Why do listed firms pay for market making in their own stock?

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Topic of paper

We study:

- Designated Market Makers (DMM) at Oslo Stock Exchange
- DMM (brokerage house/bank) hired by the firm against a fee.
- ensure a liquid secondary market in firm's stock

Main question in this paper:

- Why are firms willing to pay a cost to improve the secondary market liquidity of their issued shares?

Contribution:

- Earlier studies $\Rightarrow$ DMMs have a significant effect on market quality
- We look at DMMs from the *firm's perspective*: what determines the hiring choice?

The issue from the financial markets perspective

Current equity markets: No longer a market participant with a positive obligation to provide liquidity.

- US: 2008: The specialist no longer obliged to stand on the other side of every trade
- Most other markets: Moved towards pure limit order markets, market participants provide liquidity.

Simultaneously:

- Fragmentation of trading across exchanges
- High Frequency Trading(HFT): Automated trading algorithms.

One Argument: The High Frequency Traders are the New Market Makers, See e.g. Men, which shows an example of a HFT providing liquidity across two markets..
However: In crisis like situations HFT's *consume* liquidity rather than provide it.
Spectacular example: The US Flash Crash. [Kirilenko et al., 2011]

Main problem: No "Liquidity Provision of Last Resort"

Is continuous trading the optimal trading mechanism?
If not, possible fixes:

- Politicians: Transaction taxes
- Economists: Frequent auctions

Staying with continuous trading:

- Reintroduce participants with positive obligations to provide liquidity: "Designated Market Makers"

DMM contracts on European Limit Order Market

These markets faced the "no positive obligation for liquidity provision" problem much earlier than the US, when they introduced electronic limit order markets in the 1980's and 90's

- No market makers, liquidity supplied by patient traders
- Problem: low liquidity supply for *some* stocks (e.g. small-caps)

Response: Designated Market Makers (DMM)

- listed firms can hire a financial intermediary (DMM) to provide liquidity in its stock.
- *typical contract*:
  - practice market making at least 85% of the day
  - maximum bid/ask spread of 4%
  - ensure minimum number of shares available at best quotes

But:

- Why is it the listed firm that is paying?

DMM: Market Participant supplying liquidity

For example, Bessembinder et al. [2015] argue in a theoretical framework:
"The DMM contract increases trading volume, and enhances allocative efficiency, price discovery and firm value."
Theoretical framework: IPO situation.
Price firm can "get" in IPO is higher if the stock down the road is more liquid.
Firm hire a DMM to improve this future liquidity.

DMM: Market Participant supplying liquidity

Problem for a DMM: They are welfare improving (improve allocative efficiency)
They have little gains above competitive profits (earlier: monopoly gains)
They suffer costs from trading with informed traders.
Who is paying that cost?
Solution used in most markets: The issuing firm.
Why? Just that they have deep pockets?
No: This is our result. A firm *can* get benefits from a paying a DMM through effects on the corporate cash flows down the road.

Corporate finance view

Firm value: PV future cashflows X, discounted at cost of capital r:

$$\text{Firm Value} = V = \frac{X}{r}$$

Hire a DMM: Pay an annual fee:

$$V = \frac{X - \text{Annual cost of DMM}}{r}$$

Previous studies: Value of firm increases.

- This increase in V must come from either of
  - Cash flows
  - Cost of capital

New firm value calculation:

$$V = \frac{X - \text{Annual cost of DMM} + \text{Other cash flow consequences}}{r + \text{Change in cost of capital}}$$

Firm's perspective: Source of value of DMM?

Firm benefits from liquidity only when interacting with market

Potential direct effects on cash flow (X)

- Reduced equity issuance costs (fees) [Butler et.al, 2005]
- Lower costs of stock repurchases [Brockman et.al, 2008]
- Lower direct cost of debt issuance [Butler/Wan, 2010]

Potential effect on discount rate (r)

- Liquidity risk priced [e.g. Pastor/Stambaugh (2003), Acharya/Pedersen (2005)]
- DMM reduces liquidity risk loading $\Rightarrow$ lower r.
  But: this argument more from stock owner perspective...

Wedge between firm and owners: Transaction costs

Value of firm

$$V = \frac{X}{r}$$

Value of position to an individual owner:

$$\text{Value} = \frac{X}{r} \times \text{Fraction of firm owned} - \text{Transaction costs}$$

Improved liquidity following DMM

- Lower transaction costs.

Not clear why this is relevant for the firm

- short term traders benefit most
- why subsidize short term trading/speculation?

However: One group of important owners for whom the firm may care: Founders/venture capitalists.
May want to lower costs of exit at IPO lockup...

The data

Oslo Stock Exchange (OSE) – Electronic limit order market, main market for trading Norwegian stocks

- DMMs allowed at the OSE from October 2004
- look at DMM hirings from 2004 through 2010
- the DMM is paid by the firm to "maintain an orderly market"
  - little info on actual costs
  - Anand et.al [2009], average fee $\sim$ USD 40k per year (Sweden)
  - Norway $\sim$ USD 30k per year
- OSE monitors stocks with DMM to ensure that the DMM fulfills obligations

Describing DMM deals at the OSE

	2004	2005	2006	2007	2008	2009	2010	2011	2012
Total listed stocks at OSE	207	240	260	294	292	274	264	268	254
% stocks having DMM	3.3%	12.9%	16.5%	17.3%	19.8%	17.5%	21.9%	20.9%	21.2
Active DMM contracts	7	31	43	51	58	48	58	56	54
in firm size quartiles:									
1 (small)	0	5	12	19	25	32	15	17	24
2	2	16	19	14	18	11	18	15	17
3	3	5	8	14	11	5	13	15	11
4 (large)	2	5	4	4	4	0	12	9	2
New DMM contracts	7	24	17	20	16	16	21	6	5
in firm size quartiles:									
1 (small)	0	5	6	8	7	8	10	1	2
2	2	13	8	7	7	6	6	1	3
3	3	4	3	5	1	2	2	3	0
4 (large)	2	2	0	0	1	0	3	1	0

What is the effect on the market of hiring a DMM?

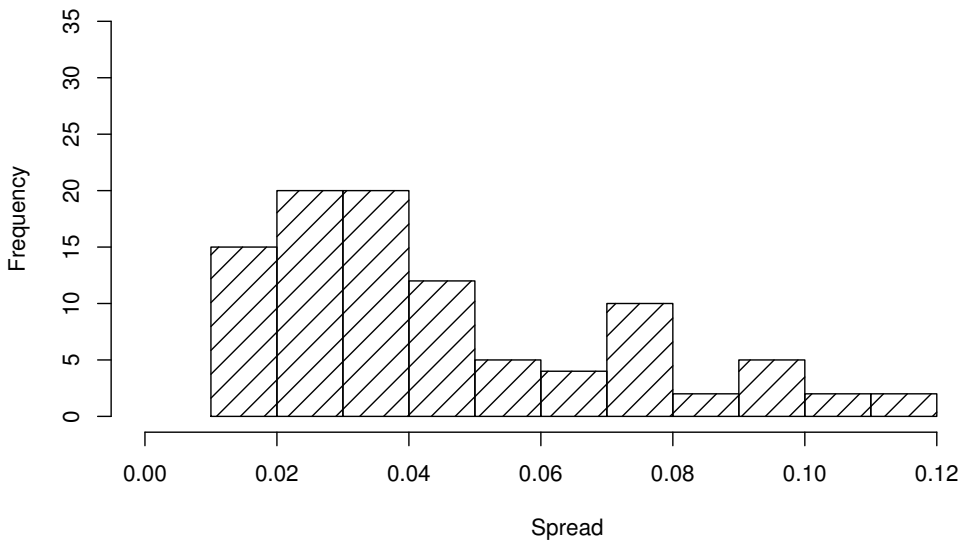
First, check that effect of DMM initiations is similar at the OSE as other markets

1. Does liquidity improve?
   - liquidity significantly improves (6 month/1 year)
   - turnover and #days traded increases
2. Does the market react?
   - about 1% excess 5 day event return around announcement

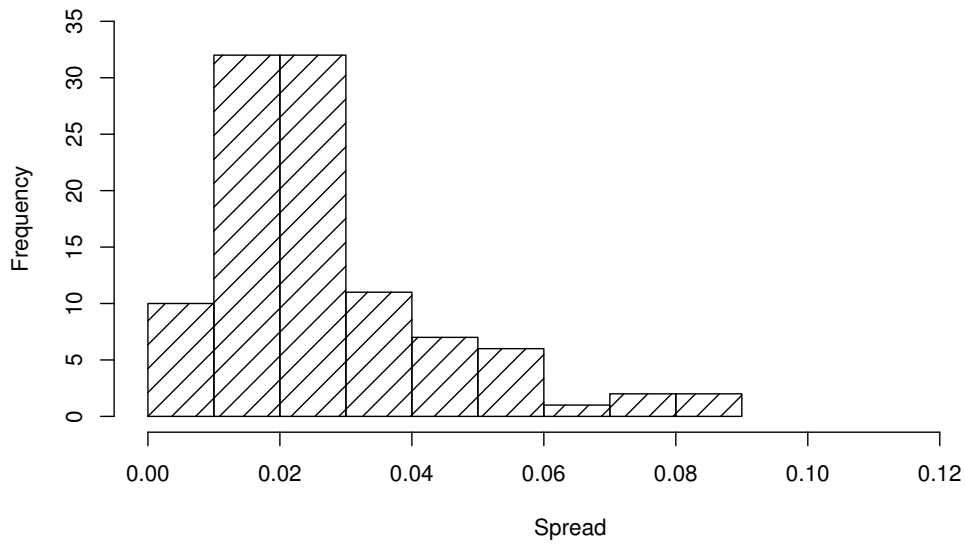
Similar results in our sample as other studies on DMMs for other markets.

Changes to average spread following DMM introduction

Year before



year after



Analyzing decision to hire DMM

What determines the decision to hire a DMM?

- Decision theoretic empirical analysis (Probit)
- Pr(Hire DMM)=f(likelihood of accessing market)

Determinants of the hiring decision:

- Likelihood of capital needs
  - ex-ante: growth potential (Tobin's Q)
  - ex post: actual stock issuance
- Likelihood of stock repurchase (cash distribution)
  - ex-ante: repurchase program announcements
  - ex-post: actual repurchases over next year
- Other variables
  - insider transactions (ex-post exit motivation)
  - $<$2 years since listing (ex-ante exit motivation)
  - Pre-DMM liquidity

Probit analysis: Ex-ante variables

	Dependent variable: Hire DMM			
	(1)	(2)	(3)	(4)
Liquidity (Rel.Spread)	−2.56	−11.78***		
	(2.72)	(4.12)		
Q	0.21***		0.21***	0.22***
	(0.06)		(0.06)	(0.06)
Sales Growth		0.03		
		(0.14)		
Repurchase Program	0.06	0.09	0.07	0.06
	(0.21)	(0.25)	(0.21)	(0.21)
Listed<2 Years	0.19	0.09	0.25	
	(0.18)	(0.25)	(0.17)	
Constant	−1.44***	−0.75***	−1.62***	−1.56***
	(0.20)	(0.26)	(0.12)	(0.11)
Observations	481	322	510	510

Probit analysis: Ex-post variables

	(1)	(2)	(3)
Liquidity (Rel.Spread)	-3.47		
	(2.84)		
Issue Equity	0.46^{***}	0.48^{***}	0.48^{***}
	(0.16)	(0.16)	(0.15)
Actual Repurchase	0.21	0.24	0.34^{**}
	(0.16)	(0.16)	(0.15)
Insider Sales	0.06^{**}	0.07^{***}	
	(0.02)	(0.02)	
Constant	-1.43^{***}	-1.68^{***}	-1.58^{***}
	(0.22)	(0.14)	(0.12)
Observations	462	490	547
Note:			*p<0.1; **p<0.05; ***p<0.01

Conclusion from the Probit analysis

Variables representing

- future capital needs (Q)
- actual SEO issues
- actual repurchases
- IPO lockup

all seem important for the decision to hire a DMM.

Illustrative calculation: Cost savings in SEO

The firm's decision to pay a cost to hire a DMM.
Can it be justified by the cost savings of a future SEO?
Some "back of the envelope calculations" (Using numbers from Norwegian Market)
Cost of issuing new equity $=$ # shares $\times$ underpricing per share
Typical share issue: 10% of firm value
Typical underpricing when issuing new shares

- Large (liquid) stocks: 5.3%
- Small (illiquid) stocks: 9.1%

Use this difference as estimate of the improved terms of issuance

Cost savings when issuing new equity

$$\begin{aligned} &\approx 0.10 \times \text{firm value} \times (9.1 - 5.3)\% \\ &= \text{NOK } 3.2 \text{ mill} \end{aligned}$$

Illustrative calculation: Cost savings in SEO ctd

$$\text{Cost savings when issuing new equity} = \text{NOK } 3.2 \text{ mill}$$

The *expected* cost of a new issue:
probability of a SEO in a given year (37%) times this:

$$\text{E[Cost savings when issuing new equity]} = \text{NOK } 1.2 \text{ mill}$$

Unfortunately, we do not have the actual costs for DMM contracts.
Exchange indicates NOK 300K as typical annual fee.

Conclusion

Why pay for a DMM?

- Secondary market liquidity matters *to the firm* because of the market's role when *new* capital is raised or distributed
- Firms pay to improve liquidity when they plan on accessing the stock market in the near future

Implications for asset pricing

- liquidity risk loading drops, liquidity risk transferred to DMM
- 2.5% lower expected return (annualized)

$\Rightarrow$ suggest an economically significant effect on cost of capital
$\Rightarrow$ likely to cover the cost of having a DMM

Speculations, Corporate Finance Research

Also corporate finance researchers need to watch what is going on in the structure of stock market trading.
For example: The recent *decline in new listings* (IPO's)

- Is is just the financial crisis?
- Or could the development in how trading is organized/regulated be part of the reason?

For example, Lawrence Harris (2011) (ex Chief Economist at SEC), talking about the US, concludes that

> *"issuers no longer have meaningful control over how their stocks trade"*

and actually suggests that

> *"the government could act to allow corporations to limit the markets at which their securities can trade, if they so wish"*

Hendrik Bessembinder, Jia Hao, and Kuncheng Zheng. Market making contracts, firm value, and the ipo decision. *Journal of Finance*, 70(5): 1997–2028, 2015.

Lawrence Harris. The homogenization of US Equity Trading. Working Paper, USC, September 2011.

Andrei A Kirilenko, Albert S Kyle, Mehrdad Samadi, and Tugkan Tuzun. The flash crash: The impact of high frequency trading on an electronic market. Working Paper, SSRN, May 2011.