

Why do firms pay for liquidity provision in limit order markets?

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Evolution towards electronic Limit Order Markets

- no market makers
- liquidity provided by orders from market participants (only)
- problem for “thinly” traded stocks

Appearance of Designated Market Makers (DMM)

- Listed firms *pay* a financial intermediary (DMM) to maintain an orderly market in the firms stock.

Question of this paper:

Why are listed firms willing to pay for improving the market liquidity of their stock?

Why is this not an obvious question?

Prior research: When firms hire a DMM, *liquidity improves*.

- ..but that is what the DMM is paid to do.
- **typical contract** \Rightarrow practice market making in a minimum of *85% market days*, maximum bid/ask spread of *4%* and minimum *X shares/lots at quotes*

This study: From a *corporate finance perspective*, why would a listed firm choose to *pay* for improving secondary market liquidity of their stocks?

- Firm *already* paid cost of becoming listed, raising capital and making the stock available to investors.
- *Why pay more?*

Stock owners' perspective

- improved liquidity **increases stock value** (lower transaction costs and liquidity risk)
- however, not clear why this is relevant for the firm
 - why subsidize short term traders/owners?

Firm's perspective

- Market liquidity matters if listed firm plans to **interact directly** with the capital market.
 - **Raise additional capital** (issue more shares)
 - **Repurchase own shares** (excess cash distribution)

Two Strands:

- Market microstructure
- The interaction of liquidity and corporate finance

Studies of DMM initiations

- Venkataraman and Waisburd [2007] Paris Bourse
- Anand, Tangaard, Weaver [2008] – Stockholm
- Hengelbrock [2008] – Deutsche Börse
- Menkveld and Wang [2009] – EuroNext

Typically find

- Liquidity improves after the introduction of a DMM
- One or at the most two DMMs is enough, more does not improve liquidity (Menkveld and Wang, 2009)
- The stock market views the hiring of DMMs as a positive signal

An evolving literature studies the link between **stock market liquidity** and **corporate finance**.

Some examples:

- Easley/O'Hara [2004] – link **asymmetric information** (liquidity) to cost of capital
- Butler et al. [2005] – **issuing costs** lower for more liquid firms
- Lipson/Mortal [2009] – stock liquidity affects **capital structure**
- Brockman/Howe/Mortal [2008] – stock liquidity affects **payout decision** (dividends vs. repurchases)

Most of this literature treats liquidity as an *exogenous* property of the stock.

Our innovation relative to the literature

By hiring a DMM, liquidity can be *directly influenced* by the firm that has issued the stock.

We treat the hiring of Designated Market Makers as *endogenous decisions*, and ask:

- What influences this decision?

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

- DMM announcements/initiations from 2004 through 2009
 - 111 DMM contracts during period
 - little info on actual costs (Anand et.al [2009], USD 25k – 100k per year in Swedish data)
 - OSE tracks stocks with DMM to ensure that the DMM fulfills obligations
- also use data on repurchase programs, trades by corporate insiders in addition to accounting and price data.

Describing DMM deals at the OSE

Year	2004	2005	2006	2007	2008	2009
Total active stocks at OSE	207	238	258	292	286	261
Active DMM contracts	7	30	42	50	57	47
% of stocks with DMM	3%	13%	16%	17%	20%	18%
Firm sizes (mcap)						
of which in firm size quartile 1	0	4	11	17	24	32
of which in firm size quartile 2	2	16	19	15	18	9
of which in firm size quartile 3	3	5	8	14	11	6
of which in firm size quartile 4	2	5	4	4	4	0

Characteristics of DMM stocks vs. other stocks

(a) Liquidity and activity

Year	Spread (NOK)		Relative spread (%)		Amihud ILR		Turnover (monthly)	
	DMM	other	DMM	other	DMM	other	DMM	other
2004	0.7	2.2	3.1	2.9	0.41	0.42	0.53	1.23
2005	0.9	2.5	1.9	2.3	0.17	0.22	0.72	1.48
2006	0.8	2.5	2.2	2.3	0.20	0.23	0.69	1.28
2007	0.8	2.5	2.2	2.6	0.23	0.27	0.85	0.94
2008	0.7	2.8	3.4	4.3	0.54	0.86	0.53	0.88
2009	0.7	1.4	4.0	4.4	0.61	0.93	0.45	0.81

(b) Other characteristics

Year	Firm size (bill.NOK)		Tobin's Q		Equity issuers (fraction)		Repurch. (fraction)		Insider trades	
	DMM	other	DMM	other	DMM	other	DMM	other	DMM	other
2004	1.3	4.5	1.4	2.0	0.57	0.31	0.43	0.30	6.8	5.5
2005	1.4	5.9	3.3	2.4	0.27	0.38	0.50	0.33	9.1	5.9
2006	1.5	7.8	2.9	2.6	0.38	0.31	0.50	0.34	7.5	5.3
2007	1.5	10.2	3.2	2.6	0.36	0.33	0.40	0.31	4.5	5.6
2008	1.3	10.4	2.8	2.3	0.21	0.20	0.30	0.32	4.9	4.3
2009	0.6	4.6	1.2	1.1	0.40	0.28	0.30	0.26	-	-

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

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

- 1 Does liquidity improve?
- 2 Does the market react?

Does liquidity improve?

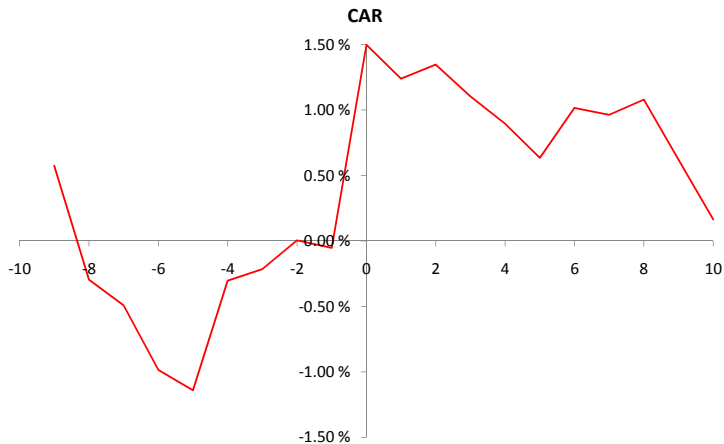
Liquidity measures before and after market maker deals

	<u>6 months</u>			<u>1 year</u>		
	before	after	Diff.	before	after	Diff.
Relative Spread	0.038	0.024	-0.014**	0.037	0.025	-0.012**
LOT	0.040	0.034	-0.006**	0.041	0.037	-0.004
Amihud ILR	0.568	0.265	-0.303**	0.524	0.299	-0.225**
Turnover (monthly)	0.045	0.053	0.008	0.045	0.060	0.015*

(** indicates significance at 1% level)

Market reaction to DMM introduction

Event study, centered at date of DMM introduction.



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

Effect of DMMs at the Oslo Stock Exchange similar to other markets

- ① Liquidity improves - DMMs do their job
- ② The market reacts positively - reduction in transaction costs/liquidity risk (Menkveld/Wang, 2009)

Analyzing decision to hire DMM

Question we look at:

- What affects firm's decision to hire DMM
- Decision theoretic empirical analysis (Logit/Probit).

Determinants of the decision:

- ① **Likelihood of raising capital (main hypothesis)**
 - ex-ante: growth potential (Tobin's Q)
 - ex post: stock issue within a year (dummy)
- ② **Likelihood of stock repurchases**
 - Repurchases within a year after DMM (dummy)
- ③ **Likelihood of trades by corporate insiders**
 - Number of insider transactions announced within a year after DMM
- ④ **Control variables**
 - liquidity - hire DMM if liquidity is low
 - firm size - large firms more liquid

Logit analysis, decision to hire DMM

Proxy for probability of raising capital: Tobin's Q (ex ante) or actual issuance (ex-post)

Variable	Ex-ante (Q)		Ex-post (actual issuance)	
	coeff	pvalue	coeff	pvalue
liquidity last year (spread)	-0.09	(0.08)	-0.14	(0.02)
ln(firm size)	-0.49	(0.00)	-0.47	(0.00)
Q last year	0.18	(0.00)	-	-
issue capital (within a year)	-	-	-0.33	(0.25)
repurchase (within a year)	0.60	(0.03)	0.55	(0.04)
insider trades (within a year)	0.02	(0.06)	0.03	(0.03)
constant	6.42	(0.00)	6.47	(0.00)
<i>n</i>	1070		1070	
Pseudo R^2	0.10		0.09	

Logit analysis, decision to hire DMM

Instead of size control, only look at small firms (Q1 and Q2)

Variable	Ex-ante (Q)		Ex-post (actual issuance)	
	coeff	pvalue	coeff	pvalue
liquidity last year (spread)	-0.07	(0.18)	-0.12	(0.05)
Q last year	0.25	(0.00)	-	-
issue capital within a year	-	-	-0.01	(0.96)
repurchase within a year	0.48	(0.12)	0.57	(0.07)
insider trades within a year	0.04	(0.04)	0.04	(0.02)
constant	-3.12	(0.00)	-2.64	(0.00)
<i>n</i>	472		472	
Pseudo R^2	0.08		0.05	

Our empirical results points to:

- secondary market liquidity matters *to the firm* because of the market's role when *new* capital is raised
- firms that hire a DMM are more likely to
 - raise additional capital
 - execute open market repurchases
- also, firms that initiate DMM contracts are more likely to experience trading by corporate insiders