

Market Making Signals for CNX Nifty Futures

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Financial markets are faced with asymmetric information. Therefore, issues on autonomy, accountability, and transparency arise. Consequently, markets experience instabilities and inequilibrium in investment decisions. In this context, it is observed that market-making signals are necessary to counter the inefficiencies in the market. A survey was conducted among sub brokers operating in the NSE Futures and Options (NSE F&O) Market. Analysis of Variance is done on the responses provided by the sub brokers. The results indicate that time of submission of limit orders, frequency of submission of orders, tick size, number of ticks, and initial margin affect the trading volume. As such, they have a signaling effect in the market. Market participants can benefit through these signals.

Key words: Financial markets, market participants and market-making signals

1. Introduction

The Indian futures trading system suffers from inefficiencies (Prasanna Kumar and Supriya, 2007a and 2007b; Prasanna Kumar, 2008). There are several participants actively trading in the market. They are the clearing members, branch managers, dealers, brokers, and sub-brokers. Depending on valid order entries, the market participants execute orders setting in motion the clearing and settlement process. Derivatives apart from enabling leveraging also help market participants benefit from both a downswing as well as an upswing in the market. Therefore, one can benefit both in the bull and bear market situations. However, the pathetic situation is that due to asymmetric information, this opportunity is not available equally to all of the market participants. The retail investors are perhaps affected the most. In this context, understanding the signaling effects is a matter of concern. In addition, the market participants execute limit orders that influences the liquidity in the market. In this case, some other issues arise. These are market participants' trading behaviour and their strategies; second, the incentive problem to participate with the market trend; third, the relationship between the market strategies and valuation, order entry system, etc. fourth, the informational advantage gap between the market participants and the investors and finally, the efficiency of limit order book market. To analyze issues that arise due to asymmetric information, signaling devices or informational norms are helpful.

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2. Literature Review

In this context, studies like, the job market signaling (Spence, 1973 and 1974), the financial incentive signaling approach (Ross, 1977), the signaling hypothesis test on Harris and Raviv (1985) by Acharya (1988), and signaling in insurance market by Rothschild and Stiglitz (1976), are relevant. The 'lemon' effect on market making (Akerlof, 1970), 'learning process through the signaling instruments' suggested by Miller (2002), and the market making analysis with order flow (Schultz, 2003) are significant other contributions in this context.

Bondarenko and Sung (2003) have concluded in their paper that the market makers wish to trade against the market trend when the realized depth of the limit book is significantly lower than the critical value and vice versa. This value of the limit book depth is the conditional value where the expected profit to limit order is zero. Again, they have stated that the market order traders are better off when the limit book is certain. Chung et. al, (1999) have examined the role of the limit order traders' intraday competitiveness, in limit order placements and executions.

Chow et. al, (2002) have examined the various aspects of trading behaviour and found that both the institutional traders and individual traders supply liquidity in Taiwan stock exchange. The institutional traders do not trade on margin. Here, some of institutional traders trade on margin much less than the individual investor. Again, they have found that the liquidity and the settlement risk might be at odds affecting each other.

Naresh (2006) has found that in National Stock Exchange of India Ltd. (NSE), the market participants are satisfied with the existing systems like the investors' protection, position limits, contract on the new indices, and use of derivatives by mutual funds. Along with this, they are also not satisfied with the margining, cross-margining, minimum contract size, transaction tax, physical settlement, and eligibility requirement for the introduction of new derivatives.

Prasanna Kumar and Supriya (2005, 2007a and 2007b) have found that the signaling devices like efficient order entry system and efficient valuation are necessary to make a signaling equilibrium at NSE futures market. Through these informational norms, they have defined and measured the market activities like hedging, speculation, and arbitrage. It is observed that the market is not achieving the hedging, speculation and arbitrage positions efficiently. Therefore, futile trading and inconsistent profit maximization exist, suggesting the monopoly character of the market.

Considering all of the above literature, the present study has focused on the quest for signals at the Indian futures market (*CNX nifty*).

3. Methodology

This study relies on the responses to a field survey. The survey was carried out at Hubli-Dharwad city (Karnataka, India). This geographical area consists of twenty-one *NSE* traders. Of these, six are *NSE F&O* sub-brokers and fifteen investors who are actively trading at *NSE F&O*. A questionnaire was prepared and administered for this purpose. Analysis of variance is used to test the hypotheses framed in this research.

4. Results and Discussion

The survey conducted threw some interesting insights. About 50 per cent of the sub brokers opined that they preferred to submit the limit and market orders during the initial period of nifty trading. In the opinion of 50 per cent of the sub-brokers, the frequency of submission of orders affects the tick value. Moreover, 67 per cent of them expressed satisfaction at the current tick size. The number of ticks for placing limit and market orders is high during the initial period of nifty trading according to 67 per cent of the respondents. Again, 67 per cent of respondents opined that the initial margin is appropriate.

Considering these observations, it can be premised that they may have some signaling effect.

Analysis of variance (*ANOVA*) is used to understand the relationship between the dependent and independent variables. In this case, 'trading volume' is considered as the dependent variable. It signals market making and its functioning. The independent variables considered in the study are time of submission of limit orders, tick size, frequency of submission of orders, number of ticks, and the initial margin. The analysis is based on the responses of the sub brokers. Five distinct null hypotheses are framed and tested. The results are discussed below.

H_1 : There is no relationship between the time of submission of limit order and the trading volume. The *ANOVA* result is shown in Table 1.

Table 1: ANOVA: Time of submission of limit order

Source	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1.500	1	1.500	4.500	.101
Within Groups (error)	1.333	4	.333		

Total	2.833	5
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$$\hat{\eta}^2 = 0.595$$

The sub-brokers are classified into three groups based on the trading volume. The first group consists of sub-brokers reporting trading volume $\leq 20,00,000$ INR. This category is considered as poor trading performance. The second group consists of sub-brokers reporting trading volume 20,00,001 to 50,00,000 INR. This category is considered as fair trading performance. The third group consists of sub-brokers reporting trading volume 50,00,001 to 80,00,000 INR. This category is considered as good trading performance. Three time-periods for submission of limit order is considered. They are initial period, between period and last period. The result indicates that the submission of limit order is high during the initial period of nifty trading. It indicates that there is a significant relationship between the time of submission of limit order and the trading volume. About 60 per cent of the variance in trading volume is explained by the time of submission of limit order.

H₂: There is no significant relationship between the tick size and the trading volume. The result is shown in Table 2.

Table 2: ANOVA: Tick Size

Source	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1.333	1	1.333	3.556	.132
Within Groups(error)	1.500	4	.375		
Total	2.833	5			

$$\hat{\eta}^2 = 0.471$$

Results indicate there is a significant relationship between the tick size and the trading volume. About 47 per cent of the variance in trading volume is explained by the tick size.

H₃: There is no significant relationship between frequency of submission of orders and the trading volume. The result is shown in Table 3.

Table 3: ANOVA: frequency of submission of orders

Source	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1.500	1	1.500	4.500	.101
Within Groups (errors)	1.333	4	.333		
Total	2.833	5			

$$\hat{\eta}^2 = 0.530$$

Results indicate there is a significant relationship between the frequency of submission of orders and the trading volume. About 53 per cent of the variance in trading volume is explained by the frequency of submission of orders.

H₄: There is no significant relationship between number of ticks and the trading volume. The result is shown in Table 4.

Table 4: ANOVA: Number of ticks

Source	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1.333	1	1.333	3.556	.132
Within Groups (errors)	1.500	4	.375		
Total	2.833	5			

$$\hat{\eta}^2 = 0.471$$

Results indicate there is a significant relationship between the number of ticks and the trading volume. About 47 per cent of the variance in trading volume is explained by the number of ticks.

H₅: There is no significant relationship between initial margin and the trading volume. The result is shown in Table 5.

Table 5: ANOVA: Initial margin

Source	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	2.083	1	2.083	11.111	.029
Within Groups (errors)	.750	4	.188		
Total	2.833	5			

$$\hat{\eta}^2 = 0.735$$

Results indicate there is a significant relationship between the initial margin and the trading volume. About 74 per cent of the variance in trading volume is explained by the initial margin.

5. Conclusion

The survey results indicate that these variables significantly affect the trading volume at NSE F&O market. The efficacy of these variables as signals can be tested empirically in future research with a larger sample. Further, the

relationship between the market participants' trading strategy and these signals may be examined. Additionally, the impact of the market participants' trading behavior on market makings in the light of these market signals may also be examined.

Reference

Acharya, S 1988, 'A Generalised Econometric Model and Tests of Signaling Hypothesis with Two Discrete Signals', *The Journal of Finance* 53(2), pp. 413-429.

Akerlof, G A 1970, 'The Market for 'Lemons': Quality Uncertainty and the Market Mechanism', *The Quarterly Journal of Economics* 84(3), pp. 488-500.

Bondarenko, Oleg and Jaeyoung Sung 2003, 'Specialist Participation and Limit Orders', *Journal of Financial Markets* 6, pp. 539-571.

Chung, Kee H., Bonnie F. Van Ness and Robert A. Van Ness 1999, 'Limit Order and the Bid-Ask Spread', *www.ssrn.com*, SSRN ID 136725: 1-37, Published in the *Journal of Financial Economics* 53, pp. 255-287.

Chow, Edward H., Yuan Lin Hsu and Ivan Tso 2002, 'Liquidity Providers on an Electronic Order-Driven Market', *www.ssrn.com*, SSRN ID 302634, pp. 1-52.

Edwards, Franklin R. and Cindy W. Ma 1992, *Futures and Options*, McGraw-Hill Inc., Singapore.

Harris, Milton and Raviv A. 1985, 'A Sequential Signaling Model of Convertible Debt Call Policy', *Journal of Finance* 40(5), pp. 1263-81.

Hull, John C 2003, *Options, Futures and Other Derivatives*, Pearson Education (Singapore) Pvt. Ltd., Delhi.

Miller, Ross M 2002, 'Can Markets Learn to Avoid Bubbles?', *www.ssrn.com*, SSRN ID 299674, Forthcoming in the *Journal of Psychology and Financial Markets*, pp. 01-16.

Naresh, G 2006, 'Views of the Market Participants on Trading Regulations in the Derivatives Market', *www.ssrn.com*, SSRN ID 876877, pp. 1-18.

Prasanna Kumar, B 2005, *Signaling in Financial Markets: A Study on Indian Futures Market*, The Ph.D. thesis at Anna University, Chennai, 600 025, India.

Prasanna Kumar, B and Supriya M V 2005, 'Signaling In Indian Futures Market', *The ICFAI Journal of Applied Finance* 11(4), pp. 13-30.

Prasanna Kumar, B and Supriya M V 2007, 'S & P CNX Nifty Futures at NSE India: An Empirical Analysis', *Asia-Pacific Business Review* 3(1), pp. 67-90.

Prasanna Kumar, B and Supriya M V 2007, 'S & P CNX Nifty Futures at NSE India: An Empirical Analysis', *www.ssrn.com*, SSRN ID 1004238, pp. 1- 45.

Prasanna Kumar, B and Supriya M V 2007, 'Signaling in S & P CNX Futures Market at NSE, India', *Decision* 34(1), pp. 183-212.

Prasanna Kumar, B 2008, 'Hedging Effectiveness with CNX Bank Nifty and Nifty Futures: VECH (H_t) Approach', *Communicated*.

Ross Stephen A 1977, 'The Determination of Financial Structure: The Incentive -Signaling Approach', *The Bell Journal of Economics* 8(1), pp. 623-641.

Rothschild, Michael and Joseph Stiglitz 1976, 'Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information', *Quarterly Journal of Economics* 90(4), pp. 629-649.

Schultz, P 2003, 'Who makes Markets', *Journal of Financial Markets* 6, pp. 49-72.

Spence, M 1973, 'Job Market Signaling', *The Quarterly Journal of Economics* 87(3), pp. 355-374.

Spence, M 1974, 'Competitive and Optimal Responses to Signals: An Analysis of Efficiency and Distribution', *Journal of Economic Theory* 7, pp. 296-332.

Werner, Ingrid M 2003, 'NYSE order flow, Spreads and Information', *Journal of Financial Market* 6, pp. 309-335.