



American Finance Association

Determinants of Brokerage Commission Rates for Institutional Investors: A Note

Author(s): Robert O. Edmister and N. Subramanian

Source: *The Journal of Finance*, Vol. 37, No. 4 (Sep., 1982), pp. 1087-1093

Published by: Blackwell Publishing for the American Finance Association

Stable URL: <http://www.jstor.org/stable/2327769>

Accessed: 27/11/2009 08:20

Your use of the JSTOR archive indicates your acceptance of JSTOR's Terms and Conditions of Use, available at <http://www.jstor.org/page/info/about/policies/terms.jsp>. JSTOR's Terms and Conditions of Use provides, in part, that unless you have obtained prior permission, you may not download an entire issue of a journal or multiple copies of articles, and you may use content in the JSTOR archive only for your personal, non-commercial use.

Please contact the publisher regarding any further use of this work. Publisher contact information may be obtained at <http://www.jstor.org/action/showPublisher?publisherCode=black>.

Each copy of any part of a JSTOR transmission must contain the same copyright notice that appears on the screen or printed page of such transmission.

JSTOR is a not-for-profit service that helps scholars, researchers, and students discover, use, and build upon a wide range of content in a trusted digital archive. We use information technology and tools to increase productivity and facilitate new forms of scholarship. For more information about JSTOR, please contact support@jstor.org.



Blackwell Publishing and American Finance Association are collaborating with JSTOR to digitize, preserve and extend access to *The Journal of Finance*.

<http://www.jstor.org>

Determinants of Brokerage Commission Rates for Institutional Investors: A Note

ROBERT O. EDMISTER and N. SUBRAMANIAN*

FOLLOWING THE DEREGULATION OF brokerage commissions on 1 May 1975, institutional commission rates fell substantially, as shown by Ofer and Melnick [18], Edmister [7, 8], and Securities and Exchange Commission Reports [9].¹ The deregulation of rates cleared the way for discount brokerage firms which provide fewer services and charge lower rates than full-service firms, and permitted brokerage firms to charge different rates for buy and sell orders, for execution on different exchanges, for different stocks, and for different institutions. This study investigates the determinants of institutional commission rates, including variables not only studied by Ofer and Melnick [18] and Fabozzi [11], but also, characteristics of markets, stocks, and brokerage firms.

Commissions may depend not only on the broker and exchange but also on the combination of broker and exchange. Consequently, the individual and interactive effects of various markets and investors should be studied without potential biases caused by omitted variables or variable interactions. This analysis includes three exchanges, eight broker types, buy and sell transactions, and four transactions characteristics.

In the first section, the commission rate model is specified on the basis of previous research findings and the addition of determinants introduced by this study. In the second section, the commission data base development and statistical summary are presented. In the third section, results emphasizing intermarket differences, brokerage firm, and investor size differences for NYSE trades are presented. The final section contains interpretative and summary comments.

I. The Model

Previous research on commissions and bid-ask spreads suggests that the trade specific variables which should be included in the model are: share price, transaction size, and odd-lot orders. Share price has been found to be an important determinant of commissions in every previous study.² In addition to share price, transactions size is expected to be an important determinant of commission rates. Scale economies with respect to transaction size might be anticipated, although Edmister [7] reports that such scale economies declined after commission rates

* Associate Professor and Doctoral Candidate, College of Business and Management, University of Maryland, respectively.

¹ For details, see the Securities and Exchange Commission *Report to Congress* [22].

² See the pioneering work by Demsetz [6], theoretical and empirical analysis by West and Tinic [24], previous over-the-counter analyses by Benston and Hagerman [2, 3] and Tinic and West [21], institutional commission research by Edmister [7] and Ofer and Melnick [18], and recent over-the-counter research by Fabozzi [11].

were deregulated on 1 May 1975. Odd-lot transactions, defined operationally in this study to be trades of less than 100 shares, are expected to cost more to execute, because they are nonstandard denomination and are traditionally priced above round-lot-transactions. In summary, important transactions characteristics appear to be share price, transaction size, and odd-lot orders.

A potentially important security characteristic is liquidity, the relationship between short-run price changes and volume. Demsetz [6] notes that dealer spread is related to the number of shareholders, and in a later study, Edmister and Walkling [9] find that liquidity is inversely related to commissions. Liquidity is defined here as the dollar volume (in thousands) associated with a one percent change in price, as a means of measuring Demsetz's broad definition of transaction cost. To calculate the measure, a 3-month moving average of the ratio of daily trading volume to the absolute value of relative changes in price is computed. The daily liquidity measure is defined as:³

$$L_t = \frac{(V_t)(P_t)(100)P_t - P_{t-1}}{P_{t-1}}$$

L_t = liquidity on day t (percent)
 V_t = trading volume on day t
 P_t = closing price on day t

High stock liquidity should facilitate the immediate execution of stock trades, resulting in lower commissions. Consequently, a negative coefficient is expected for the liquidity variable.

Although transactions costs for organized exchanges and over-the-counter markets have been reported in previous studies, no intermarket analysis has been reported. Similarly, this is the first cross-sectional study by type of brokerage firms. Thus, the development of this part of the model proceeds from a more limited research basis than that of the transactions characteristics section.

The three exchange markets studied are the New York Stock Exchange (NYSE), the American Stock Exchange (ASE), and the Over-the-Counter market (OTC). A vast majority of the OTC trades involve securities which are on the NYSE and ASE, as might be expected for large institutional investors. Of the 176 issues traded by institutions (in this study) on the OTC, only 2 are unlisted. Lower commission rates may be one reason for trading listed stocks off the organized exchanges, a possibility tested here by explicitly recognizing the OTC market in listed issues. Brokerage firms are classified into eight categories, as defined by the Securities and Exchange Commission: national full line, regional and local full line, regional and local commission business, traders and market makers, underwriters, institutional, introducing, and other. National full line brokers are expected to be the highest rate firms because they provide the greatest service level. On the other hand, the regional and local commission business brokers are expected to charge a lower commission rate because they generally provide more limited services.

The negotiating strength of institutional investors is expected to depend upon

³ Liquidity effects are estimated with quarterly averages of daily liquidity values. (Infinite values of the liquidity measured caused by zero price changes are excluded.)

the size of the organization initiating the trade. Large institutions are expected to be more successful than their smaller counterparts bargaining for lower commission rates. Institutional size is measured in this study by bank asset size classified into four ranges: (1) \$250–500 million, (2) \$501–1,000 million, (3) \$1,001–5,000 million, and (4) over \$5,000 million. Discrete classification provides a method of examining the relation between size and other variables without specifying a functional form. Given the vast range in bank size and unknown possible interactions with other effects, this general approach is more likely to reveal the commission relationships than a more rigidly specified model.

Buy and sell transactions may require different levels of effort and, consequently, are charged different commission rates. Casual observation indicates that in most markets sellers undertake a more aggressive search effort to locate buyers than do buyers. Consequently, selling commissions are expected to be greater than buying commissions.

A multiplicative model of the Cobb-Douglas form has been applied successfully in previous studies by Benston and Hagerman [3] and Edmister [7]. This type of model provides for changes in the average commission rate caused by the explanatory variables. A multiplicative model has two desirable features compared to a linear model. First, heteroskedasticity usually is reduced, producing more efficient estimates. Second, scale economies are directly measurable and interpretable.

The final commission model is:⁴

$$C = b_0 P^{b_1} S^{b_2} V^{b_3} L^{b_4} BS^{b_5} O^{b_6} ILM_i^{d_i} BR_j^{g_j} BK_1^{h_1} T_n^{k_n} \quad \text{for all } i, j, l, n$$

where C = commission rate (percent of value traded)

P = price of the stock

S = size of the transaction

V = average trading volume

L = liquidity measure

BS = 10 if it is a "sell" order, 1 if it is a "buy" order

ODD = 10 if it is an odd-lot order (under 100 shares), 1 if it is not an odd-lot order

M_1 = 10 if transaction is on AMEX, 1 otherwise

M_2 = 10 if transaction is on OTC, 1 otherwise

$BR_1 - BR_7$ = dummy variables for eight types of brokerage houses
Each dummy takes on values of 10 or 1

$BK_1 - BK_3$ = bank size dummy representing three (of four possible) sizes (assets) of banks

Each dummy takes on values of 10 or 1

$T_1 - T_3$ = time trend (quarters in which transactions occurred)

Past studies have shown that commission rates declined after deregulation on 1 May 1975. To capture this trend a time variable (T), as measured by the quarter in which the transaction occurred, is included.

⁴ Characteristics left unclassified by dummy variables are (1) NYSE, (2) national full-line brokerage firms, (3) small banks and (4) fourth quarter of 1976. Dummy variables take on values of 1 or 10 before and 0 or 1 after logarithmic transformation.

II. Transactions Information

The transactions information analyzed in this study consists of 24,102 trades by 39 national bank trust departments during the last quarter of 1976, and the first three quarters of 1977. The transactions are sampled from those reported to the Comptroller of the Currency in accordance with Section 9.102(b) of Regulation 9 which requires that all transactions totalling over \$500,000 or 10,000 shares during a three month period be reported.⁵ The number of transactions per quarter ranges from 5,935 (for the fourth quarter of 1976) to 6,535 (for the first quarter of 1977). Approximately 39 institutions trading from four to five hundred different stocks are included in the study. The average price of the shares of stock traded is approximately \$40 in all quarters. It is interesting to note that although the average number of shares traded per transaction is about 4,000, the range of shares traded is quite large. The smallest trade over the four quarter period is for one share and the largest trade is for 402,000 shares.

Most stocks traded by institutional investors are listed on the New York Stock Exchange; of those traded over-the-counter, all but one are listed on the NYSE, as shown in Table I. Consequently, the coefficient for the OTC variable does not represent commissions for a different set of stocks but for the same set of stocks executed via a different channel. Furthermore, the pair-wise correlation coefficients between the transformed independent variables are generally small and statistically insignificant.

III. Results

Regression results are interpreted under the categories of exchange, investor, and brokerage firm.⁶ Given the number of observations, it is not surprising that most coefficients have large *t*-statistics and the regression has a high adjusted *R*-square (0.50).⁷ (Regression estimates are summarized in Table II.) Also as expected, commission rates vary inversely and substantially with share price.

Virtually all of the stocks studied here are listed on the NYSE but when traded through the OTC market, the commission rate is reduced substantially. The OTC dummy variable represents the change in commission from the NYSE rate; the exponent value of -0.149 implies a multiplier of 0.710, an average discount of 29.0 percent from the NYSE rate for similar trades. On the other hand, the few trades

⁵ Some banks apparently submitted information on all their transactions. For banks reporting a large number of transactions (generally more than 300) random samples are utilized and the resulting data are weighted for undersampling; in other cases all transactions are included. The weighting is achieved by multiplying the partially sampled data by the inverse of the percentage of that bank's transactions sampled. This adjusts for the fact that all transactions for the smaller banks are included while only a portion of the transactions of larger banks are utilized.

⁶ Alternatively, the model may be estimated with multivariate analysis of variance MANOVA in which continuous variables are defined as covariates and discrete variables are group delineators. However, the MANOVA approach requires non-zero cell sizes for all intersections of the discrete variables, an assumption which cannot be met empirically for Equation 1. Consequently, MANOVA is judged unsatisfactory for estimating Equation 1 coefficients.

⁷ A *t*-statistic is not reported for the constant term, because it does not have an intrinsic meaning. For instance, at zero price and volume, the transactions set is null.

Table I
Frequency Statistics for Dummy Variables

Symbol	Variable Description	Frequency
M_1	Amex	00.7%
M_2	OTC	02.7
BR_1	Broker — Regional/Local Full Line	15.2
BR_2	— Regional/Local Commission	02.2
BR_3	— Traders/Market Makers	07.9
BR_4	— Underwriters	27.6
BR_5	— Institutional	11.5
BR_6	— Introducing	03.5
BR_7	— Other	24.4
BK_1	Bank Size — Medium	12.9
BK_2	— Large	47.1
BK_3	— Very Large	23.2
BS	Purchase(1)/Sale(10)	40.6
T_1	1st Quarter — 1977	25.8
T_2	2nd Quarter — 1977	25.3
T_3	3rd Quarter — 1977	25.3
O	Odd Lot	04.1

Table II
The Commission Rate Equation

Variable	Coefficient	<i>t</i> -Statistics
Log Price	-0.640	-100.2
Log Trading Volume	-0.049	-27.1
Log Liquidity Measure	-0.007	-2.7
Amex	0.049	3.3
OTC	-0.149	-18.9
Broker — Regional/Local Full Line	0.0	—
— Regional/Local Commission	0.016	1.7
— Traders/Market Makers	-0.003	-4.2
— Underwriters	-0.026	-5.5
— Institutional	-0.021	-3.7
— Introducing	0.022	2.9
— Other	-0.005	-1.1
Bank Size — Medium	-0.038	-8.7
— Large	-0.129	-37.5
— Very Large	-0.108	-28.3
Purchase(1)/Sale(10)	0.107	44.1
Quarter 1 — 1977	-0.030	-8.6
2 — 1977	-0.047	-13.6
3 — 1977	-0.084	-24.3
Odd Lot	-0.042	-6.5
Constant	0.906	
Adjusted R^2	.500	

on the AMEX required an 11.9 percent higher commission rate than the NYSE rate.

Bank size variables are significantly and inversely related to commissions, as expected. Large and very large banks negotiate commissions 25.7 and 22.0 percent lower, respectively, than small banks. Medium size bank commission rates are 8.4

percent below small-bank rates but about 20.0 percent greater than large-bank rates. Clearly, banks with assets greater than \$1 billion are negotiating substantially lower commission rates than are the smaller banks.

Three brokerage groups are identified as executing most of the trades but at different commission rates. In the first groups, national, regional, and local full-line brokers, accounting for 22.9 percent of total trades, are charging the same average rate. The second group is underwriting (27.9 percent of trades) and institutional (11.5 percent of trades) which charge 12.9 and 4.6 percent, respectively, less than full-line brokers. The third group consists of "other" brokers (24.4 percent of trades) which are only slightly (-1.1 percent) below full-line brokers. Apparently, the full-line brokers tend to price institutional trading in line with retail business, while the underwriting and institutional brokers price at wholesale rates. Of course, these observations regarding price are not associated with service quality, and consequently, do not imply a value judgment for any type of broker.

The coefficient for order type (purchase or sale) is positive, indicating that sellers pay 27.9 percent higher rates than buyers. Apparently, sellers are more willing to bear search costs than are buyers, a phenomenon observed almost universally in commodity markets (real estate, goods and services, etc.) This suggests that investors reducing positions search more aggressively than those increasing positions, a result which is not intuitively logical but appears to be industry practice. One would expect buyers to search equally hard to obtain the lowest price and sellers would search for the highest price.

IV. Summary

Institutional investors studied here contracted for brokerage executions through various brokerage firm types and securities exchanges. Commission rates incurred by these investors are negotiable and were expected to vary with the exchange path chosen and the specific characteristics of each trade. Institutional and securities characteristics of trades were modeled so as to separate and measure factors influencing commission rates. The model was estimated with information on bank trust department trades after deregulation.

Substantially lower rates were observed for NYSE listed securities which were traded in the OTC market. The price advantage of trading off the floor of the NYSE suggests that marginal costs were lower for the informal than the formal exchange organization, at least for the securities studied. Also, the wholesale broker types charged lower commissions than the full-line and other types of brokerage firms. Higher rates paid for sell than purchase orders indicated that sellers bear a larger share of search costs than purchasers.

REFERENCES

1. Amir Barnea and Dennis Logue. "Risk and Market Spread." *Financial Analysts Journal* 31 (November-December 1975), 45-49.
2. George J. Benston and Rogert L. Hagerman. "Determinants of Bid-Asked Spread in the Over-the-Counter Market." *Journal of Financial Economics* 1 (December 1974), 353-64.
3. ———. "Risk, Volume and Spread." *Financial Analysts Journal* 34 (January-February 1978), 46-49.

4. Ben Branch and Walter Freed. "Bid-Asked Spreads on the Amex and the Big Board." *Journal of Finance* 32 (March 1977), 159-63.
5. Andrew H. Chen, Han Kim, and Stanley J. Ken. "Cash Demand Liquidation Costs and Capital Market Equilibrium Under Uncertainty." *Journal of Financial Economics* 2 (September 1975), 159-63.
6. Harold Demsetz. "The Cost of Transacting." *Journal of Quantitative Economics* 82 (February 1968), 33-53.
7. Robert O. Edmister. "Management of Commission Costs in Institutional Equity Portfolios." *Journal of Contemporary Business* 6 (Summer 1977), 45-57.
8. ———. "Commission Cost Structure: Shifts and Scale Economies." *Journal of Finance* 33 (May 1978), 477-86.
9. ——— and Ralph A. Walkling. "Stock Characteristics, Brokerage Commissions and Institutional Portfolio Management." Finance Faculty Working Paper. University of Maryland, College Park, MD, August 1980.
10. Thomas W. Epps. "The Demand for Brokers' Services: The Relation Between Security Trading Volume and Transaction Cost." *The Bell Journal of Economics* 7 (Spring 1976), 163-94.
11. Frank J. Fabozzi. "Bid-Ask Spreads for Over-the-Counter Stocks." *Journal of Economics and Business* 31 (Fall 1979), 56-65.
12. Irwin Friend and Marshall Blume. "Competitive Commissions on the New York Stock Exchange." *Journal of Finance* 28 (September 1973), 795-819.
13. James L. Hamilton. "Competition, Scale Economies, and Transactions Cost in the Stock Market." *Journal of Financial and Quantitative Analysis* 11 (December 1976), 770-802.
14. John R. Hicks. "Liquidity." *Economic Journal* 72 (December 1962), 787-802.
15. Lawrence D. Jones. "Some Contributions of the Institutional Investor Study." *Journal of Finance* 27 (May 1972), 305-17.
16. John M. Keynes. *A Treatise on Money*. London: Macmillan International, Ltd., 1930.
17. John Neter and William Wasserman. *Applied Linear Statistical Models*. Homewood, IL: Richard D. Irwin, Inc., 1974.
18. Aharon R. Ofer and Arie Melnick. "Price Deregulation in the Brokerage Industry: An Empirical Analysis." *The Bell Journal of Economics* 9 (Autumn 1978), 633-41.
19. Securities and Exchange Commission. "The Effect of Absence of Fixed Rates of Commissions." *Report to Congress*. Washington, D.C.: Securities and Exchange Commission, 1 December 1975; 28 March 1976; 10 August 1976; 28 January 1977; and 26 May 1977.
20. Seha M. Tinic. "The Economics of Liquidity Services." *The Quarterly Journal of Economics* 86 (February 1972), 79-92.
21. ——— and R. R. West. "Competition and the Pricing of Dealer Services in the Over-the-Counter Stock Market." *Journal of Financial and Quantative Analysis* 7 (June 1972), 1707-28.
22. ———. "The Securities Industry Under Negotiated Brokerage Commissions: Changes in the Structure and Performance of New York Stock Exchange Member Firms." *The Bell Journal of Economics* 11 (Spring 1980), 29-41.
23. Richard R. West and Seha M. Tinic. "Minimum Commission Rates on New York Stock Exchange Transactions." *The Bell Journal of Economics and Management Science* 2 (Autumn 1971), 577-605.
24. ———. *The Economics of the Stock Market*. New York: Praeger Publications, 1971.
25. Edward Zabel. "Consumer Choice, Portfolio Decisions and Transactions Costs." *Econometrica* 41 (March 1973), 321-35.