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## **THE 2008 GLOBAL FINANCIAL CRISIS: THE CASE OF A MARKET WITH CONSISTENT LOSSES EVER SINCE**

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### **Abstract**

Following the 2008 global financial crisis, and in common with many stock markets around the world, the Amman Securities Exchange (ASE) experienced some heavy losses. However, what makes the Jordanian market probably different is its inability to recover. The weighted price index fell from 7519.3 points in 2007 to 5520.1 points in 2009, to 4593.9 points in 2012, and to 4336.7 points by the end of 2013 respectively. With a statutory minimum tick which is equal to one pence, this observation has some serious implications to the liquidity cost that prevails in the Jordanian capital market, and the cost of financing listed firms. The primary aim of this research paper is to examine the impact of the stock market crash in Jordan on liquidity cost. Based on a total number of 108 listed stocks and daily data during the years 2007 and 2009, the empirical results indicate that liquidity cost on the Jordanian capital market is high. In addition, the results show that the 2009 stock market crash has led to a substantial increase in liquidity cost. In other words, the market must consider a number of remedial measures to improve its' operational efficiency.

**Keywords:** Amman Securities Exchange, Bid-ask Spread, Minimum Tick Specialist

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### **1. Introduction**

Liquidity plays a critical role in the functioning of capital markets. The fact that capital investments require long-term commitments of funds, in the presence of liquid stock markets, encourages savers to invest in the issued corporate securities because they have the opportunity to sell them quickly and cheaply (Levine, 1991).

Notwithstanding the fact that its causes have been widely analyzed, the point remains that the 2008 financial crisis was unique in terms of the wealth destruction, it is estimated at US\$ 50 trillion equivalent to one year of world GDP, (Aisen and Franken, 2010). Indeed, this crisis was unprecedented in its impact on the market value of stocks, and many other assets.

For example, by October 2008, the crisis had erased around US\$25 trillion from the value of stock markets (Naude, 2009).

In common with many stock markets around the world, the ASE experienced some heavy losses. The weighted price index fell from 7519.3 points in 2007 to 6243.1 points in 2008, to 5520.1 points in 2009, and to 5318.0 points in 2010. However, what makes the Jordanian market probably different is its inability to recover. In actual fact, it suffered consistent losses ever since the 2008 crisis. For example, the value of the index has fallen to 4648.4 points, 4593.9 points, and to 3913.4 points by the end of 2011, 2012, and September 2013 respectively. Also, the market's capitalization to GDP ratio has fallen from 240.8 percent in 2007 to 87.1 percent by the end of 2012.

The consistent losses from which the ASE has suffered provide interested researchers with a number of issues that can be examined. For example, it would be interesting to examine two questions. First, what is the liquidity cost in the ASE? Second, has the market crash led to an increase in the liquidity cost of listed Jordanian stocks? The implications of liquidity cost are the sources of the importance of this paper. Indeed, relatively high liquidity cost implies higher risk (investment in financial securities) and higher cost of equity financing (corporate finance).

The rest of the paper is organized as follows. In section II, we briefly review the literature which examines the operational efficiency (liquidity) of stock markets. Section III provides some information about the ASE. In section IV, the data, methodology and the empirical results are presented and discussed. Section V summarizes and concludes the paper.

## 2. The Issue of Stock Market Liquidity: Literature Review

The issue of stock market liquidity has for so long attracted the attention of researchers and policy-makers. The published literature indicates that firms with more liquid stocks or lower liquidity cost have, on average, lower cost of equity capital. Naturally, this finding has investment implications as well capital structure implications (Amihud and Mendelson, 1986). Similarly, investment bankers demand for their underwriting services lower fees. In turn, this observation implies lower cost of equity capital (Butler *et al.* 2005).

Relative to the concept of the cost of equity capital, it is useful to note that the impact of stock prices on listed firms' investments in fixed assets is an important research issue. On average, this literature shows that stock price positively impacts firms' investment levels. Some of these papers include Aivazian *et al.* (2005), Hanazaki and Liu (2007), Yuan and Motohashi (2008), Bokpin and Onumah (2009), Umutlu (2010), Ma'in and Ismail (2011), Geng and N'Diaye (2012), and Wang *et al.* (2013).

Given its importance, the issue of liquidity has attracted numerous papers. Relative to this literature, it is interesting to note from a recently published paper (Amihud and Mendelson, 2012) which reviews the theoretical and empirical works that involve the issue of liquidity and firm value, capital structure, payout policy, disclosure of information and analyst following, corporate governance, and capital investment, that this literature is too large to review.

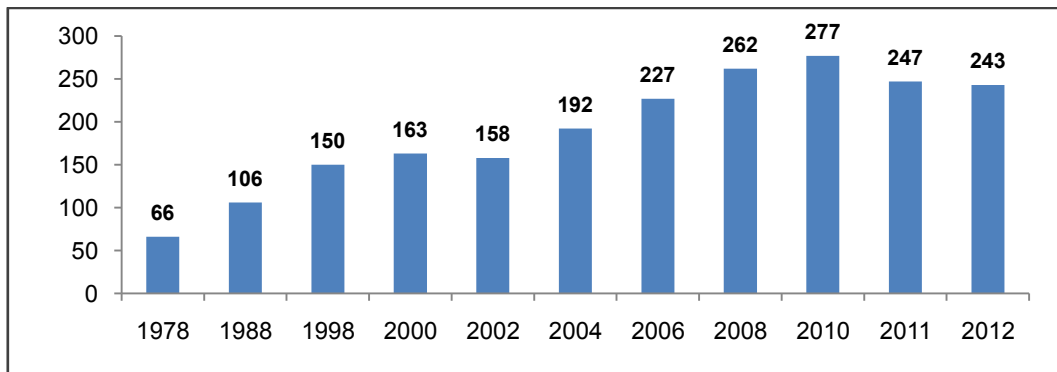
Many researchers were interested in this issue particularly about what determines liquidity cost (bid-ask spread) such as Demsetz (1968), Tinic (1972), and Tinic and West (1974). In addition, and based on the order execution and inventory model provided by Stoll (2000), many papers examine the underlying relationship between liquidity and stock characteristics. Typically, these works rely on measures like stock volatility, stock trading volume, firm size, stock price, and foreign ownership in understanding the difference in the liquidity cost of listed stocks. Again, some of these papers are published by Chai *et al.* (2010), Chung *et al.* (2010), Jacoby and Zheng (2010), Kuo *et al.* (2010), Chekili and Abaoub (2013), Ding *et al.* (2013), and Madyan *et al.* (2013).

On average, this literature shows that in advanced stock markets liquidity cost is lower than that in developing or emerging markets. In addition, the literature clearly shows that stock markets with designated market makers (specialists) tend to have lower liquidity cost than order-driven markets.

### 3. The Jordanian Capital Market: Some Basic Information

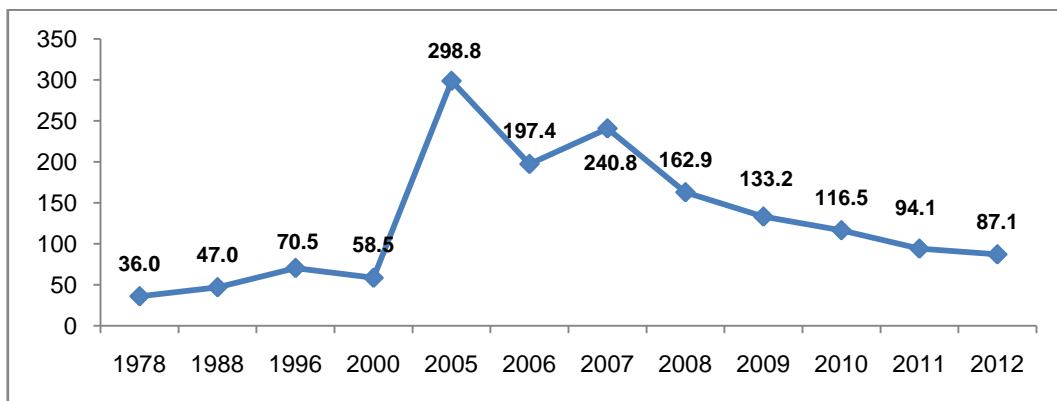
The ASE, which was established in 1978, constitutes a major part of the Jordanian financial system and private sector. Indeed, the market boasts the listing of some of the largest firms in terms of assets and employment levels in the economy. These firms include, for example, all Jordanian commercial banks, Arab Potash, Jordan Telecom, Jordan Phosphate Mines, Jordan Cement Manufacturing, Arab Pharmaceutical Company, and Jordan Electric Power.

Initially, and as expected, the ASE reflected some modest figures. By the end of 1978 (its first year in operation), the market had a total of 66 listed companies (Figure 1). By the end of 2012, this number has increased to 243 companies. The ratio of market capitalization to GDP was also modest (Figure 2). However, following the relative “volatility” of the market during the period 2000-2007, this ratio has collapsed and reached 87.1 percent by the end of 2012. To appreciate the extent of this collapse, it is worth noting that in 2007 and 2012, the capitalization of the market as a whole was equal to JD29.2 billion and JD19.1 billion respectively.



**Figure 1. No. of Listed Companies**

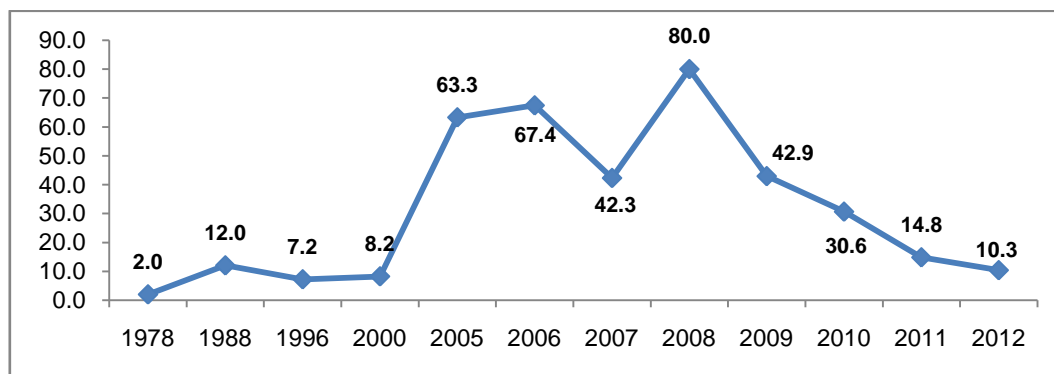
Source: ASE Annual Reports



**Figure 2 Market Capitalization to GDP Ratio**

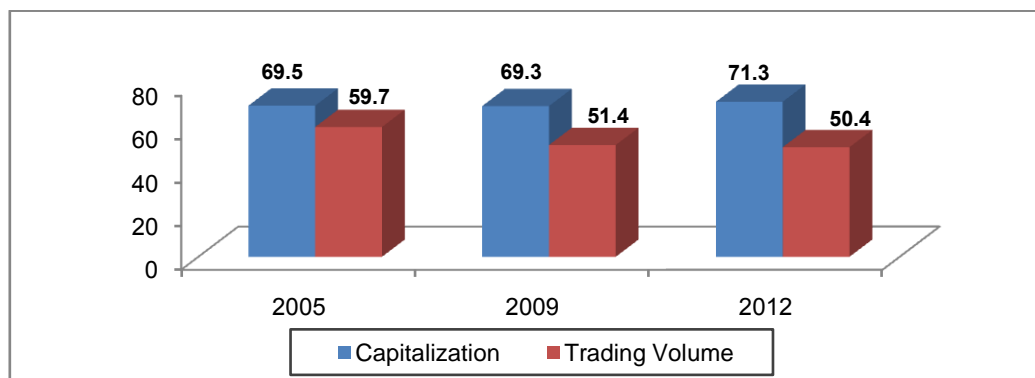
Source: ASE Annual Reports

The volatility of the market in terms of its capitalization is also reflected in the secondary market trading activity. Indeed, the turnover ratio of the market (trading volume to market capitalization) reflects some large changes during the period 1978-2012 (Figure 3).



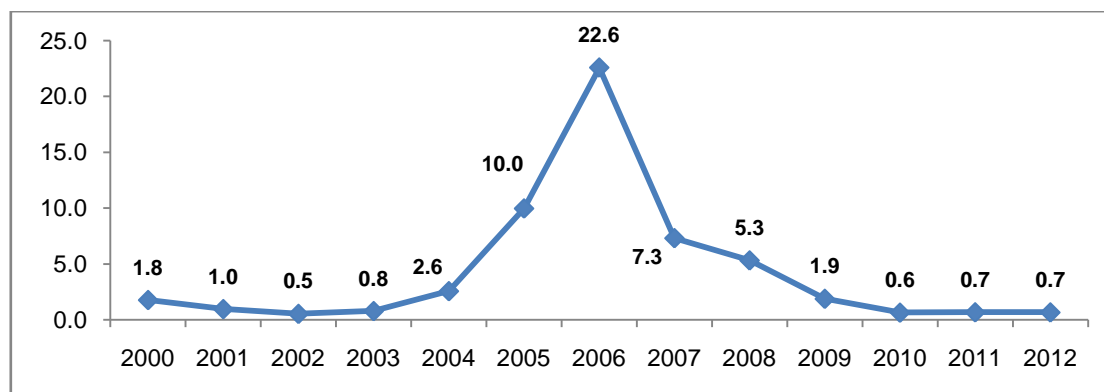
**Figure 3. Trading Volume to Capitalization Ratio**

Relative to the growth in the number of listed firms, the ASE is a highly concentrated market in terms of both capitalization and trading activity. For example, in 2012, the largest 10 companies accounted for about 70 percent of the whole market's capitalization and 50 percent of the total trading volume (Figure 4).



**Figure 4. Top Ten Firms by Capitalization & Trading Volume**

As far as the primary market is concerned, again the record is not encouraging. The privatization program which led to significant stock issues in 2005 and 2006 notwithstanding, the ratios of primary market stock and corporate bond issues to GDP are low (Figure 5 and Figure 6). Since 2008, corporate bond issues to GDP ratio has been below the one percent mark. This is relatively low. For example, the market capitalization of corporate bonds to GDP ratio in 2010 was equal to 22.8 percent in China, 59.5 percent in South Korea, 17.0 percent in Chile, 11.2 percent in the Czech Republic, and 98.6 percent in the USA (Mu et al. 2013).



**Figure 5. Primary Market Stock Issues to GDP Ratio**

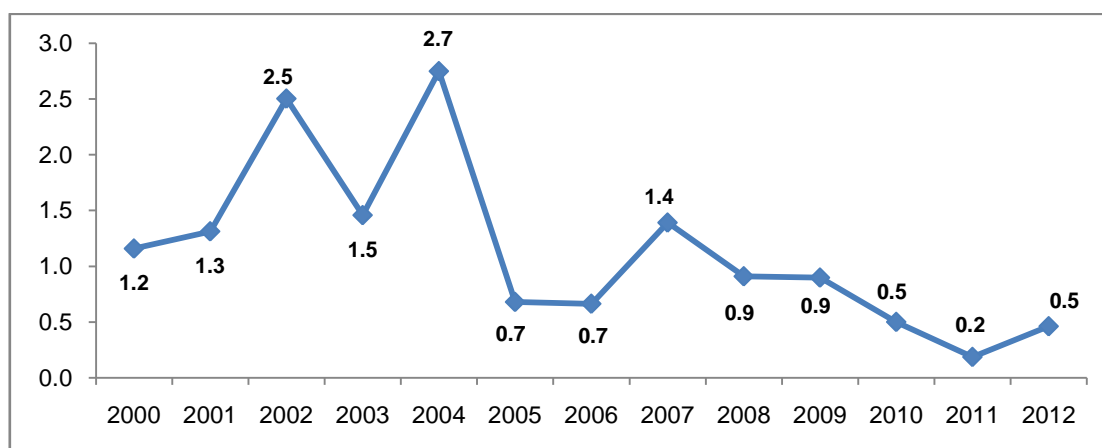


Figure 6. Primary Market Corporate Bond Issues to GDP Ratio

Equally discouraging, is the market for government bonds. The size of the issued treasury bonds (and treasury bills) has been increasing (Figure 7). However, the issuance of long-term bonds is disappointing. Since 2005, public-entity bonds and development bonds have fluctuated between 0.4 percent and 2.1 percent of GDP.

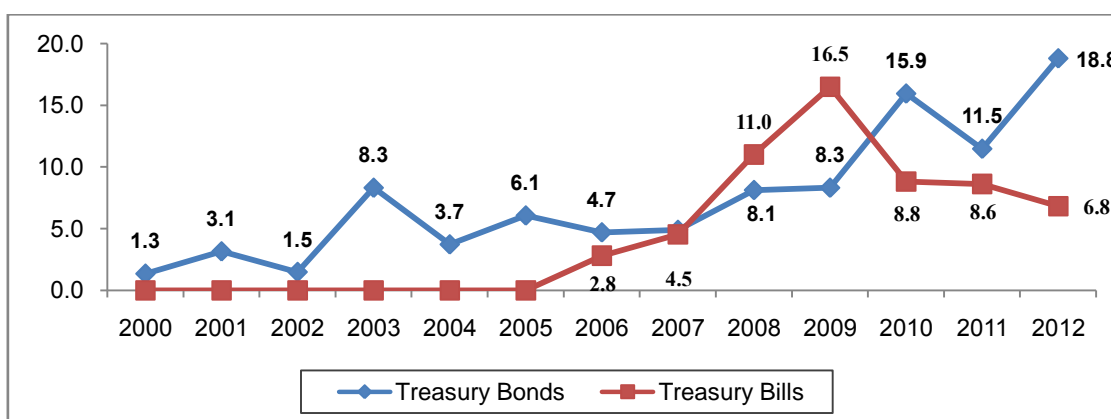


Figure 7. Issues of Treasury Bonds & Bills to GDP Ratio

Again, these ratios (long-term bonds to GDP) are much lower than 27.3 percent in China, 43.8 percent in South Korea, 13.1 percent in Chile, 23.3 percent in the Czech Republic, and the 75.7 percent in the USA (Mu et al. 2013). Finally, the most discouraging observation lies in the fact that the trading activity on the secondary market in these Jordanian securities (corporate and government bonds) is almost zero!

#### 4. The Data, Methodology and Empirical Results

The data set which is used in the empirical estimations is collected from the ASE's daily reports and annual reports. The daily reports publish basic information like the number of traded shares, trading volume, number of transactions, closing prices, and the highest and lowest recorded transaction prices. In addition, and at the close of each trading day, the market publishes the highest bid price and lowest ask price. The fact that these orders are not executed, the difference between them can be used as a measure of liquidity cost. Naturally, it would have been better if the market published the highest bid and lowest ask prices continuously. However, it is due to the fact that the arrival times of the closing best bid and best ask are random in nature, the difference can be a good measure of liquidity cost. Finally, the annual report publishes a summary of the annual reports' financial information.

Based on the daily closing bid and ask prices during the years 2007-2012, we compute the following overall mean of the daily spread for all listed stocks.

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

where  $\text{Spread}_i$  refers to the percentage bid-ask spread of stock  $i$  at the end of the trading day  $t$ ,  $\text{Ask}_i$  is the ask price and  $\text{Bid}_i$  is the bid price at the end of day  $t$ .

In addition, we use the daily computed liquidity cost of a total of 108 listed for each of the two years (2007 and 2009) and examine their determinants. These stocks are chosen and used in the econometric model (determinants of liquidity cost) because they are the most actively traded on the secondary market. These stocks had closing bid and ask prices for at least 220 days during the each of the years 2007 and 2009.

Based on similar works, we estimate the following OLS regression model for each of the years 2007 and 2009:

$$\begin{aligned} (\text{Spread}_{i,t}) = & \alpha_0 + \alpha_1 \ln(\text{Vol}_{i,t}) + \alpha_2 \ln(\text{Price}_{i,t}) + \alpha_3 (\text{Risk}_{i,t}) \\ & + \alpha_4 \ln(\text{Size}_{i,t}) + \alpha_5 (\text{Own}_{i,t}) + \alpha_6 (\text{Dum}_{i,t}) + \varepsilon_{i,t} \end{aligned} \quad (1)$$

where  $\text{Spread}$  is the bid-ask spread (as defined above);  $\text{Vol}$  is the natural logarithm of trading volume defined as the daily trading volume (in Dinars);  $\text{Price}$  is equal to one plus the natural logarithm of stock price;  $\text{Risk}$  is the difference between the highest and lowest price divided by the closing price;  $\text{Size}$  is the natural logarithm of market capitalization;  $\text{Own}$  is the proportion of the shares which are owned by non-Jordanian investors; and  $\text{Dum}$  is a dummy variable which is equal to 0 if the firm is listed on the First market and equal to 1 if the firm is listed on the Second market.

## 5. The Empirical Results

Based on the reported values of the overall mean annual spread measures (Figure 8), we can conclude that liquidity cost witnessed some consistent increases. Indeed, this measure increased from 1.468 percent in 2007 to 2.266 percent in 2012. Naturally, these increases are due to the stock market's collapse referred to above.

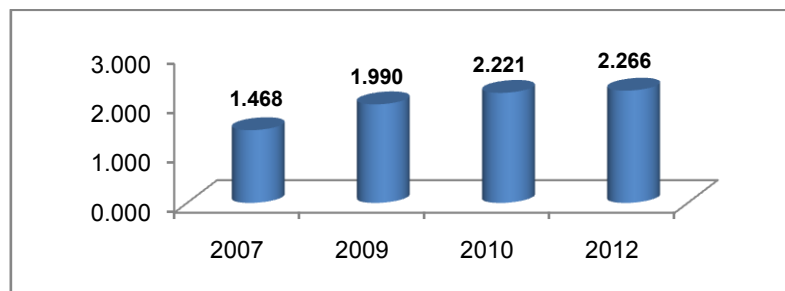


Figure 8. Mean annual spread values

When we classify all listed stocks according to their market prices, some interesting results are revealed (Table 1). For example, for those stocks whose market prices are less than or equal to one Dinar, the mean spread value is equal to 3.548 percent. For higher-priced stocks, the mean spread measure becomes lower. Indeed, this is expected because all stock prices are allowed to move by multiples of one pence (minimum tick). In addition, when we estimate the simple correlation between the spread measure and stock price, the coefficient becomes weaker for higher-priced stocks.

**Table 1. Mean spread values (2012)**

| Price Range  | Liquidity Cost | Correlation with Price |
|--------------|----------------|------------------------|
| ≤ JD1        | 3.548 percent  | -0.550                 |
| >JD1 & ≤ JD2 | 1.969 percent  | -0.245                 |
| > JD2        | 1.673 percent  | -0.042                 |

In Table 2, we report some basic descriptive statistics about liquidity cost for the chosen 108 stocks (most active) for each of the years 2007 and 2009. Again, the reported figures reveal the same conclusion; liquidity cost in 2009, when stock prices fell relative to 2007, is higher than that in 2007. Also, the reported mean values are lower than those reported in Figure 8. This is due to the fact that the 108 stocks have, on average, higher prices than those excluded stocks.

**Table 2. Estimates of liquidity cost**

|                    | 2007   | 2009   |
|--------------------|--------|--------|
| Mean               | 1.260  | 2.088  |
| Median             | 0.873  | 1.653  |
| Maximum            | 10.345 | 10.000 |
| Minimum            | 0.034  | 0.027  |
| Standard Deviation | 1.143  | 1.467  |
| Observations       | 17,913 | 22,919 |

It is important to note that on the ASE the daily price for all listed stocks is not allowed to move (up or down) by more than 5 percent. In other words, the ASE operates a limit system on stock prices. This observation is critical to the above-mentioned spread measure. For example, what if the closing bid (ask) price is more (less) than 5 percent of the opening price? Naturally, such orders would not be executed. To take into account this contradiction between the daily price limit rule and the spread measure, we re-measure the daily spread after deleting all closing bid or ask prices which are greater (or lesser) than 5 percent of the opening price. The results are reported in Table 3.

As expected, when we account for the 5 percent price limit, liquidity cost becomes lower. However, the results still reveal an increase in liquidity cost. In 2007 and 2009, the mean values of the spread are equal to 1.119 percent and 1.853 percent respectively. In addition, these values are still higher than, for example, the 0.0181 percent and the 0.0373 percent that prevail in the NYSE and NASDAQ respectively (Jiang *et al.* 2011). Similarly, liquidity cost in the ASE is higher than the 0.331 percent and the 0.213 percent that exist in the European exchanges and Canada respectively (Gagnon and Gimet, 2013), and the 0.217 percent that prevails in China (Ding *et al.* 2013).

**Table 3. Estimates of liquidity cost (Adjusted for price limit)**

|                    | 2007   | 2009   |
|--------------------|--------|--------|
| Mean               | 1.119  | 1.853  |
| Median             | 0.844  | 1.550  |
| Maximum            | 8.594  | 9.756  |
| Minimum            | 0.034  | 0.027  |
| Standard Deviation | 0.862  | 1.176  |
| Observations       | 16,832 | 20,040 |

The relatively high liquidity cost on the ASE is due to the market-making mechanism itself. The fact that the market is a brokered-market that does not have dealers that provide liquidity (immediacy), the trading cost is bound to be high.

Relative to the absence of market-makers, it is useful to note, for example, that volume increases substantially and liquidity cost declined when the Tel Aviv Stock Exchange introduced market makers to its thinly-traded shekel-euro options in 2004 (Eldor *et al.* 2006). Similarly, the impact of market-makers on liquidity cost is examined by several papers. Again, the evidence

shows that liquidity cost decreased in, for example, the Italian market (Nimalendrau and Petrella, 2003), Stockholm market (Venkataraman and Waisburd, 2007), Dutch market (Menkveld and Wang, 2011), German market (Hengelbrock, 2012), and the Norwegian market (Skjeltorp and Odegaard, 2011). Finally, Jain (2003) examined the market structure of 51 stock exchanges and the results indicate that market-makers significantly decrease liquidity cost and this impact is more pronounced in less liquid emerging markets.

Some of the main descriptive statistics about the independent variables are reported in Table 4 and Table 5 below. These Tables reveal some contrasting information. For example, the 2009 figures show that the mean values of stock prices (1.309 and 1.330) were lower than their corresponding values in 2007 (1.865 and 1.871). The mean risk measures in 2009 (3.357 and 3.085), on the other hand, were higher than the 2007 values (2.694 and 2.553). These observations are what one might expect given the fact that the ASE's market index fell by a large proportion in 2009.

**Table 4. Independent variables: 2007**

| <b>Not Adjusted for Price Limit</b> | <b>VOL</b> | <b>PRICE</b> | <b>RISK</b> | <b>SIZE</b> | <b>OWN</b> |
|-------------------------------------|------------|--------------|-------------|-------------|------------|
| Mean                                | 11.257     | 1.865        | 2.694       | 17.582      | 0.230      |
| Median                              | 11.389     | 1.770        | 2.459       | 17.026      | 0.143      |
| Std. Deviation                      | 2.077      | 0.689        | 1.644       | 1.762       | 0.207      |
| Observations                        | 17,913     | 17,913       | 17,931      | 17,931      | 17,913     |
| <b>Adjusted for Price Limit</b>     | <b>VOL</b> | <b>PRICE</b> | <b>RISK</b> | <b>SIZE</b> | <b>OWN</b> |
| Mean                                | 11.213     | 1.871        | 2.553       | 17.629      | 0.232      |
| Median                              | 11.326     | 1.770        | 2.381       | 17.040      | 0.143      |
| Std. Deviation                      | 2.026      | 0.696        | 1.493       | 1.763       | 0.208      |
| No. of Observations                 | 16,832     | 16,832       | 16,832      | 16,832      | 16,832     |

VOL is the natural logarithm of trading volume defined as the daily trading volume (in Dinars); PRICE is equal to one plus the natural logarithm of stock price; RISK is the difference between the highest and lowest price divided by the closing price; SIZE is the natural logarithm of market capitalization; OWN is the proportion of the shares which are owned by non-Jordanian investors.

**Table 5. Independent variables: 2009**

| <b>Not Adjusted for Price Limit</b> | <b>VOL</b> | <b>PRICE</b> | <b>RISK</b> | <b>SIZE</b> | <b>OWN</b> |
|-------------------------------------|------------|--------------|-------------|-------------|------------|
| Mean                                | 10.387     | 1.309        | 3.357       | 17.074      | 0.237      |
| Median                              | 10.343     | 1.086        | 3.175       | 16.706      | 0.161      |
| Std. Deviation                      | 2.336      | 0.842        | 1.953       | 1.616       | 0.223      |
| Observations                        | 22,919     | 22,919       | 22,919      | 22,919      | 22,919     |
| <b>Adjusted for Price Limit</b>     | <b>VOL</b> | <b>PRICE</b> | <b>RISK</b> | <b>SIZE</b> | <b>OWN</b> |
| Mean                                | 10.308     | 1.330        | 3.085       | 17.140      | 0.238      |
| Median                              | 10.226     | 1.095        | 2.985       | 16.749      | 0.161      |
| Std. Deviation                      | 2.284      | 0.859        | 1.745       | 1.651       | 0.223      |
| No. of Observations                 | 20,040     | 20,040       | 20,040      | 20,040      | 20,040     |

VOL is the natural logarithm of trading volume defined as the daily trading volume (in Dinars); PRICE is equal to one plus the natural logarithm of stock price; RISK is the difference between the highest and lowest price divided by the closing price; SIZE is the natural logarithm of market capitalization; OWN is the proportion of the shares which are owned by non-Jordanian investors.

The estimation results of model (1) are reported in Table 6 and Table 7. Based on these results, we can make three sets of observations.

First, the estimated results, reported in Table 6, show that the coefficient of stock price (PRICE) increased from -0.068 (2007) to 0.246 (2009). This increase is the largest when compared to the changes in all other independent variables. This observation is expected given



the fact that the number of stocks whose prices fell below their nominal values has increased from 10 shares to 85 shares. The increase in the coefficient of PRICE is also reflected in the 2010, 2011, and 2012 estimations (not reported here). Similarly, when we exclude those ask and bid prices that fall outside the 5 percent daily price limit in the spread measures (Table 7), the coefficient of stock price increases from -0.115 (2007) to -0.281 (2009). These observations highlight the importance of the change (fall) in stock prices in impacting the change (increase) in the cost of liquidity. In other words, when stock prices fall, as they did in 2009, investors must expect a reciprocal increase in the bid-ask spread with all its implications to the world of investment (risk of stocks) and corporate finance (cost of equity capital).

**Table 6. Regression results: Not adjusted for price limit**

| 2007 Results        |               |             | 2009 Results        |               |             |
|---------------------|---------------|-------------|---------------------|---------------|-------------|
| Variable            | Coefficient   | t-Statistic | Variable            | Coefficient   | t-Statistic |
| VOL                 | -0.179        | -79.7*      | VOL                 | -0.160        | -44.2*      |
| PRICE               | <b>-0.068</b> | -45.2*      | PRICE               | <b>-0.246</b> | -30.0*      |
| RISK                | 0.234         | 15.3*       | RISK                | 0.216         | 37.4*       |
| SIZE                | -0.151        | -11.7*      | SIZE                | -0.159        | -43.3*      |
| OWN                 | -0.589        | -21.4*      | OWN                 | -0.570        | -73.0*      |
| DUM                 | 0.175         | 64.2*       | DUM                 | 0.122         | 58.6*       |
| Adj. R <sup>2</sup> | 0.642         | -           | Adj. R <sup>2</sup> | 0.534         | -           |
| F-Statistic         | 246.9         | -           | F-Statistic         | 598.6         | -           |

**Notes:** \* indicates that White (1980) heteroskedasticity-constant t-statistic is significant at the 1 percent level.

$$\text{SPREAD}_{i,t} = \alpha_0 + \alpha_1 \ln(\text{VOL}_{i,t}) + \alpha_2 \ln(\text{PRICE}_{i,t}) + \alpha_3 (\text{RISK}_{i,t}) + \alpha_4 \ln(\text{SIZE}_{i,t}) + \alpha_5 (\text{OWN}_{i,t}) + \alpha_6 (\text{DUM}_{i,t}) + \varepsilon_{i,t}.$$

VOL is the natural logarithm of trading volume; PRICE is equal to one plus the natural logarithm of stock price; RISK is the difference between the highest and lowest price divided by the closing price; SIZE is the natural logarithm of market capitalization; OWN is the proportion of the shares owned by non-Jordanian investors; and DUM is a dummy variable which is equal to 0 if the firm is listed on the First market and equal to 1 if the firm is listed on the Second (parallel) market.

**Table 7. Regression Results: Adjusted for Price Limit**

| 2007 Results        |               |             | 2009 Results        |               |             |
|---------------------|---------------|-------------|---------------------|---------------|-------------|
| Variable            | Coefficient   | t-Statistic | Variable            | Coefficient   | t-Statistic |
| VOL                 | -0.179        | -79.8*      | VOL                 | -0.157        | -20.7*      |
| PRICE               | <b>-0.115</b> | -21.7*      | PRICE               | <b>-0.281</b> | -38.6*      |
| RISK                | 0.177         | 24.1*       | RISK                | 0.179         | 30.1*       |
| SIZE                | -0.157        | -66.9*      | SIZE                | -0.161        | -39.1*      |
| OWN                 | -0.523        | -67.9*      | OWN                 | -0.475        | -14.8*      |
| DUM                 | 0.170         | 39.3*       | DUM                 | 0.169         | 79.4*       |
| Adj. R <sup>2</sup> | 78.8          | -           | Adj. R <sup>2</sup> | 52.5          | -           |
| F-Statistic         | 288.6*        | -           | F-Statistic         | 722.5*        | -           |

**Notes:** \* indicates that White (1980) heteroskedasticity-constant t-statistic is significant at the 1 percent level.

$$\text{SPREAD}_{i,t} = \alpha_0 + \alpha_1 \ln(\text{VOL}_{i,t}) + \alpha_2 \ln(\text{PRICE}_{i,t}) + \alpha_3 (\text{RISK}_{i,t}) + \alpha_4 \ln(\text{SIZE}_{i,t}) + \alpha_5 (\text{OWN}_{i,t}) + \alpha_6 (\text{DUM}_{i,t}) + \varepsilon_{i,t}.$$

VOL is the natural logarithm of trading volume; PRICE is equal to one plus the natural logarithm of stock price; RISK is the difference between the highest and lowest price divided by the closing price; SIZE is the natural logarithm of market capitalization; OWN is the proportion of the shares owned by non-Jordanian investors; and DUM is a dummy variable which is equal to 0 if the firm is listed on the First market and equal to 1 if the firm is listed on the Second (parallel) market.

Second, the signs of the other independent variables are also not surprising. The impact of trading volume on the bid-ask spread is negative and this indicates that illiquid stocks tend to have wider bid-ask spreads. The coefficient of the proportion of shares held by non-Jordanians (OWN) is negative and significant. This indicates that foreign investors contribute to greater levels of liquidity and hence narrower spreads. The coefficient of firm size (SIZE) is also negative and significant. This might imply that larger firms are older and better known and hence their bid-ask spreads tend to be narrower than smaller and less-known firms. The coefficient of risk is consistently positive and significant. In other words, when volatility (risk) is low, one should expect narrower bid-ask spreads.

Finally, it is interesting to note that the coefficient of the dummy variable (DUM) is consistently positive and significant. This conclusion is expected given the fact that those companies which are listed on the Second market are newly listed firms and these tend to be less-known than established firms listed on the First market.

## 6. Conclusions

This paper tried to provide answers to two main questions: 1- What is the liquidity cost that exists in the Jordanian capital market? 2- Has the collapse in the market, witnessed consistently since 2008, led to a reciprocal increase in the liquidity cost?

Based on the time period 2007-2012 all listed stocks, and on a total number of 108 listed stocks with daily data during the years 2007 and 2009, the empirical results indicate that liquidity cost on the Jordanian capital market is relatively high. In addition, the results clearly indicate that the stock market crash since 2008 has led to a substantial increase in its liquidity cost.

It is the fact that increasing in bid-ask spreads has serious implications to firms' cost of equity capital. The management of the ASE must look into introducing market-makers. In the meantime, however, if stock prices impact liquidity cost, why don't firms with relatively low prices consider reverse stock splits? This should automatically increase their stock prices and hence, decrease their liquidity cost. Also, why doesn't the management of the ASE consider a reduction in the minimum tick? Clearly, if stock prices are allowed to move in multiples of fils (one tenth of a pence) instead of the currently existing one pence, such an administered change should reduce liquidity cost.

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