

OWNERSHIP STRUCTURE AND STOCK LIQUIDITY: SOME EVIDENCE FROM THE JORDANIAN CAPITAL MARKET

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Abstract

It is common knowledge that the microstructure of securities markets has generated a large number of research papers. This effort is not really surprising if one understands that market liquidity is important because of its implications for firms' investment and financing decisions and the development of financial markets. This paper examines the issue of stock liquidity in the Jordanian capital market. Specifically, we provide of measure of liquidity cost and relate it to firm specific characteristics including the ownership structure of stocks. Based on the daily trading data for a total of 131 listed companies during 2005, the results indicate that liquidity cost in the Jordanian market is high. In addition, the results indicate that while risk is the main determinant factor of spread, higher ownership dispersion does not improve market liquidity.

Keywords: Jordan, stock exchange, spread, risk, trading volume, price, ownership structure

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1. Introduction

In the context of stock markets, the financial economics literature has developed a myriad of concepts which are known to be essential in performing their economic role. These concepts include pricing efficiency and operational efficiency. For example, stock prices in an efficient (pricing) market provide investors with good measures of the value of listed companies. This efficiency source can discipline managers and consequently improve the allocation of capital. Similarly, in operationally efficient stock markets, the fact that traders can get their orders executed as quickly (immediacy) and as cheaply as possible enables companies to acquire much needed capital quickly. Indeed high transaction costs tend to inhibit capital movements and hence discourage the efficient allocation of resources¹.

The issue of stock liquidity is important because of its implications for the company's financing and investment decisions. The published literature indicates a negative relationship between stock returns and liquidity. This observation implies that companies with more liquid stocks have lower costs of capital (e.g., Amihud and Mendelson, 1986; Brennan and Subrahmanyam, 1996; Easley, Hvidkjaer and O'Hara, 2002; Pastor and Stambaugh, 2003; Acharya and Pedersen, 2005; Hasbrouck, 2005). Moreover, it is shown that companies with more liquid stocks incur lower investment banking fees and hence lower cost

of capital (Butler et al., 2005). Moreover, it is stated that trading costs and liquidity "are often cited as important factors in the international competition for order flow, and might shed light on the relative merits of different market designs. Cost considerations in emerging markets are especially relevant from a public policy perspective. For example, in emerging markets, large orders often result in substantial price movements raising concerns that foreign capital flows ("hot money") might destabilize domestic markets²". Finally, it is argued that high costs (trading) in emerging markets might induce corporations to cross-list their stocks in more liquid and developed markets, thereby hinder the development of domestic markets (Domowitz, 2001).

Given the economic importance of stock liquidity and following the classical work of Garman (1976), the microstructure of securities markets has been attracting a lot of research attention. These works deal with the "moment-to-moment aggregate exchange behavior as an important aspect of such markets", (Garman, 1976). In more specific terms, this effort examines stock markets' trading mechanisms, actions of market participants and the behavior of price changes. Indeed a number of papers review important elements of the market microstructure literature. These include Cohen et al. (1986), Kiem and Madhavan (1998), Choughenour and Shastri (1999), Madhavan (2000), Stoll (2002), and Biais et al. (2005).

The current microstructure literature suggests that

¹ This might happen even if the stock market is pricing its listed securities in an efficient manner.

² Choe et al. provide some analysis of this issue for Korea.

the bid-ask spread is driven by dealers' costs and these include inventory-holding costs, adverse selection (asymmetric information) costs, and order processing costs (Stoll, 1978). Based on this classification, many papers relate the spread to a vector of characteristics that are associated with the individual securities. These characteristics include the risk of securities, trading volume, market value of the firm, information, competition and others³. In addition to this empirical literature, many researchers have examined a number of specific issues regarding the determinants of liquidity costs. For example, while some argue that the reduction in the minimum tick size lead to lower transaction costs (Harris, 1994; Goldstein and Kavajecz, 2000; and Aitken et al., 2005), others argue that "improvements in legal and political institutions will lower the cost of liquidity in financial markets" (Eleswarapu and Venkatataman, 2006).

Following the pioneering work of Demsetz (1968), the market microstructure literature suggests a negative relationship between stock market liquidity and ownership structure of companies. While the number of papers which examine this issue is relatively limited, a growing number of researchers have examined the impact of the ownership structure on liquidity cost. These works include Benston and Hagerman (1974), Chiang and Venkatesh (1988), Glosten and Harris (1988), Sarin et al. (1997), Heflin and Shaw (2000), Attig et al. (2003), Naes (2004), Jacoby and Zheng (2006) and many others. This research effort is based on the premise that asymmetric information can impact the liquidity of a security. In other words, stocks with concentrated ownership (informed traders) tend to have wider bid-ask spreads. Moreover, it can be argued that even in the absence of informational asymmetry, concentrated ownership structures might reduce liquidity because in such cases there will be less available stocks for the "small" investor to trade in the market.

The Jordanian capital market (Amman Securities Exchange) has been examined in terms of both pricing and operational efficiencies. For example, Omet et al. (2002) examined the pricing efficiency of the market and the relationship between returns and conditional volatility. Based on the estimated AR(1)-GARCH(1,1)-M model, the empirical results indicate significant departures from the Efficient Market Hypothesis (EMH). Similarly, Maghyereh and Omet (2002) argue that the Jordanian market, following its liberalization, did not become more efficient at the weak level of the EMH. Finally, Omet and Masharawe (2002) examined the liquidity of the Jordanian market in terms of liquidity. Based on a sample of ten listed stocks, it is stated that "transaction cost in the Jordanian capital market is comparatively quite high. Moreover, as depicted by theory, the coefficients show that the spread increases as price volatility and stock price increase and

decrease as trading contracts decrease" (Omet and Mashharawe, 2002). However, in this paper, the issue of the ownership structure of companies was not investigated.

Against the above background, the objective of this paper is to empirically examine the relation between stock liquidity and ownership structure in the Jordanian stock exchange. In section II, we present some basic information about the Jordanian stock exchange and in particular its' trading mechanism. In section III, the data, methodology and the results are presented. Finally, section IV summarizes and concludes the paper.

II. The Jordanian Stock Exchange: Market-Making Mechanism

The Jordanian stock exchange was established on 1 January 1978. Like many emerging stock markets, the market in Jordan has experienced some impressive growth in many aspects. For example, the market capitalization of listed stocks as a proportion of Gross Domestic Product (GDP) has increased from about 37 percent in 1978 to more than 295 percent by the end of 2005. Similarly, the number of listed companies has increased from 67 to more than 200 companies by the end of 2005. Based on these observations alone, one can argue that it is worth examining this market in terms of its operational efficiency.

The market-making mechanism in Jordan is order-driven. The market has no designated liquidity providers. In other words, investors must deal with brokers and their order are prioritized (for execution) according to price and time. By submitting successive buy and sell orders, traders provide liquidity for other participants who demand immediacy by placing counter market orders.

It is common knowledge that the trading mechanism, briefly described above, is likely to suffer low levels of liquidity. For example, if there is any imbalance between buy and sell orders during a time period (trading day), successive buy (sell) orders would be noted on the trading board without counter sell (buy) orders arriving at the market. Similarly, any imbalance between buy and sell order might cause successive price changes to be "large". This is due to the fact that there are no dealers who stand ready to buy a stock at the bid and sell a stock at the ask (bid-ask spread). This is probably why most listed stocks are thinly traded and that the largest 10 stocks account for more than 50 percent of the trading volume in the market.

II. The Data, Methodology and Results

The basic data set which is used in this paper is obtained from the market's daily report. This report published a number of measures including the number of traded shares, trading volume, number of transactions, closing prices, highest and lowest recorded transaction prices, and the highest (lowest)

³ For a review of this literature, see Stoll (2002).

prevailing bid (ask) prices at the close of each trading day. At the close of each trading, the market publishes the prevailing highest and lowest buy price and sell price. These prices are for counter orders (buy and sell) that *did not get executed* during the trading day. The difference between these two prices can be used as a measure of liquidity cost. While the market does not publish these prices regularly during trading days, we can argue that this is a good measure of liquidity cost. This is due to the fact that the arrival times of the closing bid and ask prices are random in nature. In other words, over a time period (a year), the daily closing best bid and ask prices reflect a good measure of liquidity cost. To estimate liquidity cost, we delete from our sample stocks with less than 30 days of trading data during the year 2005. Based on this principle, the total number of stocks that we are left with is 131. This number constitutes about 65 percent of all listed companies. Moreover, the fact that these companies account for more than 90 percent of the whole market in terms of market capitalization and trading volume, it can be argued that our sample of companies reflects the performance of the Jordanian stock exchange in terms of liquidity cost.

Based on the daily closing bid and ask prices during the time period 01/01/ 2005 to 31/12/2005, we compute the mean value of the daily spread as follows:

$$\text{Bid-Ask Spread} = (\text{Ask Price} - \text{Bid Price}) / [(\text{Ask Price} + \text{Bid Price}) / 2] * 100$$

Based on the international literature and the availability of data, we use trading frequency, closing

price, risk, company size, and the ownership structure of companies to explain the cross-sectional variations in the bid-ask spread. In other words, we estimate the following model:

$$\text{Spread}_i = \alpha_0 + \alpha_1 \text{Ownership} + \alpha_2 \text{Risk} + \alpha_3 \text{Trading} + \alpha_4 \text{Price} + \alpha_5 \text{Market} + \varepsilon_i$$

where ownership is the total percentage of shares held by stockholders with more than 5 percent ownership, risk is the difference between the highest and lowest price during a trading day divided by the average price, trading is the daily mean of trading volume, and market is a dummy variable which is equal to 1 if the company is listed on the first market (, and zero otherwise (second market), (in Jordan, companies are listed on the first or second market. The second market companies are newly established and are smaller than those listed on the first market. In other words, this variable is a proxy measure of company size).

In Table 1, we report some descriptive statistics for the variables including the mean bid-ask spread. The most interesting observation which is reported in this Table is the mean value of liquidity cost (spread). With a mean value of 2.2 percent, we can argue that liquidity cost on the Jordanian market is relatively high. For example, this proportion is much higher than, for example, the 0.32 percent in the USA (Angle, 1997) and the 0.297 percent in Paris (Bourghelle and Declerck, 2001).

Table 1. Summary Statistics of the Variables

Variable	Mean	Maximum	Minimum	Std. Deviation
Spread	0.022	0.060	0.004	0.013
Ownership	0.470	0.970	0.000	0.267
Risk	0.029	0.061	0.011	0.010
Trading	4.619	5.950	3.152	0.757
Price	0.659	2.260	0.081	0.472

Spread is equal to $(\text{Ask Price} - \text{Bid Price}) / [(\text{Ask Price} + \text{Bid Price}) / 2] * 100$; ownership is the total percentage of shares held by stockholders with more than 5 percent ownership, risk is the difference between the highest and lowest price during a trading day divided by the average price, trading is the log of daily mean of trading volume, and price is the log of the daily mean closing prices.

As far as the ownership structure of companies is concerned, we can see that the total proportion of shares held by stockholders with more than 5 percent ownership has a mean value of 47 percent. Moreover, there are some companies which are highly concentrated in their ownership structure (maximum mean value equal to 97 percent) and some that do not have any major stockholders (minimum value of zero). In Table 2, we report the OLS regression results. With the exception of the ownership structure and the market variables, all other variables are significant at the 99 percent level and have the expected signs. The coefficient of risk shows that the spread increases as price volatility increases and this

is in agreement with the available international evidence. Liquidity cost varies inversely with the trading volume⁴. This observation is consistent with theory and reflects lower inventory costs on behalf of the investors. The coefficient of stock price is negative and significant albeit small in magnitude. This result is obviously due to the minimum tick size. The fact that the minimum tick is one pence, stock with low market prices tend to have higher values of spread. As a measure of company size, the coefficient of the market variable is not significant. In other

⁴ The use of the number of contracts (log) yielded similar results.

words, the size of companies has no influence on the cost of liquidity.

Table 2. Regression Results

Variable	Coefficients
Intercept	0.080 (9.842*)
Ownership	0.010 (0.372)
Risk	0.726 (4.615*)
Trading	-0.200 (-9.317*)
Price	-0.019 (-4.719*)
Market	0.002 (0.623)
Adjusted R2	0.610
F-Statistic	25.405*

Finally, the ownership structure of firms is not a significant determinant of spread. Indeed while there is some great variation between our sample of companies in terms of their ownership structure, companies with dominant shareholders do not seem to have higher spreads. This result is probably understandable if we consider the fact that the market-making mechanism itself does not really promote and enhance liquidity. In other words, one cannot argue for a reduction in the ownership structure of firms as a means to reduce liquidity costs on the Jordanian capital market.

IV. Summary and Conclusions

The relationship between financial development and economic growth has received a lot of attention in the financial economics literature. The consensus finding, which has also become widely accepted and adopted by policymakers, is that financial development has a positive impact on economic growth. Given the importance of the stock market in both financial development and economic growth, one cannot be surprised of the huge research effort which this institution has generated. At the forefront of this research effort is the concept of operational efficiency.

The published literature indicates a negative relationship between stock returns and liquidity. This observation implies that companies with more liquid stocks have lower costs of capital. In addition, high liquidity costs may induce corporations to cross-list their stocks on more liquid markets, and thereby hinder the development of domestic stock markets. Due to these reasons, and others, it is important to examine the issue of liquidity in emerging markets.

This paper raised the issue of operational efficiency in the context of the Jordanian stock exchange. Indeed, as mentioned in section II, this market is extremely large relative to the Jordanian economy and hence worthy of investigation. Based on a sample of 131 companies, the results indicate three main conclusions. First, liquidity cost (spread) in the

Jordanian market is relatively high. Second, as depicted by theory, the cost of liquidity increases as price volatility increases. Finally, the ownership structure of firms has no significant impact on spread. While the final conclusion is in contrast to the international evidence, the insignificant coefficient of the ownership variable indicates that the market-making mechanism which prevails in the Jordanian stock exchange is more paramount in impacting liquidity cost than any other variable including the ownership structure of companies.

The findings of this paper add to the growing evidence which indicates that the Jordanian market suffers from a number of weaknesses. If the market is not efficient in pricing its listed securities (Omet et al., 2002 and Maghyreh and Omet, 2002) and if liquidity cost is high, these factors need some serious remedial measures if the exchange is to fulfill its economic role in the Jordanian economy. Finally, based on the results of this paper, it is recommended that the issue of introducing designated market-makers must be examined, and if possible, introduced.

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