Relationship discounts in corporate bond trading[1]

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Motivation

Structural changes after the 2008 crisis made corporate bond markets more vulnerable to liquidity imbalances

- Growth of investment funds offering daily liquidity $\Rightarrow$ *demand for liquidity* $\uparrow$
- Constraints on dealer balance sheets $\Rightarrow$ *supply of liquidity* $\downarrow$

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Main research question:

What role do relationships play for dealers' liquidity provision?

- How best to quantify the heterogeneity in prices faced by different clients?
- When do relationships matter most (e.g. in stress times, balance sheet intensive trades)?
- Why do dealers care about relationships?

Contribution

We use a unique and rich transaction-level data set that identifies *both* counterparties of a trade...

This allows us to:

(1) **Study bilateral relationships in the dealer-to-client segment**

(2) **Analyse the drivers of relationship benefits**

- Liquidity provision by clients
- Keeping high-value clients as loyal customers
- Extracting information

Main results

We find that ...

Clients with stronger relationships receive consistently better prices

1. Top 1% clients enjoy 2/3 lower transaction costs than median client
2. Effect is particularly strong during COVID-19 turmoil

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Relationship discounts owe to two main drivers:

1. Discounts more pronounced for clients who provide **liquidity** to dealers
   $\Rightarrow$ Management of costly balance sheet space is a key consideration for dealers when providing relationship discounts
2. Relationship clients generate bulk of dealers' **profits** and so dealers have a strong incentive to keep **high-value** clients as loyal customers

Data

We employ a unique data set comprising:

- MiFID II corporate bond transaction data
  - **Clients identified via LEI** (not available in TRACE)
  - 52 dealers, 16K clients, 35K bonds
- Mid-quotes from MarketAxess (Composite+)
  - Proprietary pricing engine providing **pre-trade reference prices** to investors based on public and proprietary data
  - Used by sophisticated practitioners as an **indicator of "fair value"**
  - Observed **more frequently** than inter-dealer prices
- Sample period:
  - Pre-crisis: Jan 2018 - 28 Feb 2020
  - Crisis: 1 - 18 March 2020 (Dash-for-cash)

▷ Sample Stats

Composition of client volume

Sector	Share in %
Asset Manager	53.12
Bank	17.67
Hedge Fund	6.99
Broker	12.21
PFLDI	8.76
PTF	1.26

- Dealer-customer segment is where end-users trade with dealers
- It represents around **75% of overall corporate bond trading**

Main variables I

Transaction costs

$$TC = \log(P/P_b) \times D$$

- P - transaction price
- P_b - benchmark price: closest Market Axess price before the transaction
- D - trade-direction of the client ($+1$ for buy, -1 for sell)
- measured in basis points ($\times 10,000$)

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Mean transaction costs (basis points)

	pre-crisis	crisis
client buying	7	10
client selling	8	34

Main variables II

Relationships

$$Qrel_{dct} = \frac{\sum_{\tau=t-187}^{t-7} Q_{dc\tau}}{\sum_{k\in C}\sum_{\tau=t-187}^{t-7} Q_{dk\tau}}$$

C is the set of all dealer's clients over a past 180-days window
We measure *Qrel* based on the transactions of the dealer-client (dc) pair over a past 180-days window

$\Rightarrow$ *Qrel* captures, from a dealer's perspective, how important a particular client is in terms of its contribution to the dealer's overall trading volume

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Qrel distribution (measured in %)

	mean	std	1%	25%	50%	75%	99%
Qrel	1.4	3.5	0.0	0.1	0.3	1.1	18.3

▷ Concentration

Method: panel regressions with rich set of controls

Our rich data-set allows us to control for many observed and unobserved factors

$$TC_{bdct} = \gamma Qrel_{dct} + X_{bdct}\beta + 1'\mu + \epsilon_{bdct}$$ bond (b), dealer (d), client (c), time (t)

- Transaction cost: log-difference between transaction price & fair value

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  trade size, client-sell dummy, trade-is-matched dummy, trade-on-platform dummy, intra-day benchmark price change

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- Fixed-effects include:
  bond-month, dealer-month, client-month, industry-day

Relationship discounts in corporate bond trading are sizeable ...

Non-stress period (Jan 2018 - Feb 2020):

- Top relationship clients pay **5bps less** than the median client

$$TC_{bdct} = \gamma Qrel_{dct} + \dots$$
$$5bps \approx -\mathbf{27.9} \times [0.183 - 0.003]$$
$$= \gamma[Qrel(top\ 1\%) - Qrel(median)]$$

Qrel	**-27.86****
	(11.76)
match	−2.15***
	(0.51)
sell	−1.26
	(1.26)
venue	1.84**
	(0.71)
logQ	0.56***
	(0.06)
dt*r	0.02
	(0.03)
R^2	0.22
nobs	1,932,525
dealer × month	Yes
client × month	Yes
bond × month	Yes
industry × day	Yes

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- This is **67% reduction** relative to the average transaction cost

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- Limited capacity to manage inventory risk:
  - **7bps discount** on riskless matched trades
  - **29bps surcharge** for client sales

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Interim summary

The results so far show that...

1. there is significant heterogeneity in the prices faced by different clients when transacting in corporate bond markets
2. relationship clients get rewarded by discounts, which is valuable especially at times of stress
3. dealers factor in balance sheet constraints in the costs of liquidity provision

Why do dealers give relationship discounts?

We test three hypothesis that could explain why dealers give relationship discounts

Dealers value relationships with clients . . .

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- . . . to maintain loyalty of high-value clients and earn larger profits as a result of greater trading volumes
  (2) **"Focus on high-value clients"** (✓)

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- . . . to maintain loyalty of high-value clients and earn larger profits as a result of greater trading volumes
  (2) **"Focus on high-value clients"** (✓)
- . . . to learn private information from their order flow
  (3) **"Information extraction"** (✗)

Testing the liquidity provision hypothesis

Test in two ways:

1. Study if relationship clients receive better prices for unmatched trades
   - Dealer absorbs risk on balance sheet (notably for unmatched sales)

   $\Rightarrow$ Top clients able to conduct balance-sheet expensive trades more cheaply

   $\Rightarrow$ Advantage of 122bps for unmatched trades vs 44 bps for matched ones

   ▷ Results: Discounts for unmatched trades

2. Dealers give better prices to clients they can rely on to off-load inventory
   - Incentivize liquidity-providing clients to step in
   - Provides balance sheet relief for the dealer

Identifying liquidity providing clients

For each client sale that a dealer absorbs:
$\Rightarrow$ Identify those clients who subsequently bought the bond from the dealer on the same day (effectively taking the other side) ...

- Measure the liquidity provision by these clients as the total amount of purchases conducted in this way (over 180-days prior to the transaction)
- For each dealer at a given point in time: define liquidity clients as the top 1% clients according to this liquidity provision measure

Who are the liquidity-providing clients?

- Asset Managers + Brokers $>$ 90% of liquidity-providing clients
- Brokers' share in liquidity-providing clients is more than 3 times larger compared to their share in the overall population of clients

Sector	All Clients	Liquidity Clients
Asset Manager	53.12	50.10
Bank	17.67	2.20
Hedge Fund	6.99	2.35
Broker	12.21	40.02
PFLDI	8.76	4.64
PTF	1.26	0.69

Testing liquidity provision hypothesis

Run baseline regression with a dummy ι_{dct} for top liquidity-providing clients

$$TC_{bdct} = \gamma\, Qrel_{dct} + \delta\, Qrel_{dct} \times \iota_{dct} + \alpha\, \iota_{dct} + ...$$

- $\delta < 0$: liquidity-providing clients receive a larger discount than other relationship clients

Do dealers reward liquidity-providing clients?

Liquidity-providing clients enjoy higher relationship discounts

- Effect of a one unit increase in Qrel is twice as large if the client is a top liquidity provider
- $\gamma + \delta = 40$bps vs $\gamma = 22$bps

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$\Rightarrow$ **Liquidity** clients are especially rewarded during **stress** periods

- Help alleviate flow imbalances
- Enjoy 3-times larger discount compared to other relationship clients

	liquidity clients
Panel A: Pre-crisis	
Qrel (γ)	-22.46*
	(11.85)
Qrel $\times$ client-type (δ)	-17.54*
	(9.06)
$\gamma + \delta$	-40.00***
Panel B: Crisis	
Qrel (γ)	-62.49
	(37.89)
Qrel $\times$ client-type (δ)	-115.06***
	(36.82)
$\gamma + \delta$	-177.54***

Focus on high-value clients: Top relationship clients account for bulk of dealers' profits

Another motive for giving discounts is to reward high-value clients that contribute greatly to dealer profits

- Idea is to keep them as loyal customers ...
- "Top" clients are the top 1% clients according to Qrel

Client group	Total Profit (in £ m)	Total Volume (in £ bn)	Avg number of clients	Avg profit per client (in £ k)	Avg Vol per client (in £ m)
non-top	1,043.29	1,190.25	640	31.36	35.77
top	297.67	534.88	14	439.04	788.91

- Top 1% of clients account for **more than 20%** of total profits
- Avg profit made on top client is **14 times larger** compared to non-top client

Who are the main high-value clients?

- Asset Managers are the vast majority of high-value clients
- Banks' (Brokers') share is more than 800 (35) times smaller compared to the general population of clients

Sector	All Clients	High-value Clients
Asset Manager	53.12	87.58
Bank	17.67	0.02
Hedge Fund	6.99	1.62
Broker	12.21	0.34
PFLDI	8.76	9.96
PTF	1.26	0.48

Top high-value clients receive discounts at least on par with other relationship clients

$$TC_{bdct} = \gamma\, Qrel_{dct} + \delta\, Qrel_{dct} \times \iota_{dct} + \alpha\, \iota_{dct} + ...$$

ι_{dct}: a dummy for top 1% high-value clients in the past

	Pre-crisis	Crisis
Qrel (γ)	-29^{**}	-72^{*}
Qrel $\times$ client-type (δ)	-10	-84
$\gamma + \delta$	-38.2^{***}	-156.78^{*}

$\Rightarrow$ Some indication that high-value clients enjoy more advantageous pricing, but effect is statistically insignificant ...

Information extraction: Do dealers reward clients to gain an informational edge?

Dealers might also wish to build relationships with clients, whose order flow provides valuable trading signals

Measure the informativeness of trades in terms of subsequent price returns

- Classify clients as **informed** if their trades consistently **anticipate future returns**
- Focus on horizons of $h = 1, 30$ days
- $perf_{ct}$ is a volume-weighted directional h-period return following client c's trades (measured over past 180-day window)
- Scale by standard deviation to identify clients whose trades **consistently** anticipate price moves in the right direction

Who are the informed clients?

- Asset Managers are the majority of informed clients
- PTFs' share is several times larger compared to the general population, particularly at short horizons

	All Clients	Informed Clients	
sector		1 day	30 days
Asset Manager	53.12	73.02	76.08
Bank	17.67	3.33	5.59
Hedge Fund	6.99	4.85	2.04
Broker	12.21	2.46	0.41
PFLDI	8.76	7.85	9.74
PTF	1.26	8.48	6.14

Information extraction: No significant discounts for informed clients

Again we run the augmented baseline regression:

$$TC_{bdct} = \gamma\, Qrel_{dct} + \delta\, Qrel_{dct} \times \iota_{dct} + \alpha\, \iota_{dct} + ...$$

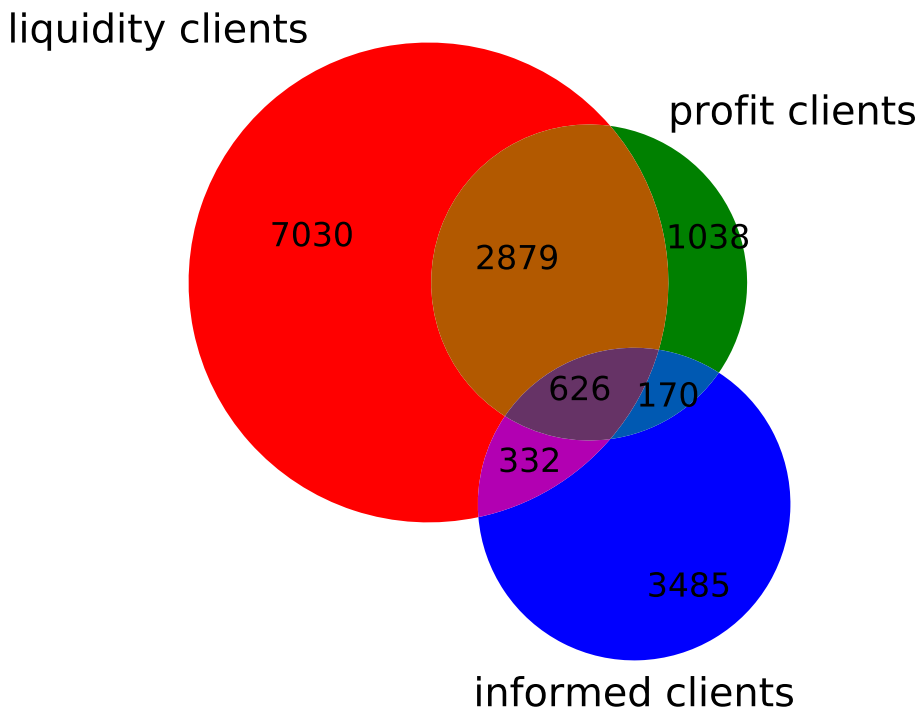
- ι_{dct}: a dummy for clients who performed best (from dealer's perspective) in anticipating price moves h periods ahead.

	Pre-crisis		Crisis	
	$h = 1$	$h = 30$	$h = 1$	$h = 30$
Qrel (γ)	-28^{**}	-28^{**}	-98^{***}	-101^{***}
Qrel $\times$ client-type (δ)	17	5	2	87
$\gamma + \delta$	-11	-23^{**}	-96	-14

$\Rightarrow$ No evidence of dealers rewarding more informed clients
$\Rightarrow$ To the contrary: positive, yet insignificant $\widehat{\delta}$ points to dealers discouraging trades with these types of clients

Overlap between profit clients, liquidity clients and informed clients

- Informed clients have less intersection with liquidity and profit clients
- We run a horse race including dummies for the three types of clients: the results are similar



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  1. Attract liquidity provision by customers that help alleviate dealers' balance sheet constraints
  2. Focus on keeping high-value clients as loyal customers

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- Two main mechanisms help explain why dealers value relationships:
  1. Attract liquidity provision by customers that help alleviate dealers' balance sheet constraints
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Policy implications and bigger picture:

- OTC structure generally proved resilient under stress
- This structure may be more sustainable in the presence of relationships as they help dealers operate with smaller inventories
- Structure has benefits for some, but not all, clients
  $\rightarrow$ explaining its persistence ...