Discussion: “Relationship Trading in OTC Markets”, Hendershott, Li, Livdan & Schürhoff

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Summary of the paper

The paper investigates the links between insurers’ trading network, trading activity and execution quality.

Main empirical findings:

- Insurer’s trading activity and trading network’s size share many explanatory characteristics (co-move with insurer’s type, size, leverage, traded bonds characteristics,... etc).
- Insurers’ trades execution quality increases with the network’s size

A model to rationalize these findings:

- Insurers optimally choose their networks.
- The larger their trading needs, the larger their optimal networks.
- Trading needs have a positive effect on execution quality (through a positive effect on the relationship value)
- Networks size has a negative effect on execution quality (through a negative effect on the relationship value)
- The first effect dominates
General comments

Very interesting paper!

- Easy to read.
- Novel empirical findings.
- Challenging for the OTC markets theory.

- The model explanation can be improved.
- I would like to better understand the main economic mechanism:
  trading needs $\rightarrow$ optimal network $\rightarrow$ execution quality

- Some assumptions should be discussed.
- Important because the model is taken seriously (structurally estimated).
The Model in a nutshell

- An insurer wants to alternatively buy (frequency $\eta$) or sell (frequency $\kappa$) because his private valuation for the asset is alternatively high or low.
- The insurer can trade with $N$ dealers. Each dealer is an intermediary between the insurer and the inter-dealer market.
- Each dealer access the inter-dealer market at speed $\lambda$. The first to access the market trades with the insurer.
- The higher $N$, the higher the access speed for the insurer, $\Lambda = \lambda N$, the lower the delay between the trading need and the trade.
- Whenever the asset is transferred to/from the insurer, trading surplus is generated.
- The insurer buys at price $P_b$ and sell at price $P_s$, determined by a Nash bargaining with the dealer.
Main economic mechanism

What happens when the trading needs frequency increases?

- Let’s look at the “first round effect”, when prices are kept fixed.
- When $\eta$ increases, the insurer has more often a high private valuation for the asset $\Rightarrow$ the insurer’s utility, $V$, increases.
- In addition, one can compute and show that (see appendix)

$$\frac{\partial^2 V}{\partial N \partial \eta} > 0$$

- Start with an equilibrium network, such that $\frac{\partial V}{\partial N} = 0$. With a positive shock on $\eta$, $\frac{\partial V}{\partial N}$ becomes positive, and the insurer wants to increase $N$ until it becomes nil again.

- This does not take into account how equilibrium prices respond (which is not obvious).
- My take is that the former mechanism dominates: $N^*$ increases with $\eta$.
- It might be interesting to understand why $\frac{\partial^2 V}{\partial N \partial \eta} > 0$. Why does the value of reducing the trading delay increases with $\eta$?
Equilibrium prices

Intuition: the buy price should decrease with $\eta$ and increase with $N$, because they have respectively a positive and a negative effect on the relationship value. When $N^*$ is optimally chosen, the buy price decrease (symmetrically for the sell price).

Actually, it is not obvious. Consider the effect of $\eta$ on prices:

- When $\eta$ increases, dealers are also better-off because they trade more often.
  - Both dealers and insurers are better-off.
- In the Nash bargaining, if the buyer has an increase in the gain from trade, while the seller does not, the seller extract a share of this higher gain via a higher price (and vice-versa if the seller has a higher gain from trade).
- Here, the dealer and the insurer have both larger gains from trade, resp $\Delta U$ and $\Delta V$. Prices could go both way.

$$\max_p (\Delta V - p)^{1-\alpha} (\Delta U + p)^\alpha \Rightarrow p = \alpha \Delta V - (1 - \alpha)\Delta U$$

- It would be interesting to investigate in more depth the price response.
Execution quality

- The bid-ask spread, $P_b - P_s$, decreases with $\eta$ (see Fig. 4).

- Is it because the former intuition works well in this case, or is it also ambiguous?

- As the average price level depends on $\eta$ as well. It may be interesting to also consider the relative bid-ask spread,

$$2 \frac{P_b - P_s}{P_b + P_s}$$
Competition among dealers and mark-ups

In the model, more competition among dealers imply greater execution speed but larger mark-ups.

• Instead, we may think that competition has a negative effect on mark-ups.
• Think of situation where the insurer can pay a fixed cost to obtain (Bertrand) price competition among dealers, while having repeated trading with one dealer is free but cannot yield the same price improvement (by assumption).
⇒ When trading needs are large enough, the insurer pays the cost for competitive dealers (larger network) which yields smaller mark-ups.
• This “model” might be too ad hoc but yields the same results with the opposite assumption.

The important question is the empirical validity of the assumption.

• Is dampening the search friction really the main purpose of the network, in the corporate bonds market?
• Is your hypothesis testable somehow?
• For instance, if $\lambda$ increases due to a technological shock what would happen to $N^*$, to execution quality...etc?
Conclusion

- Novel empirical findings and nice theory to interpret the results.

- The clarity of the main mechanisms could be improved.

- Additional testable model implications could help to strengthen the paper.

- A paper to read!
Appendix

• Continuation values:

\[ rV_s = C(1 - L) + \Lambda(V_{no} + P_s - K - V_s) \text{ with } rV_{no} = \eta(V_b - V_{no}) \]

\[ rV_b = \Lambda(V_o - P_b - K - V_b) \text{ with } rV_o = C + \kappa(V_s - V_o) \]

• first derivatives:

\[
\frac{\partial V_b}{\partial \eta} = \frac{\Lambda}{r + \Lambda} \frac{\partial V_o}{\partial \eta} = \frac{\Lambda}{r + \Lambda} \frac{\kappa}{r + \kappa} \frac{\partial V_s}{\partial \eta} = \frac{\Lambda}{r + \Lambda} \frac{\kappa}{r + \kappa} \frac{\Lambda}{r + \Lambda} \frac{\partial V_{no}}{\partial \eta}
\]

\[
= \frac{\Lambda}{r + \Lambda} \frac{\kappa}{r + \kappa} \left( \frac{\eta}{r + \eta} \frac{\partial V_b}{\partial \eta} + \frac{r}{(r + \eta)^2} V_b \right) > 0
\]

\[
\frac{\partial V_b}{\partial \Delta} = \frac{\Lambda}{r + \Lambda} \frac{\partial V_o}{\partial \Delta} + \frac{V_o - P_b - K - V_b}{r + \Delta}; \quad \frac{\partial V_o}{\partial \Delta} = \frac{\kappa}{r + \kappa} \frac{\partial V_s}{\partial \Delta}
\]

\[
\frac{\partial V_s}{\partial \Delta} = \frac{\Lambda}{r + \Lambda} \frac{\partial V_{no}}{\partial \Delta} + \frac{V_{no} + P_s - K - V_s}{r + \Delta}; \quad \frac{\partial V_{no}}{\partial \Delta} = \frac{\eta}{r + \eta} \frac{\partial V_b}{\partial \Delta}
\]

\[ \Rightarrow \frac{\partial V_b}{\partial \Delta} > 0, \quad \frac{\partial V_s}{\partial \Delta} > 0, \quad \frac{\partial V_o}{\partial \Delta} > 0, \quad \frac{\partial V_{no}}{\partial \Delta} > 0 \]
Appendix

- cross derivatives:

\[
\frac{\partial^2 V_b}{\partial \Delta \partial \eta} = \frac{\Lambda}{r + \Lambda} \frac{\partial^2 V_o}{\partial \Delta \partial \eta} + \frac{\partial V_o}{\partial \eta} - \frac{\partial V_b}{\partial \eta} + \frac{\partial^2 V_o}{\partial \Delta \partial \eta} + \frac{\partial^2 V_o}{\partial \Delta \partial \eta} > 0
\]

\[
\frac{\partial^2 V_o}{\partial \Delta \partial \eta} = \frac{\kappa}{r + \kappa} \frac{\partial^2 V_s}{\partial \Delta \partial \eta}
\]

\[
\frac{\partial^2 V_s}{\partial \Delta \partial \eta} = \frac{\Lambda}{r + \Lambda} \frac{\partial^2 V_{no}}{\partial \Delta \partial \eta} + \frac{\partial V_{no}}{\partial \eta} - \frac{\partial V_s}{\partial \eta} + \frac{\partial^2 V_{no}}{\partial \Delta \partial \eta} + \frac{\partial^2 V_{no}}{\partial \Delta \partial \eta} > 0
\]

\[
\Rightarrow \frac{\partial^2 V_b}{\partial \Delta \partial \eta} > 0, \quad \frac{\partial^2 V_s}{\partial \Delta \partial \eta} > 0, \quad \frac{\partial^2 V_o}{\partial \Delta \partial \eta} > 0, \quad \frac{\partial^2 V_{no}}{\partial \Delta \partial \eta} > 0,
\]