hold a 30% market share.
- Small regional + single-state underwriters account for 20%.

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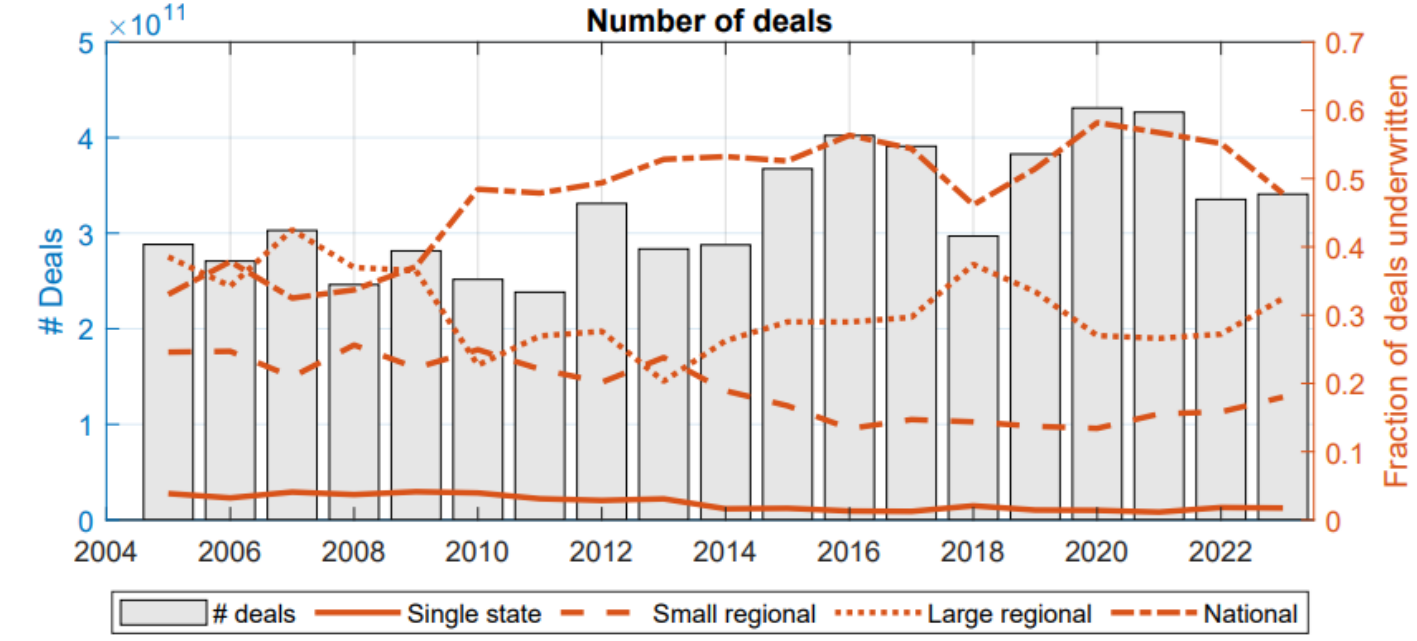
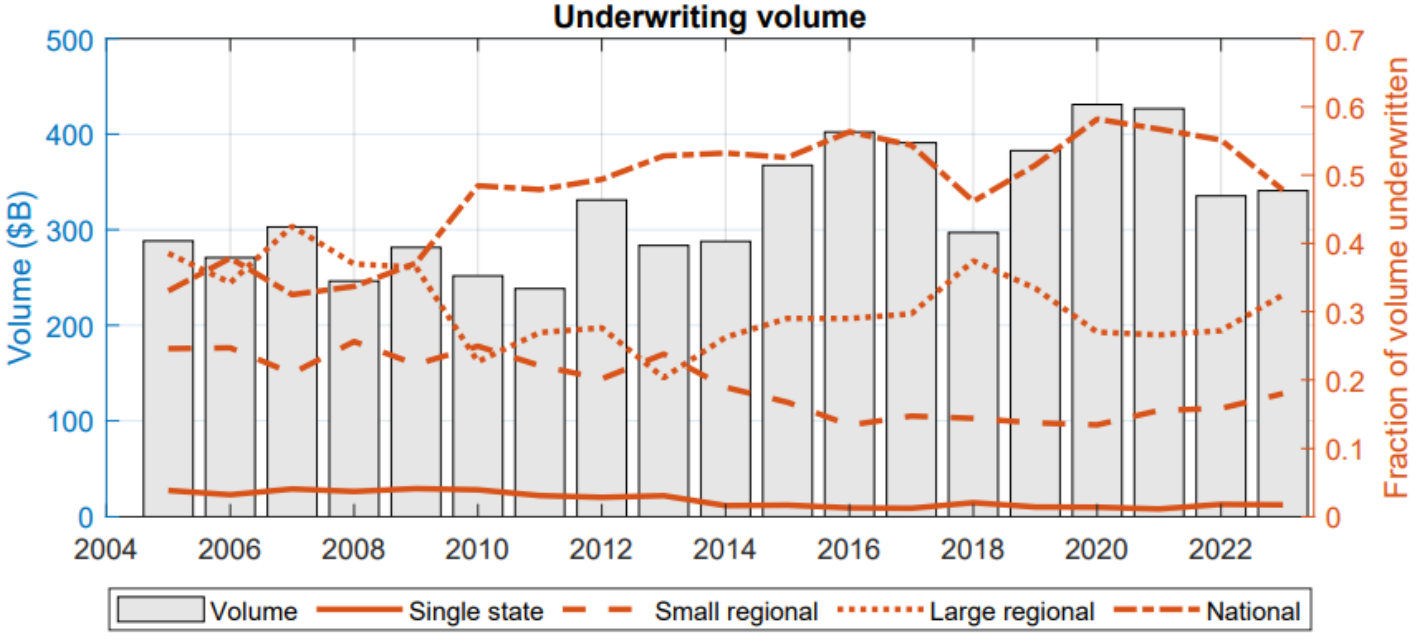
Filters	# Issues	# CUSIPs	# Trades
Full Mergent sample	509,163	4,596,452	
Bonds issued since 1/1/2005 and not by US territories	309,283	2,672,141	
0<offering yield<50% and 50<offering price<150		2,565,007	
0<coupon<20% and offering size>0		2,523,419	
Debt-type="BND" and face value = 100		2,299,523	
Fixed rate coupon		2,298,466	
Purpose of issuance either NEW or REF		2,286,565	
Remove bonds with offering date after maturity date		2,286,456	
Underwriter information available	189,373	2,275,525	
Merged with MSRB trade data:			
New issue trades ([-30;+14] of offering date)			18,308,872
Remove trades of less than $5,000 par			18306987
$50 \leq$ trade price ≤ 150	183,502	2,076,767	18,306,168
Sample for new issue markup analysis:			
Customer buy trades [0; +14] of offering date	183,502	2,076,767	12,389,917
Sample for underwriting spread analysis:			
Issues with underwriting spread data	132,588		

	Single-state	Small regional	Large regional	National
Panel A: Average annual underwriting activity				
Number of states served	1.00	6.87	27.75	44.24
Number of deals per underwriter	6.67	53.48	254.92	654.91
Volume ($m) per underwriter	66	615	5,517	18,509
Number of underwriters	111	97	18	8
Market share (% deal count)	4.65	32.47	28.02	34.86
Market share (% volume)	2.29	18.56	30.16	48.99
Panel B: Markups in the new issues market				
Mean markup (bps)	22.49	14.91	14.38	13.76
Median markup (bps)	0.00	0.00	0.00	0.00
StDev markup (bps)	70.47	61.65	62.19	58.25
Average bond size ($m)	0.66	0.95	3.27	4.39
Number of bonds	100,026	598,503	520,128	802,981
Panel C: Underwriting spreads				
Mean spreads (bps)	160.99	111.99	89.95	74.84
Median spreads (bps)	126.70	89.80	69.90	60.60
StDev spreads (bps)	130.47	88.88	91.26	61.30
Average issue size ($m)	7.00	10.04	37.99	56.08
Number of issues	11,428	63,398	49,106	65,441


Number of deals
×10^11
Deals
Fraction of deals underwritten
0
1
2
3
4
5
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
deals
Single state
Small regional
Large regional
National


Underwriting volume
Volume ($B)
Fraction of volume underwritten
0
100
200
300
400
500
0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
Volume
Single state
Small regional
Large regional
National

Reduced-form Evidence

Introduction to Profitability Analysis

Key Trends:

- Dominance of national underwriters.
- Declining markups in new issue market.

Focus:

- Investigate whether underwriters' profitability has declined over time.
- Control for changes in bond characteristics and macro environment.

Findings:

- Decline in profitability for national underwriters.
- Increased transparency reduces markups and spreads.
- Lower profitability linked to increased institutional investor participation.

Implications:

- Policy changes impact underwriter profitability.
- Market dynamics favor institutional investors over retail.

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Regression Model for Markups

Markup Regression Model:

$$\begin{aligned}\text{Markup}_{i,t} = {} & \delta' \text{Year}_t + \beta_1 \text{National}_i + \beta_2' \text{National}_i \times \text{Year}_t + \beta_3 \text{LnIssueSize}_i \\ & + \beta_4 \text{LnBondSize}_i + \beta_5 \text{Maturity}_i + \beta_6 \text{Maturity}_i^2 + \beta_7 \text{Coupon}_i \\ & + \beta_8 \text{Premium}_i + \beta_9 \text{Callable}_i + \beta_{10} \text{Insurance}_i + \beta_{11} \text{AddCredit}_i \\ & + \beta_{12} \text{BankQlf}_i + \beta_{13} \text{OfferType}_i + \gamma_1' \text{BondType}_i + \gamma_2' \text{Rating}_i \\ & + \gamma_3' \text{Proceeds}_i + \eta' \text{State}_i + \epsilon_{i,t}\end{aligned} \tag{2}$$

Variables:

- $Markup_{i,t}$: Average markup on customer buy trades.
- $National$: Dummy for national underwriter
- Control variables: Bond characteristics, state fixed effects, etc.

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Identification Strategy

Year Fixed Effects:

- Coefficients (δ_t) show average markups over years.
- Markups increased post-2008 financial crisis, then declined to 2005 levels, so we remove aggregate trends.

National Underwriters:

- β_2 estimates: Differential markups for national underwriters.
- National underwriters generally charge lower markups.
- Higher share of institutional trades contributes to lower markups.

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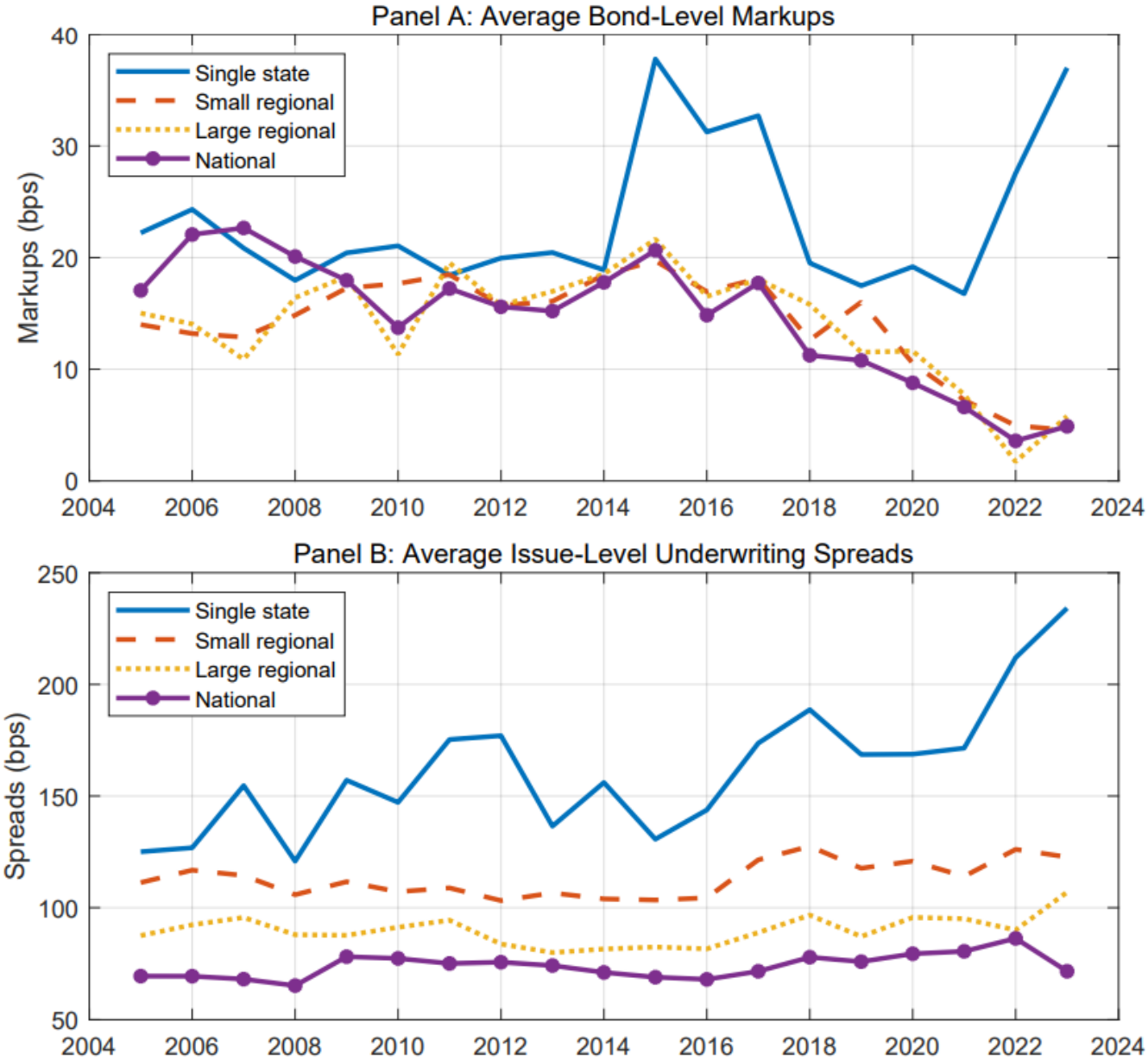
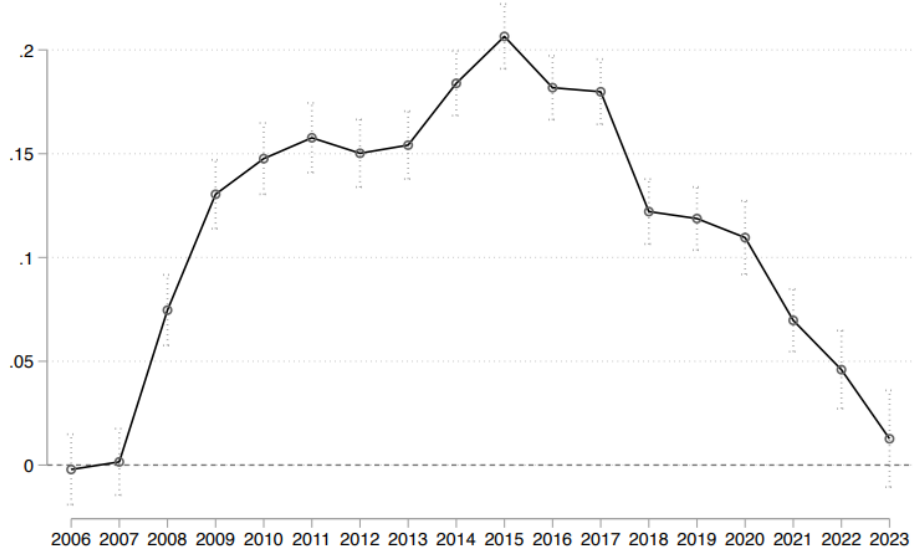
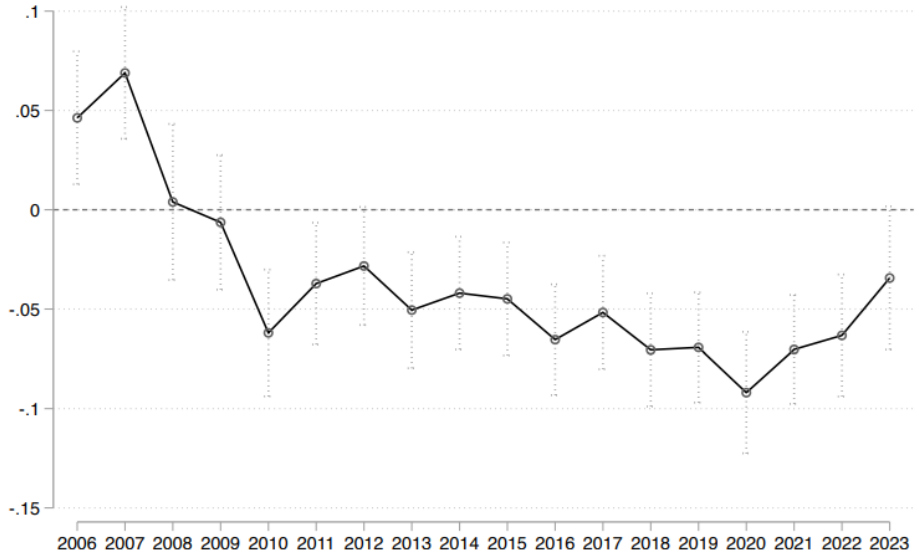
Markups (Unconditional Correlations)



Markups (Conditional Correlations)



Panel A: Year Fixed Effects



Panel B: National x Year Fixed Effects

Underwriting Spreads and Transparency

Underwriting Spread Model:

$$\begin{aligned}\text{UndSpread}_{j,t} = {} & \delta' \text{Year}_t + \beta_1 \text{National}_j + \beta_2' \text{National}_j \times \text{Year}_t + \beta_3 \text{LnIssueSize}_j \\ & + \beta_4 \text{Callable}_j + \beta_5 \text{Insurance}_j + \beta_6 \text{AddCredit}_j \\ & + \beta_7 \text{BankQlf}_j + \beta_8 \text{OfferType}_j + \gamma_1' \text{BondType}_j + \gamma_2' \text{Rating}_j \\ & + \gamma_3' \text{Proceeds}_j + \eta' \text{State}_j + u_{j,t}\end{aligned} \tag{3}$$

Transparency Shock:

- SEC Rules G-15, G-30, FINRA Rule 2232 (May 2018).
- Significant reduction in markups post-policy change.
- National underwriters unable to compensate with higher spreads.

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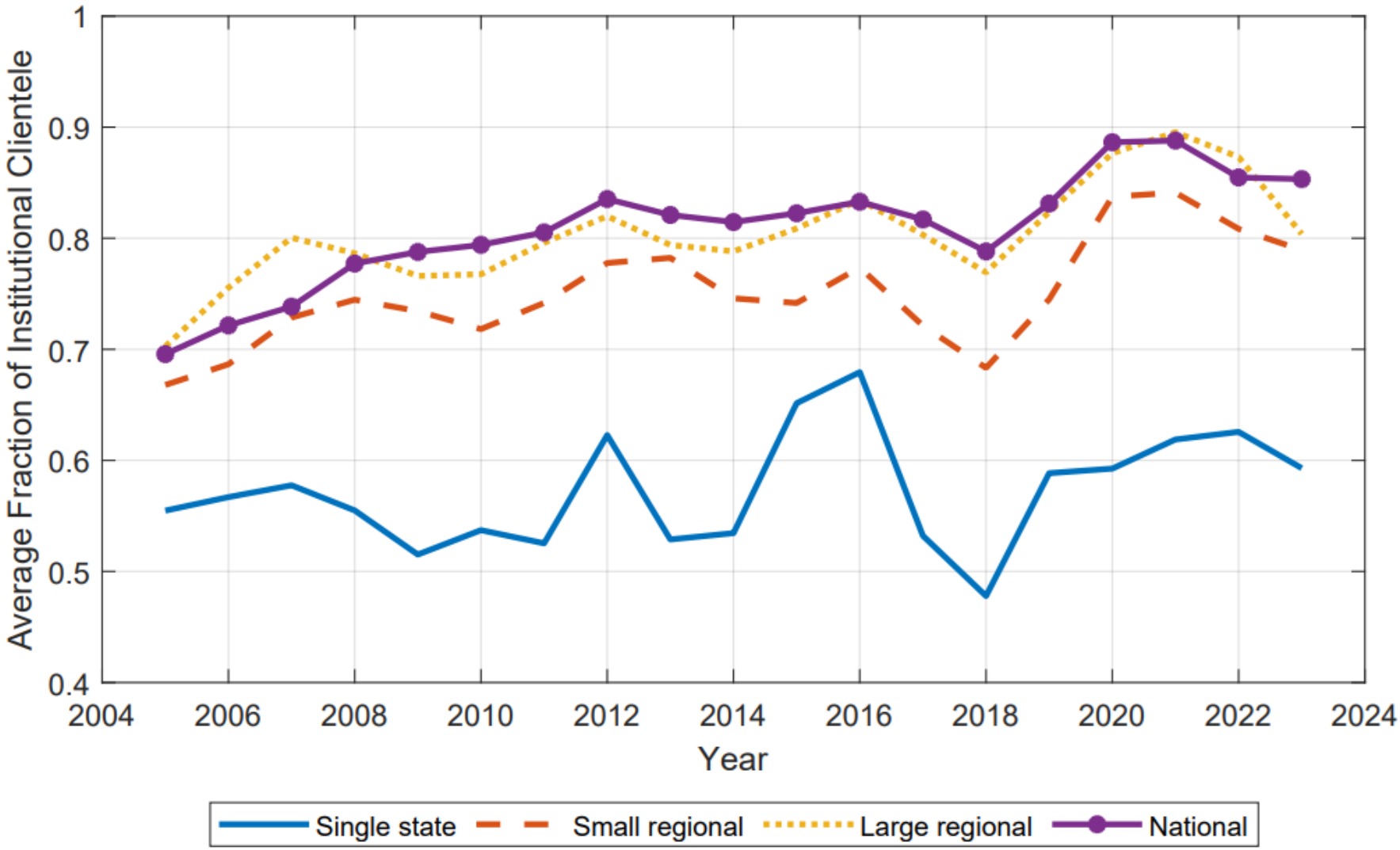
Panel A: Primary Market Markup %

	All Bonds	GO Bonds	Issue $100m+	GO & $100m+
National	0.012***	0.023***	0.028***	0.045***
	(4.78)	(6.97)	(4.14)	(3.17)
National x Post Markup Rule	-0.041***	-0.055***	-0.037***	-0.041**
	(-10.77)	(-10.33)	(-4.42)	(-2.55)
Bond Controls	Yes	Yes	Yes	Yes
Proceeds Dummies	Yes	Yes	Yes	Yes
Ratings Dummies	Yes	Yes	Yes	Yes
State and Year FE	Yes	Yes	Yes	Yes
Adjusted R^2	0.114	0.106	0.063	0.064
Observations	1,705,648	1,006,900	192,744	59,501

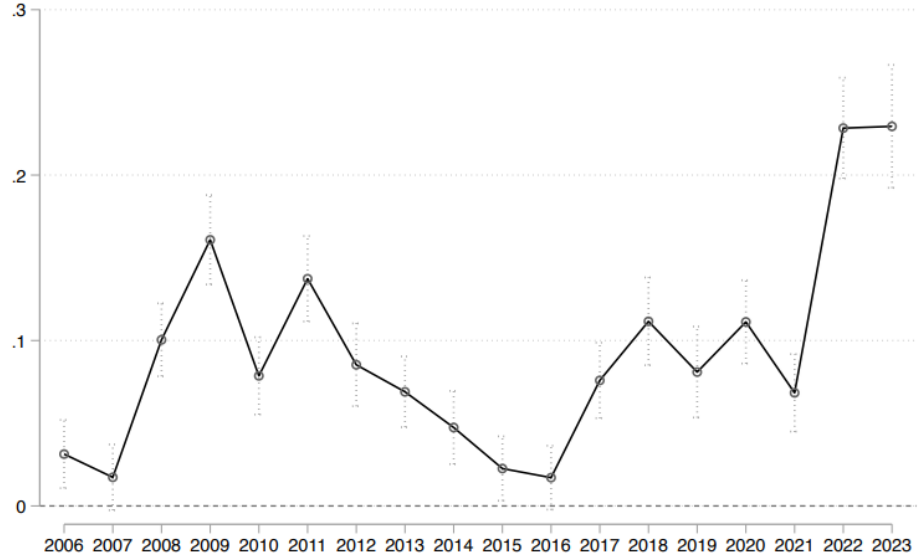
Panel B: Underwriting Spreads %

	All Bonds	GO Bonds	Issue $100m+	GO & $100m+
National	0.004	0.032***	-0.021***	-0.034**
	(1.16)	(6.67)	(-3.48)	(-2.17)
National x Post Markup Rule	-0.047***	-0.083***	-0.010	-0.043
	(-6.92)	(-9.01)	(-0.52)	(-0.65)
Bond Controls	Yes	Yes	Yes	Yes
Proceeds Dummies	Yes	Yes	Yes	Yes
Ratings Dummies	Yes	Yes	Yes	Yes
State and Year FE	Yes	Yes	Yes	Yes
Adjusted R^2	0.272	0.322	0.103	0.056
Observations	105,002	56,250	11,006	3,062

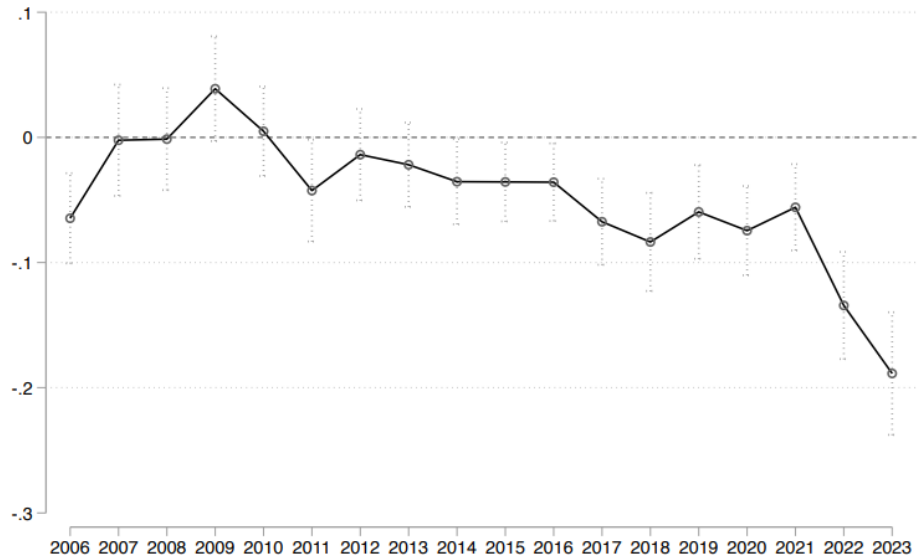
Share of Institutional Participation



Underwriting Spreads



Panel A: Year Fixed Effects



Panel B: National x Year Fixed Effects

Refining the Green (2007) Model

Introduction to Declining Profitability

Model Ingredients:

- Increased investor sophistication reduces underwriter profitability.
- Institutional investors and greater market transparency.

Model Structure:

- Two classes of investors: informed and uninformed.
- Investor becomes informed if benefits exceed costs.

Equations:

$$\begin{aligned} y_i^U &= x_i\beta^U + \epsilon_i^U, \\ y_i^I &= x_i\beta^I + \epsilon_i^I. \end{aligned} \tag{4}$$

$$y_i = \begin{cases} y_i^U & \text{if } z_i^* < 0 \\ y_i^I & \text{if } z_i^* \geq 0 \end{cases} \tag{5}$$

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$$y_i = \begin{cases} y_i^U & \text{if } z_i^* < 0 \\ y_i^I & \text{if } z_i^* \geq 0 \end{cases} \tag{5}$$

Introduction to Declining Profitability

Model Ingredients:

- Increased investor sophistication reduces underwriter profitability.
- Institutional investors and greater market transparency.

Model Structure:

- Two classes of investors: informed and uninformed.
- Investor becomes informed if benefits exceed costs.

Equations:

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Time Series Results

Proportion of Uninformed Trades:

- Steady decrease from 55.5% in 2006-2007 to 25.2% in 2022-2023.

Markups for Uninformed Investors:

- Decrease from 152 bps in 2008-2009 to 96 bps in 2023.
- Increased proportion of informed traders.

National Underwriters:

- Less likely to trade with uninformed investors over time.
- Lower markups on uninformed trades compared to regional underwriters.

Tradeoff in Profit Sources:

- Markups vs. underwriting spreads.
- Decline in retail participation leads to lower markups.

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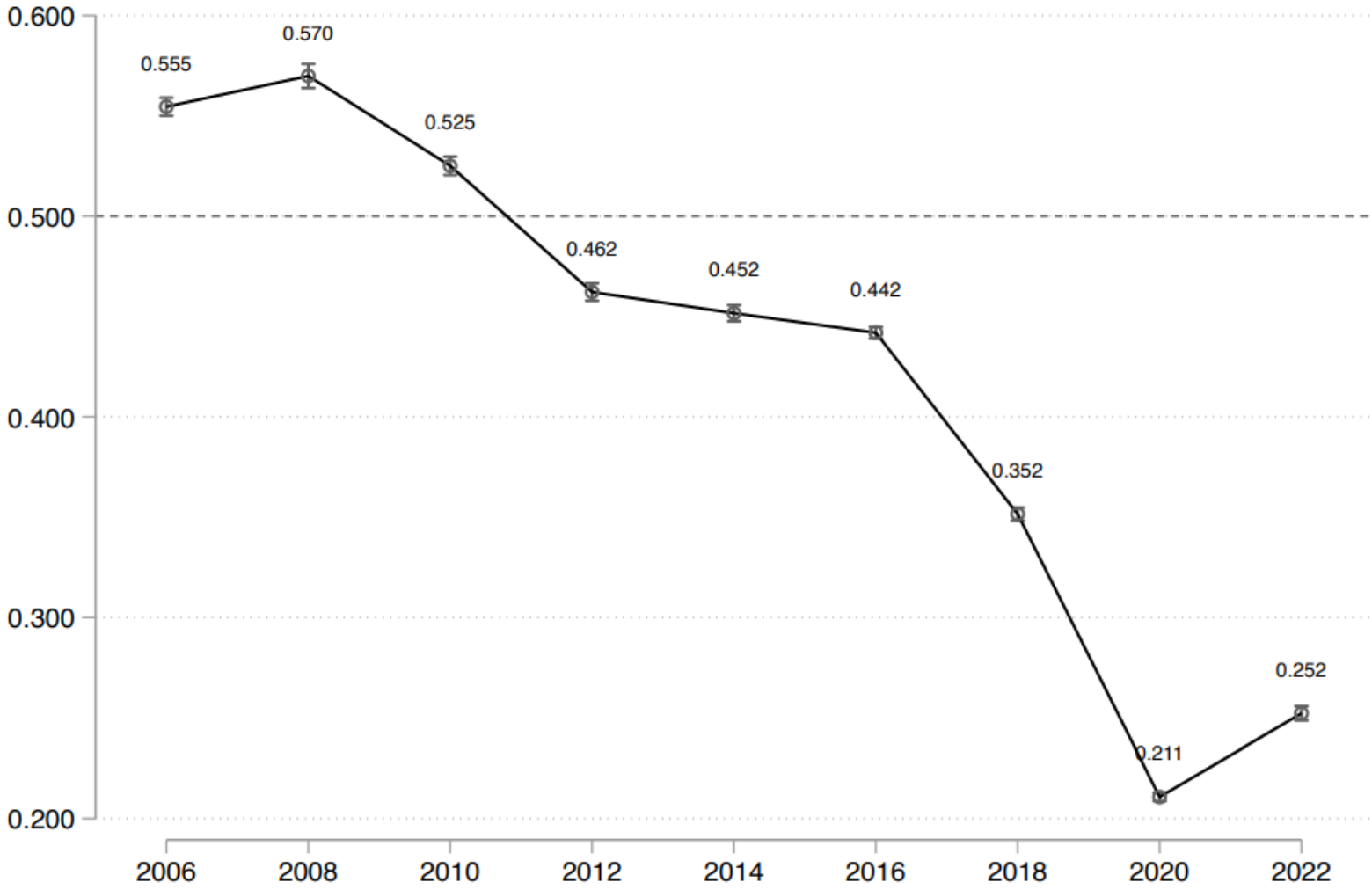
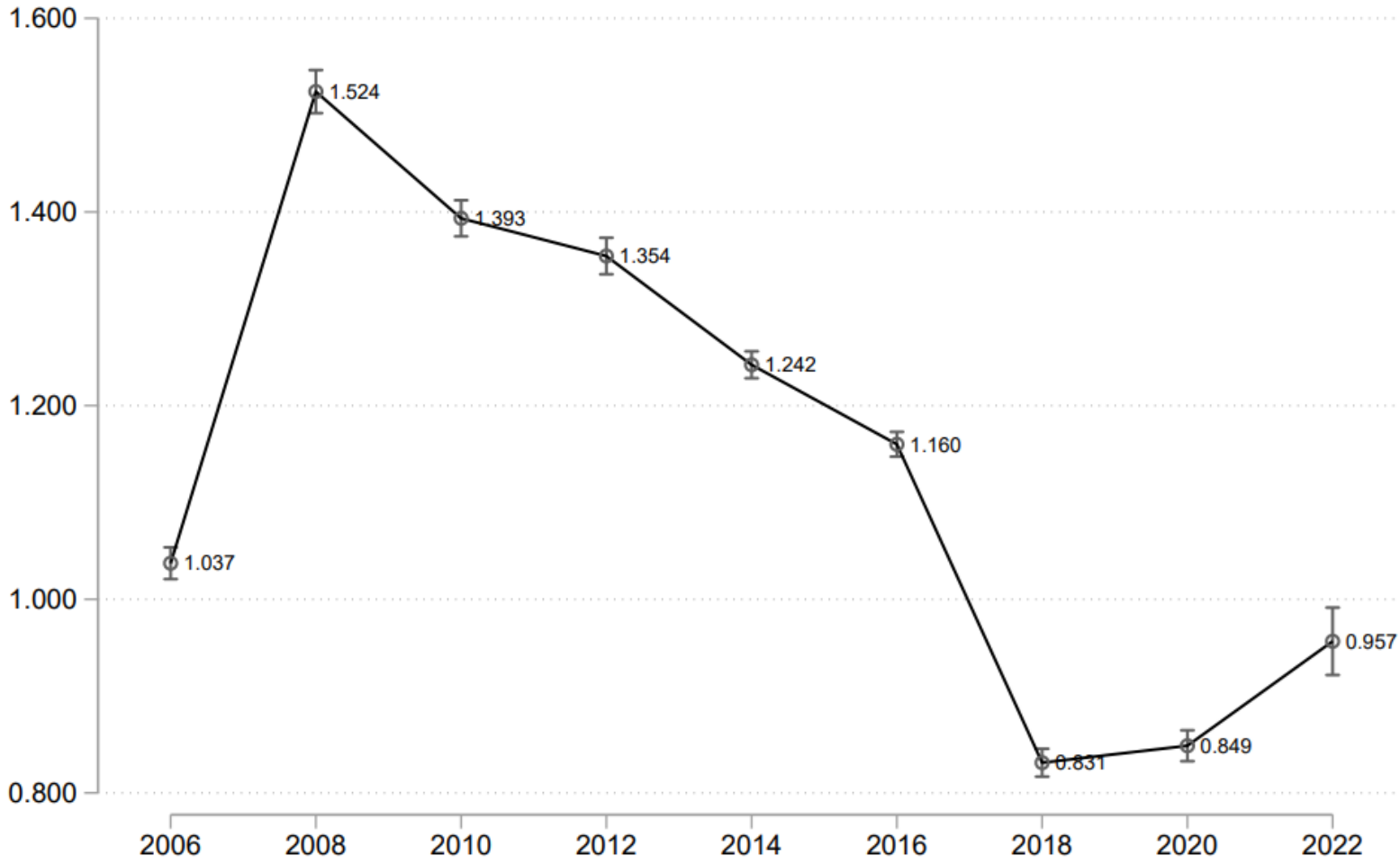
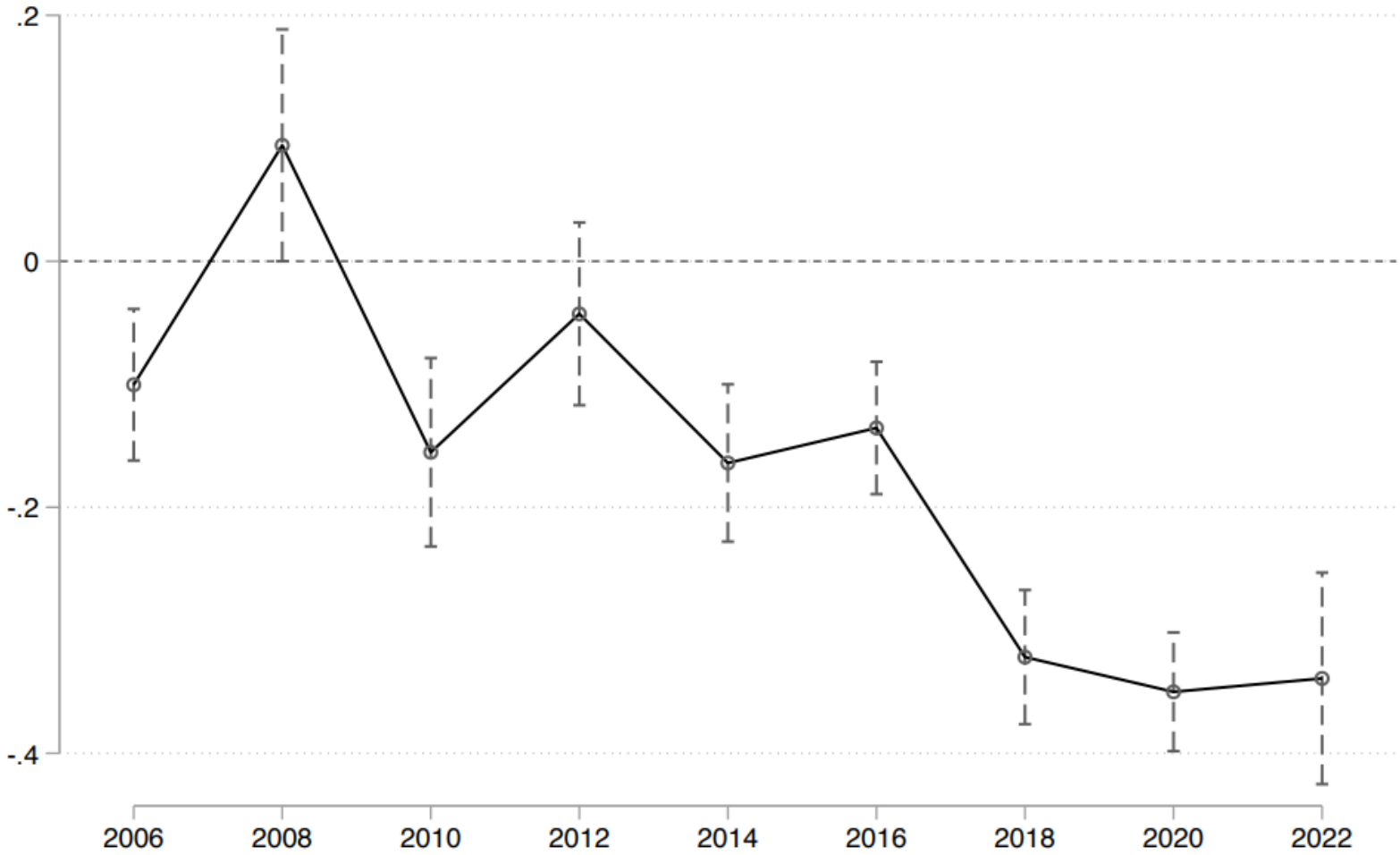
Probability of Uninformed Trade



Markups on Uninformed Trades



National Underwriter and P(Uninformed)



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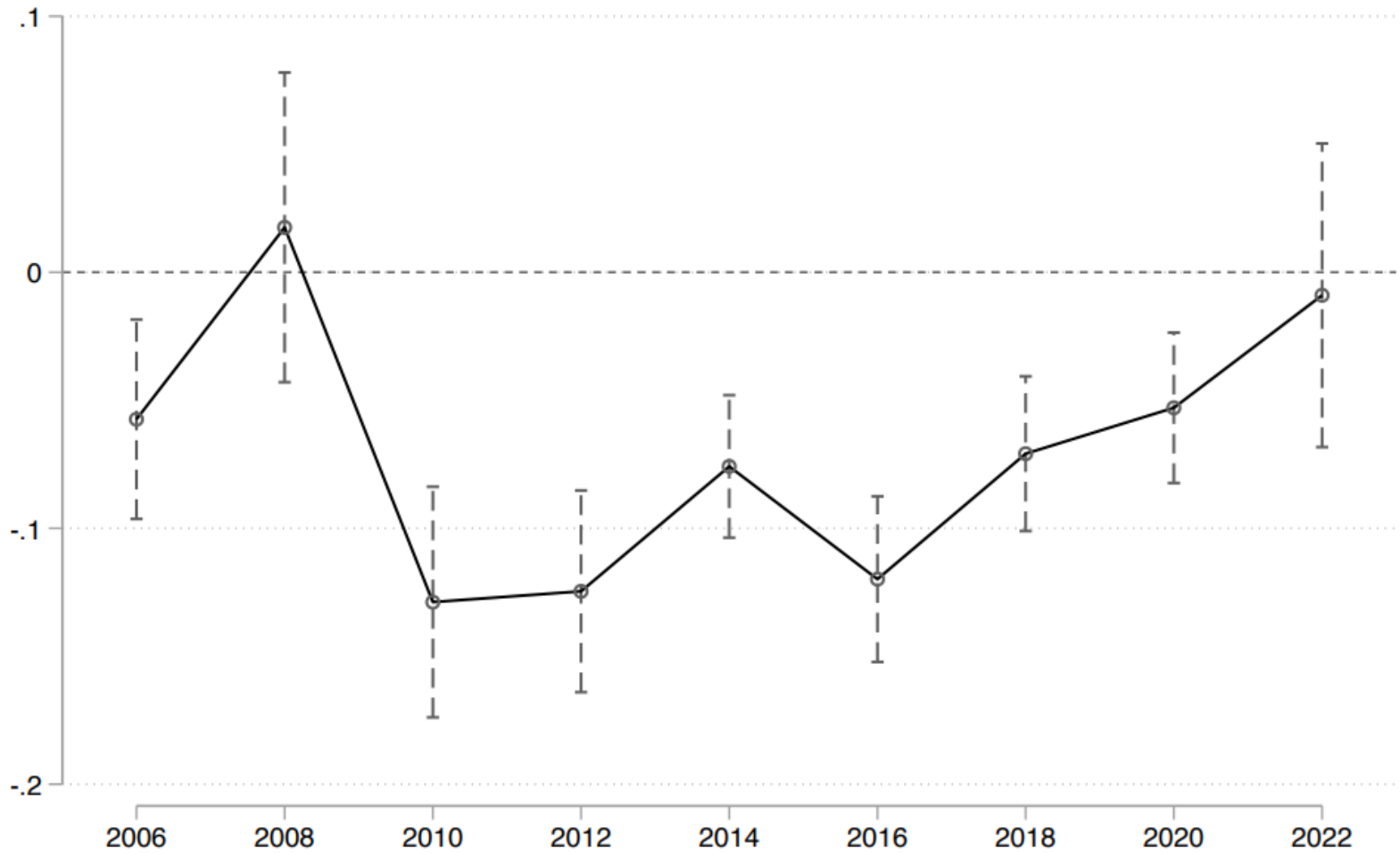
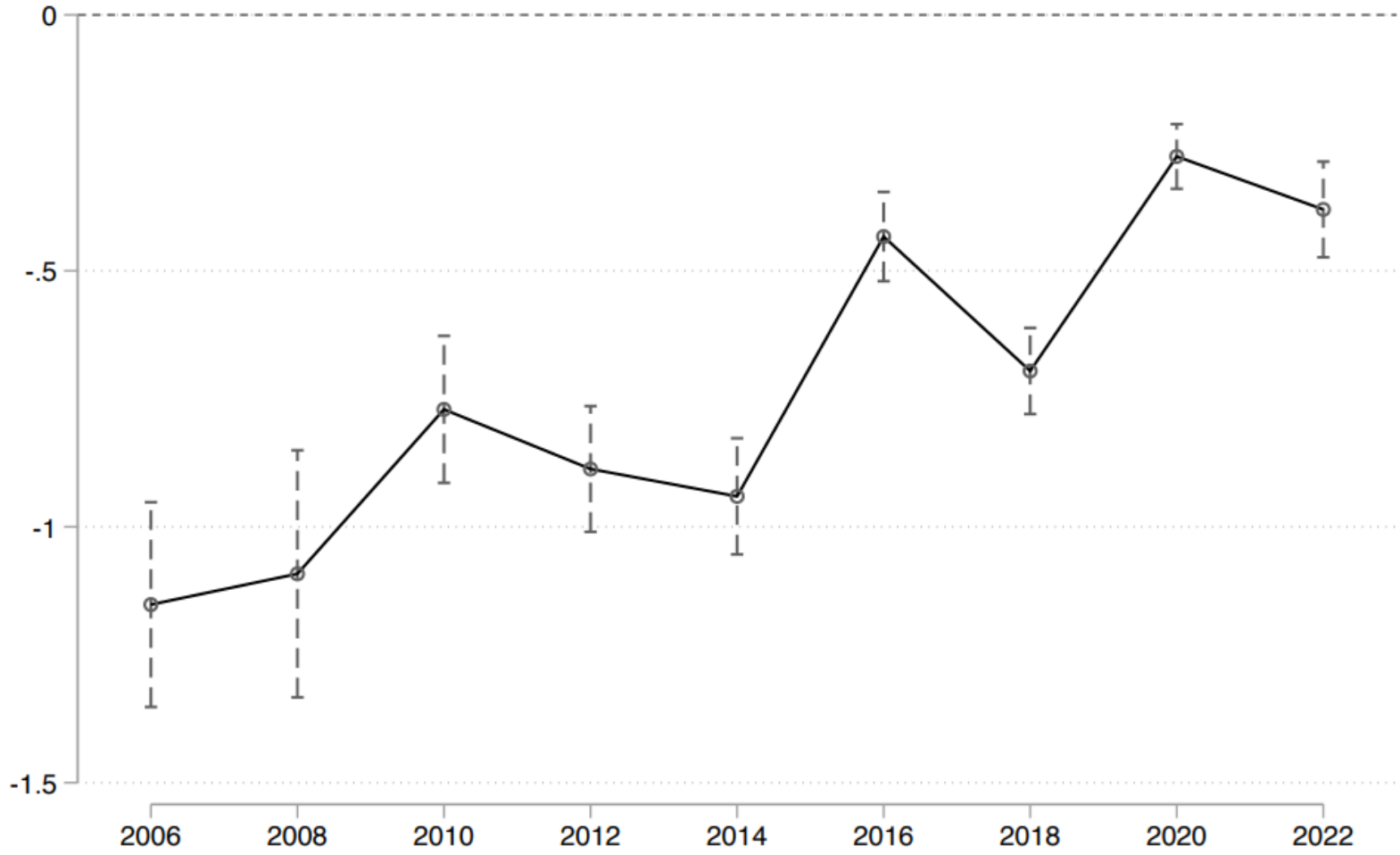


Nat'l Underwriter and Spreads(Uninformed)



Money Left on the Table (MLOT)

Year	Money Left On The Table			Underwriting Spread (bps)	MLOT in % of Total Profit
	Per Trade (bps)	Per Bond (bps of Par)	Per Issue (bps of Par)		
2006	129.79	51.89	14.89	98.05	13.41
2007	129.05	51.84	15.25	99.19	13.18
2008	179.72	73.18	28.39	91.25	20.94
2009	178.66	63.14	22.73	97.86	16.24
2010	173.38	67.61	20.47	95.53	15.45
2011	178.27	70.73	21.42	97.61	16.33
2012	172.41	64.98	17.06	91.02	13.93
2013	177.97	70.35	17.40	89.86	14.30
2014	160.39	63.60	15.91	86.42	13.81
2015	164.38	66.38	17.86	82.98	15.89
2016	155.98	62.89	15.61	82.09	14.15
2017	152.94	63.72	15.68	90.73	13.55
2018	118.48	44.08	10.48	100.50	9.55
2019	117.15	49.15	12.04	91.59	11.02
2020	113.50	52.98	10.20	94.01	8.80
2021	105.85	46.94	8.02	93.39	7.45
2022	110.61	36.83	8.06	102.53	6.22
2023	112.51	30.70	3.06	102.58	2.59
Average	157.64	59.13	14.79	93.11	12.37
Observations	3,518,135	359,840	125,926	125,926	125,926

Discussion and Implications

Decline in Underwriting Profits

Recent Exits:

- UBS exited in October 2023.
- Citigroup exited in December 2023.

Concerns:

- Impact on bond yields for municipal issuers.
- Increase in markups for municipal bond investors.

Competitive Market:

- Potential for other underwriters to fill the void.
- No expected increase in bond yields or markups.

Information Asymmetry:

- Importance of issuer-intermediary relationships.
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Legislation Impact:

- SB-13/19 prohibits contracts with financial companies boycotting Texas energy and firearms.
- Targeted banks temporarily exited Texas market.

Study Design:

- Use of Texas Senate Bills 13/19 as a shock.
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CEM Approach:

- Non-parametric estimate of average treatment effects.
- Matching based on bond type, offering type, rating, maturity, and bond size.
- Issuer-underwriter relationship from 2010-2019.

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- No significant yield differential among similar bonds.
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Non-Parametric Estimates on TX

Panel A: Pre-Policy Period

	Off. Yields	Markups
TX	1.228	0.090
Other States	1.238	0.091
Sample ATT	-0.010	-0.001
	(-1.40)	(-0.05)
Observations	36,116	36,116

Panel B: Policy Period

	Off. Yields	Markups
TX	1.878	0.063
Other States	1.869	0.050
Sample ATT	0.008	0.013*
	(0.95)	(1.74)
Observations	24,760	24,760

Panel C: After-Policy Period

	Off. Yields	Markups
TX	3.420	0.118
Other States	3.409	0.050
Sample ATT	0.011	0.067***
	(0.95)	(4.57)
Observations	16,980	16,980

Conclusion

Comprehensive Analysis (2005-2023):

- National underwriters dominate in quantity and value of deals.
- Declining markups for national underwriters over time.

Key Findings:

- Increased institutionalization and market transparency drive markup declines.
- Validation of Green (2007a,b) models.

Implications:

- Increased informed trading compresses underwriter markups.
- Underwriters need competitive pricing and operational efficiencies.

Future Research Directions:

- Track market dynamics and underwriter entry/exit.
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