

Winning at the Starting Line:
Underwriter Connections and Municipal Bond
Fund Performance

Bingkuan Cao

University of Nebraska-Lincoln

Zihan Ye

University of Tennessee

Russ Wermers

University of Maryland

Municipal Finance Conference 2024

Introduction

In this paper, we study the strategies of municipal bond mutual funds in primary muni markets, focusing on the role of fund-underwriter connections.

- Muni funds hold about 25% of the \$4 trillion municipal bond market.
- We do not know much about how these funds manage their portfolios and deliver returns.
- This paper focuses on the primary market activities of municipal bond mutual funds.

Introduction

Municipal bond market is an ideal laboratory to study mutual funds activities in primary market.

The primary market of municipal bonds is very active, while the secondary market is illiquid.

- Purchasing bonds from secondary market is costly.
- High transaction costs render most trading strategies unprofitable.

The average turnover of municipal bond funds is 27%.

- As a comparison, the average turnover for corporate bond funds (intermediate core bond funds) is 77% (174%).
- 45% of municipal bond funds' turnover is attributed to primary market allocation.

Success in primary market could largely determine the overall performance of a municipal bond fund.

Benefits of Primary Market Allocation

The benefits of acquiring municipal bonds in primary market are twofold.

Underpricing of newly issued municipal bonds

- The average underpricing of large municipal bond issues is 34bps.

Savings of transaction costs in secondary market

- Harris and Piwovar (2006) document that effective spreads in municipal bonds average about 2% of the price for retail-size trades of \$20,000 and about 1% for institutional-size trades of \$200,000.

Municipal Bonds Primary Market (2005-2020)

	Small (≤ 0.5 \$M)	Medium	Large (≥ 2 \$M)
# bonds	1,041,785	672,758	517,117
Offering amount (\$M)	0.22	1.03	13.21
Maturity (years)	8.03	9.91	12.89
Rating	AA	AA	AA
# underwriters	1.38	1.77	2.94
underpricing	6.29	22.45	33.74
MF participation	6147	29494	117801
MF ownership	0.87	0.75	0.57

Measure of Underpricing

In municipal primary market, underwriters could take a significant amount of new issues as inventory and sell them later in secondary market.

- The sale could last as long as 14 days after issuance.
- Underwriters of municipal bonds have more power.
 - Underwriters influence offering price and allocation.
 - Underwriters can discriminate investors by offering them different prices.
- Thus, the first-day return is not suitable for municipal bonds to measure underpricing.

Measure of Underpricing

In this paper, we follow Garrett (2024) and measure raw return as:

$$Ret_{i,t+\bar{n}}^B = \frac{\bar{P}_{i,t+\bar{n}} - OP_{i,t}}{OP_{i,t}}$$

where $\bar{P}_{i,t+\bar{n}}$ is the average daily transaction price from 1th day to 30th day after issuance (i.e., $1 \leq n \leq 30$).

Next, we measure underpricing as the benchmark-adjusted raw returns:

$$UP_i = Ret_{i,t+\bar{n}}^B - Ret_{i,t+\bar{n}}^I$$

where $Ret_{i,t+\bar{n}}^I$ is return of the rating and maturity matched ICE BofA index.

Role of Fund-Underwriter Connection

More access to equity/corporate bond primary market allocation

- repeat primary market participants
 - Benveniste and Spindt (1989), Binay, Gatchev, and Pirinsky (2007)
- more business in secondary market
 - Reuter (2006), Nimalendran, Ritter, and Zhang (2007), Nikolova, Wang, and Wu (2020)

Dumping ground hypothesis:

- Underwriters dump cold issues to their affiliated funds.
 - Ritter and Zhang (2007)

Measure of Fund-Underwriter Connection

Existing literature uses various measures of underwriter-investor relationship.

- Commissions paid to underwriters by equity funds (Reuter (2006), Nimalendran et al. (2007))
- Allocations from past IPOs (Binay et al. (2007))
- Bank-fund affiliation (Nagler and Ottonello (2017))
- Past trading relationship (Nikolova et al. (2020))
- Reported principals (Ottonello, Rizzo, and Zambrana (2022))

Measure of Fund-Underwriter Connection

Funds report their primary principals in N-SAR/N-CEN filing:

List the 10 entities acting as principals with whom Registrant did the largest amount of portfolio transactions in both the secondary market & in underwritten offerings during the current reporting period.

In Mergent, we observe underwriter identities of municipal bonds.

- We conduct a naming matching to link underwriters and principals.
- The connection is considered “**current**” during the reporting period.
- The connection is considered “**established**” in the next 12 months.

Municipal Bond Funds

A sample of 983 U.S. active municipal bond mutual funds from January 2000 to December 2019.

	Mean	Std	25%tile	Median	75%tile
TNA (million \$)	746	2,111	82	202	589
Age (years)	18.02	8.34	11.75	17.83	24.08
Net return (% per qtr)	1.05	2.26	0.08	1.02	2.16
BM-adj. return (% per qtr)	-0.14	1.27	-0.40	-0.11	0.18
5-Factor alpha (% per annum)	-0.50	1.75	-1.18	-0.49	0.18
Number of holdings	216	325	73	126	230
Num of new munis	8.55	18.25	1	4	9
Portfolio weight in munis (%)	98.78	2.75	98.07	99.58	100.00
Portfolio weight in new munis (%)	3.86	3.84	1.18	2.95	5.31
Num of connected new munis	5.19	13.00	0	2	5
Num of connections	10.71	20.44	0	3	12

Identification Strategy

A fund reported its primary principals in N-SAR/N-CEN filings

- **Between January 2015 and December 2015**
 - Primary Principal: BAML
 - Not in the list: JP Morgan

Portfolio Disclosure at 2016Q4

Holdings	Weight	1st month ret
New Bond A (underwriter: BAML)	0.40%	65bps
New Bond B (underwriter: JP Morgan)	0.31%	44bps

- Do funds invest more in connected bonds? ($w_A > w_B$)
 - Yes. Increased primary market allocation (extensive margin)
- Are connected bonds more profitable? ($ret_A^{1st} > ret_B^{1st}$)
 - Yes. More profitable allocation (intensive margin)

Connection and Fund Holdings

Dependant Var:	Portfolio Weight (%)			Position Value (\$ millions)		
	(1)	(2)	(3)	(4)	(5)	(6)
$\mathbf{1}_{\text{connected}}$	0.0869*** (0.0060)			1.1441*** (0.0909)		
$N_{\text{connections}}$		0.0304*** (0.0017)			0.3990*** (0.0281)	
$\mathbf{1}_{\text{lead connected}}$			0.0722*** (0.0047)			1.0160*** (0.0797)
$\ln(\text{maturity})$	0.0254*** (0.0052)	0.0260*** (0.0052)	0.0264*** (0.0052)	0.3466*** (0.0909)	0.3553*** (0.0906)	0.3561*** (0.0904)
$\mathbf{1}_{\text{GO}}$	0.0163*** (0.0053)	0.0210*** (0.0052)	0.0141*** (0.0053)	0.1754** (0.0835)	0.2368*** (0.0853)	0.1544* (0.0843)
$\mathbf{1}_{\text{negotiated}}$	-0.0676*** (0.0051)	-0.0591*** (0.0053)	-0.0698*** (0.0051)	-1.0325*** (0.1025)	-0.9201*** (0.1022)	-1.0566*** (0.1031)
$\mathbf{1}_{\text{callable}}$	0.0253*** (0.0061)	0.0191*** (0.0060)	0.0251*** (0.0061)	0.3663*** (0.1096)	0.2842*** (0.1070)	0.3668*** (0.1092)
$\mathbf{1}_{\text{insured}}$	-0.0703*** (0.0064)	-0.0607*** (0.0062)	-0.0739*** (0.0065)	-0.8768*** (0.0821)	-0.7517*** (0.0771)	-0.9171*** (0.0827)
Fund \times Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Bond rating FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	418,641	418,641	418,641	418,641	418,641	418,641
R^2	0.6527	0.6565	0.6520	0.3529	0.3611	0.3522

Connection and Underpricing

Dependant Var:	Underpricing (%)			Value Created (\$ Thousands)	
	(1)	(2)	(3)	(4)	(5)
Portfolio weight (%)	0.0103 (0.0163)				
$\mathbf{1}_{\text{connected}}$		0.1390*** (0.0163)		9.6939*** (1.4000)	
$N_{\text{connections}}$			0.0538*** (0.0048)		4.3050*** (0.4511)
$\ln(\text{maturity})$	0.2859*** (0.0259)	0.2786*** (0.0260)	0.2814*** (0.0259)	11.4543*** (1.5105)	11.5989*** (1.5341)
$\mathbf{1}_{\text{GO}}$	-0.0232 (0.0171)	-0.0073 (0.0172)	0.0056 (0.0174)	1.2534 (0.9878)	2.4489** (0.9766)
$\mathbf{1}_{\text{negotiated}}$	0.0204 (0.0146)	0.0317** (0.0148)	0.0534*** (0.0143)	-1.7897** (0.8976)	0.0711 (0.8474)
$\mathbf{1}_{\text{callable}}$	-0.0389* (0.0214)	-0.0318 (0.0212)	-0.0433** (0.0210)	-1.9496* (1.0995)	-2.8030** (1.1286)
$\mathbf{1}_{\text{insured}}$	0.2464*** (0.0251)	0.2654*** (0.0251)	0.2865*** (0.0256)	0.8160 (0.8255)	2.7097*** (0.8347)
Fund×Time FE	Yes	Yes	Yes	Yes	Yes
Bond rating FE	Yes	Yes	Yes	Yes	Yes
Observations	300,387	300,387	300,387	300,387	300,387
R ²	0.3203	0.3230	0.3273	0.1891	0.1975

Robustness

Fund-underwriter connection vs. issuer familiarity

- Exclude bonds whose issuer's other bonds are in the fund portfolio over the past 12 months.

Use a sample including only holdings of municipal bonds which are issued in the last few days before portfolio disclosure.

- We find consistent results that funds hold more connected bonds and these bonds are more underpriced.

Using fund reported holdings value to calculate bond returns.

- This approach allows us to have a complete sample of bond returns.

Matched Transactions

We match mutual fund holdings of newly issued bonds with MSRB transaction data.

- We successfully match 42% of fund positions with identical “dealer to customer” sales based on the exact par value traded.
- Over 90% of the matched transactions occur either on the offering date or the next trading day.
- The average markup funds pay is below 1bps.

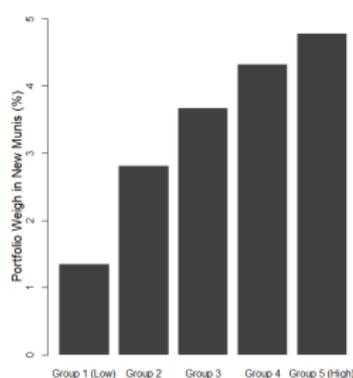
Matched Transactions

Dependant Var:	Overall Return (%)			Overall Profit (\$ Thousands)	
	(1)	(2)	(3)	(4)	(5)
Portfolio weight (%)	-0.0114 (0.0163)				
$\mathbf{1}_{\text{connected}}$		0.0599*** (0.0127)		4.6404*** (0.6590)	
$N_{\text{connections}}$			0.0256*** (0.0051)		2.7323*** (0.3604)
$\ln(\text{maturity})$	0.1810*** (0.0198)	0.1773*** (0.0197)	0.1775*** (0.0198)	6.3684*** (0.7663)	6.2916*** (0.7702)
$\mathbf{1}_{\text{GO}}$	0.0268* (0.0154)	0.0340** (0.0155)	0.0401** (0.0160)	1.5058* (0.8516)	2.3727*** (0.8644)
$\mathbf{1}_{\text{negotiated}}$	0.0041 (0.0127)	0.0086 (0.0129)	0.0130 (0.0125)	-2.1419** (0.8778)	-1.5622* (0.8318)
$\mathbf{1}_{\text{callable}}$	0.0765*** (0.0170)	0.0786*** (0.0170)	0.0745*** (0.0170)	1.9009** (0.9563)	1.5387 (0.9336)
$\mathbf{1}_{\text{insured}}$	0.1433*** (0.0243)	0.1541*** (0.0245)	0.1624*** (0.0248)	0.6188 (0.8841)	1.7955** (0.8483)
Fund×Time FE	Yes	Yes	Yes	Yes	Yes
Bond rating FE	Yes	Yes	Yes	Yes	Yes
Observations	118,781	118,781	118,781	118,781	118,781
R ²	0.4018	0.4023	0.4032	0.2818	0.2859

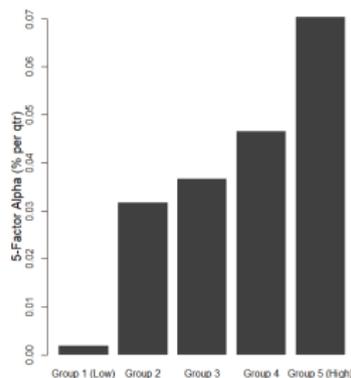
Connection and Fund Performance

We use the number of connection in a fund as a predictor for fund performance.

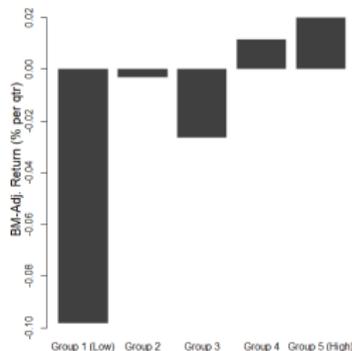
- At the end of each quarter, we sort funds into five groups based on the number of connections in each fund.



Weights in New Muni



5-Factor Alpha



BM-adj. Return

Double Sort: Connection vs. Fund Size

Size quintile	$N_{\text{connections}}$ quintile						
	Low	2	3	4	High	All	High-Low
Low	-0.252 (-5.4)	-0.240 (-5.76)	-0.112 (-2.59)	-0.053 (-1.02)	0.069 (1.13)	-0.105 (-2.9)	0.320 (4.06)
2	-0.124 (-3.26)	-0.136 (-3.23)	-0.053 (-1.16)	-0.076 (-1.47)	0.054 (0.82)	-0.064 (-1.57)	0.178 (2.86)
3	-0.066 (-1.41)	-0.052 (-1.28)	-0.026 (-0.46)	0.017 (0.31)	0.068 (1.09)	-0.012 (-0.24)	0.134 (3.5)
4	-0.020 (-0.32)	0.002 (0.03)	0.008 (0.14)	0.100 (1.62)	0.087 (1.55)	0.035 (0.63)	0.107 (2.87)
High	0.058 (0.86)	0.037 (0.5)	0.125 (1.83)	0.097 (1.45)	0.083 (1.91)	0.081 (1.37)	0.034 (0.77)
All	-0.081 (-1.89)	-0.058 (-1.24)	-0.011 (-0.23)	0.017 (0.33)	0.073 (1.33)	0.029 (0.69)	0.153 (4.18)
High-Low	0.310 (4.1)	0.276 (3.41)	0.237 (4.11)	0.150 (3.04)	0.014 (0.37)	0.186 (4.43)	

Conclusion

In the paper, we find that municipal bond funds use their connections with underwriters to get an advantage in the primary market.

- Fund-underwriter connection leads to more primary allocation.
- Fund-underwriter connection helps funds to get more profitable allocations.
- More connected funds performance better on average.