



The Effect of Ownership Composition on Stock's Liquidity: Evidence from Weak Corporate Governance Setting

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ABSTRACT

This research seeks to investigate the relationship between ownership composition and stock's liquidity in Jordan's unique corporate setting. A multivariate regression was used to investigate the effect of ownership composition on stock's liquidity for listed Jordanian firms during the period 2006-2014. The research finds that stock's liquidity is higher for listed firms that are owned by government and foreign investors. Nevertheless, the complex pyramidal ownership structure could make corporate information less transparent and then increase the complexity of forecasting; hence, it results in less stock's liquidity. Interestingly, the association between free float ownership and stock's liquidity appears to be positive. The study investigates the effect of ownership structure mechanisms on the stock's liquidity in an emerging market, and the findings provide some insight on how the stock's liquidity might be affected by certain ownership and control features in the context of concentrated government ownership and complex pyramidal ownership structure.

Keywords: Ownership Composition, Stock's Liquidity, Emerging Markets

JEL Classifications: G10, G32

1. INTRODUCTION

We study the relationship between owners' identities and stock's liquidity. Most of the literature that studied this relationship, they gauged it according to information hierarchy and trading hypotheses. The former states that "...the information content of the transactions depends on the type of director who trades in capital market" (Seyhun 1986, p. 193). Moreover, Jeng et al. (1999) documented that "Some insiders are more "inside" than others." However, the latter suggests when traders turn over their portfolio regularly, this leads to an increase in stock's liquidity (i.e., Demsetz 1968; Merton 1987; Schwartz and Shapiro 1992). Previous evidence on the association between owners' identities and stock's liquidity is mixed (e.g., Attig et al., 2006; Brockman et al., 2009; Ginglinger and Hamon 2007; Heflin and Shaw 2000; Jacoby and Zheng 2010; Naes 2004).

We investigate the relationship between owners' identities and stock's liquidity in Jordan's corporate setting during the period of 2006-2014. We include a number of independent variables that are essential in studying stock's liquidity such as shares price,

total risk, and firm size, in the multivariate regression. Moreover, the association between owners' identities and stock's liquidity is also expected to change according to the firm size that is measured mainly by market capitalization. As a result, we study the effect of the firm's size on the relationship between owner's identities and stock's liquidity. Our results reveal that firms with larger size have lower bid-ask spread and illiquidity (ILLIQ) ratio. Furthermore, we show that firms with higher free float ownership have a narrower proportional bid-ask (PBA) spread and lower ILLIQ ratio. To sum up, although scholars agree that owner's identities are linked with stock's liquidity, empirical evidence on the relationship between owner's identities and stock's liquidity in emerging markets is limited.

The paper is organized as follows. Section 2 presents the theoretical and empirical background of the relationship between ownership composition and stocks' liquidity. Section 3 shows the detailed description of the proxies of stock's liquidity and ownership composition and their descriptive statistics. Section 4 shows our findings, section 5 presents the robustness check and section 6 concludes the research.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT.

2.1. Free Float Ownership and Stock's Liquidity

The term free float is used interchangeably with diffused ownership by the existing literature. For example, Ragazzi (1981) defines the free float shares as "the one where a firm's shares are owned by several individuals who cannot take control of the firm or is not able get any benefits other than those available to other shareholders and whose top managers do not receive either direct or indirect benefits other than a market salary." Existing literature document a negative association between block holders and free float shares (Bhide 1993; Holmstrom and Tirole 1993; Bolton and Von Thadden 1998). For instance, Holmstrom and Tirole (1993) state that when free float shares are low in the market then outside shareholders will have few motivations for information production. In the same line, Bhide (1993) states that a lower free float shares in the market would result in less active and continuous trading, and as a result, this will decrease stock's liquidity.

The existing literature also documents that free float holders are uninformed investors. For instance, Comerton-Forde and Rydger (2006) suggest that free float holders ownership has a positive relationship with turnover ratio and negative relationship with the bid-ask spread. This finding supports the view that when free float holders trade, they trade for liquidity reasons. Moreover, Ginglinger and Hamon (2012) examine the free float effect on market liquidity on a sample of 918 firms traded on the French stock exchange for the period 1998-2003. They document a positive relationship between free float and market liquidity. Accordingly, this study proposes that:

Hypothesis 1: There is a positive association between free float ownership and stock's liquidity.

2.2. Investment Companies Ownership and Stock's Liquidity

Existing literature has suggested that, on the contrary to other institutions, investment companies have ability to trade against stock's liquidity shocks (e.g., Gatev and Strahan 2006). A small number of studies have investigated the effect of outside block holders' identity on market liquidity (Fehle 2004; Ginglinger and Hamon 2007; Naes 2004). For example, Fehle (2004) examines the association between market liquidity and institutional ownership, using a sample of 10,107 NYSE stocks for 1980-1996. He finds that there is a negative association between investment companies' ownership and bid-ask spread. He concludes a negative relationship between investment companies and stock's liquidity.

Furthermore, Jennings et al. (2002) partition the institutional ownership into five institutional types and find a heterogeneous relationship between institutional ownership and market liquidity across the types. Specifically, they report a negative relationship between institutional ownership and bid-ask spread is strongest for commercial banks and insurance companies, while there is no relationship between bid-ask spread and pension, foundation, endowment and employee stock option. This heterogeneity is consistent with the notion that the impact on the informational

environment of institutional ownership depends on the nature of the institution. As a result, this study proposes that:

Hypothesis 2: There is a negative association between investment companies' ownership and stock's liquidity.

2.3. Foreign Ownership and Stock's Liquidity

A vast body of literature has documented that foreign investors show a preference for large firms with low insider ownership (see for example, Bushee and Noe 2000; Ferreira and Matos 2008). As a result, foreign investors may increase stock's liquidity. Moreover, some previous studies has documented that foreign institutional investors are more experienced and regarded as informed investors (Grinblatt and Keloharju 2000; Khanna and Palepu 1999; Seasholes 2004). There is also evidence in the existing literature which document that foreign investors will exercise pressure on firms to increase disclosure, which will reduce information asymmetries between inside and outside investors and leads to increase market liquidity (Diamond and Verrachia 1991, Heflin et al., 2005). Nevertheless, in the existing literature only a few studies directly address the issue of how participation of foreign institutions affects market liquidity (Bekaert et al., 2007).

However, previous studies have documented that foreign investors are less likely to have a positive impact on stock's liquidity (e.g., Grinblatt and Keloharju 2000; Seasholes 2004). For instance, Khanna and Palepu (1999) conclude that foreign investors may monitor corporate management better than local investors. Furthermore, Bacmann and Bolliger (2001) state that foreign investors would create more timely and accurate forecasts than local analysts. As a result, foreign ownership may have a negative impact on market liquidity as reported in (Rhee and Wang 2009). This study proposes that:

Hypothesis 3a: There is a positive association between foreign ownership and the stock's liquidity.

Hypothesis 3b: There is a negative association between foreign ownership and the stock's liquidity.

2.4. Government Ownership and Stock's Liquidity

Regarding government ownership, existing literature has stated that agency problem is likely to be high in firms with a higher level of government investors as there are not active shareholders in term of monitoring activities. This suggests that the information environment of government-owned firms is more closed which leads to a lower stock's liquidity (Brockman and Chung 2003). In some countries, the government may be a significant corporate stockholder. For example, when government is a major owner, it is especially important for the board of directors to appear to be legitimate and accountable to the public. This can be achieved by adding more outside directors to the board. Therefore, this study proposes that:

Hypothesis 4: There is a negative association between government ownership and the stock's liquidity.

With respect to employee ownership, cross- holding and other holding relationship with market liquidity, to the best of the

author's knowledge only a limited number of studies test this relationship with market liquidity (e.g., Park 2009, for more details). Nevertheless, based on the work of Park (2009) this study expects to find a negative association between employee ownership, cross-holding and other holding and market liquidity.

3. RESEARCH DESIGN

3.1. Data

The sample used in this study contains 131 firms listed on Amman Stock Exchange (ASE) in Jordan during the year from 2016 to 2014. The sample contains all firms of the ASE index except the financial firms. We extract data on owner's identities, and financial data from DataStream. Our sample includes firms with detailed data for the main variables used in the empirical analyses.

3.2. Research Model

The model for our study is represented by the following equation:

$$LIQ_{it} = \alpha_0 + \beta_1 NOHFF_{it} + \beta_2 NOSHIC_{it} + \beta_3 NOSHOF_{it} + \beta_4 NOSGV_{it} + \beta_5 NOSHEM_{it} + \beta_6 NOSHCO_{it} + \beta_7 NOSHFR_{it} + \beta_8 NOSHOF_{it} + \gamma_1 SIZE_{it} + \gamma_2 PI_{it} + \gamma_3 RI_{it} + \sum_{i=1}^n IND + \sum_{i=1}^n YEAR + \varepsilon_i \tag{1}$$

Where *LIQ* is market liquidity, *NOSHFF* is free float shares, *NOSHIC* investment company ownership, *NOSHGV* government ownership, *NOSHEM* employee ownership, *NOSHCO* cross-holding ownership, *NOSHFR* foreign ownership, *NOSHOF* other holding, *MV* is market value, *PI* is shares price, *RI* is total risk, and *IND* and *YEAR* is the industry and year dummies respectively.

3.3. Descriptive Analysis

This part presents the descriptive figures for owners' identity variables. Table 1 uses average, standard deviation (SD), minimum, and maximum values to illustrate the data over the period 2006-2014. In addition, Table 2 documents the mean and median differences for owners' identity and market liquidity variables in large and small firms. It is noticeable from Table 1 that free float ownership (*NOSHFF*) ranges between a minimum of 5% to a maximum of 100% with a mean of 49% and a SD of 21% for the whole sample over the period. With respect to the other holding ownership (*NOSHOF*) the average of other holding ownership within the same period of study is 2% with a SD of 8%.

As shown in Table 1 foreign ownership (*NOSHFR*) ranges between a minimum of zero to a maximum of 90% with an average of 16% for the whole sample over the period. In addition, investment company ownership (*NOSHIC*) has an average of 24%. With respect to government ownership (*NOSHGV*), Table 1 shows that *NOSHGV* has an average of 3% with a range of zero and 88%. However, cross-holding ownership (*NOSHCO*) has an average of 23% and range between 0 and 90%. Regarding employee ownership (*NOSHEM*) it has an average of 21% and a range between 0 and 95%. These findings are consistent with the results

Table 1: Descriptive statistics

Variables	Mean±SD	Minimum	Maximum
<i>NOSHFF</i>	0.49±0.21	0.05	100
<i>NOSHOF</i>	0.02±0.08	0.00	0.57
<i>NOSHIC</i>	0.01±0.07	0.00	0.89
<i>NOSHGV</i>	0.03±0.10	0.00	0.88
<i>NOSHFR</i>	0.16±0.21	0.00	0.90
<i>NOSHEM</i>	0.21±0.20	0.00	0.95
<i>NOSHCO</i>	0.23±0.22	0.00	0.90
<i>RI</i>	0.17±0.23	0.00	0.99
<i>SIZE</i>	157.53±653.86	1.01	10445.04
<i>PI</i> in pence	2.39±4.38	0.03	46.51
<i>ILLIQ</i>	0.12±0.002	0.00	0.57
<i>PBA</i>	0.072±0.052	0.00	0.50

The mean, SD, minimum, and maximum values for free float holding (*NOSHFF*), foreign holding (*NOSHFR*), investment companies holding (*NOSHIC*), government holding (*NOSHGV*), employee holding (*NOSHEM*), cross-holding (*NOSHCO*), other holding (*NOSHOF*), *PBA* spread, *ILLIQ* ratio, firm size (*SIZE*), share price (*PI*), total risk (*RI*) during 2006 to 2014 for ASE companies. See Appendix 1 for variables' definitions and measurements. SD: Standard deviation, *PBA*: Proportional bid-ask, ASE: Amman Stock Exchange

Table 2: Descriptive statistics of large and small firms

Variables	Small	Large	t-statistics	Wilcoxon signed rank test
<i>ILLIQ</i>	0.002	0.003	-1.4376	-0.587
<i>PBA</i>	0.008	0.006	0.8983	0.135
<i>NOSHFF</i>	0.473	0.482	-0.4558	-0.794
<i>NOSHOF</i>	0.017	0.014	0.4085	0.777
<i>NOSHIC</i>	0.029	0.002	2.9565***	3.996***
<i>NOSHGV</i>	0.024	0.038	-1.5822	-0.875
<i>NOSHFR</i>	0.145	0.154	-0.4472	0.228
<i>NOSHEM</i>	0.225	0.188	1.7439*	2.057**
<i>NOSHCO</i>	0.230	0.273	-1.7422*	-1.033

***1%,**5% and *10%. The mean and median differences of free float holding (*NOSHFF*), foreign holding (*NOSHFR*), investment company holding (*NOSHIC*), government holding (*NOSHGV*), employee holding (*NOSHEM*), cross-holding (*NOSHCO*), other holding (*NOSHOF*), *PBA*: Proportional bid-ask spread and *ILLIQ*: Illiquidity ratio firms are sorted according to the market value: firms above the median of market value are considered as large and those below the median are considered as small. See Appendix 1 for variables' definitions and measurements

obtained by prior ASE ownership-liquidity studies. Nevertheless, only two studies investigate the effect of institutional identity on market liquidity. Our results matched the findings of Al-Amarnah (2014), Al-Amarnah and Yaseen (2014), Al-Sharif et al. (2015) and Tayeh (2016) in ASE. For stock's liquidity measures, Table 1 documents that the average (median) of *PBA* spread and *ILLIQ* ratio are 7.2% (5.2%) and 12% (0.00) respectively showing that our sample includes a relatively liquid firms. For control variables, mean (SD) for firm size (*SIZE*) and total volatility (*RI*) are JD 157.53 (JD 653.86), 17% (23%). Lastly, the mean (SD) of share price is JD 2.39 (JD 4.38).

3.4. Size Anomaly

To investigate the effect of the firm size on the owners' identity and stock's liquidity variables, this study stratifies ASE firms into two size groups. The large (small) firm group consists of firms with size above (below) the median of the market value of equity (*MV*) of the ASE sample firms. The average for owners' identity and stock's liquidity variables are reported in Table 2. This research implies both parametric and non-parametric test in order to test the differences in average and median of the above-mentioned

Table 3: Correlation matrix

Variables	RI	SIZE	PI	ILLIQ	PBA	NOSHFF	NOSHOF	NOSHIC	NOSHGV	NOSHFR	NOSHEM	NOSHCO
RI	1.00											
SIZE	-0.02	1.00										
PI	-0.16*	0.11*	1.00									
ILLIQ	0.03	0.07*	0.11*	1.00								
PBA	0.16*	0.00	-0.17*	0.28*	1.00							
NOSHFF	0.08*	0.00	-0.29*	-0.22*	-0.01	1.00						
NOSHOF	-0.01	-0.11*	0.06	0.06	0.02	-0.13*	1.00					
NOSHIC	0.11*	-0.22*	-0.10*	-0.12*	-0.04	-0.00	-0.04	1.00				
NOSHGV	-0.12*	0.10*	0.19*	0.07	-0.08	-0.07	0.01	-0.03	1.00			
NOSHFR	0.02	0.03	0.05	0.03	-0.03	-0.34*	0.21*	0.01	0.14*	1.00		
NOSHEM	0.05	-0.11*	0.20*	0.06	0.04	-0.24*	-0.02	-0.06	-0.27*	0.04	1.00	
NOSHCO	0.03	0.09*	-0.04	0.10*	-0.00	-0.47*	-0.15*	-0.05	-0.06	0.16*	-0.35*	1.00

Correlations between the research variables. A brief description of all the variables is given below. Free float holding (*NOSHFF*), foreign holding (*NOSHFR*), investment company holding (*NOSHIC*), government holding (*NOSHGV*), employee holding (*NOSHEM*), cross-holding (*NOSHCO*), other holding (*NOSHOF*), PBA spread, ILLIQ ratio ILLIQ, firm size (*SIZE*), share price (*PI*), total risk (*RI*). See Appendix 1 for variables' definitions and measurements. Significance at 5% and more

variables between small and large ASE firms; both the t-statistics and Wilcoxon signed-rank test are used to test the average and median differences respectively.

Table 2 reports that on average small ASE firms have a higher PBA spread relative to the large ASE firms. Nevertheless, it is noticeable from Table 2 that small ASE firms have the higher PBA spread in comparison with the large ASE firms. Regarding to the owners' identity variables, small ASE firms have lower free float ownership (*NOSHFF*) in comparison with large ASE firms. These findings are in line with previous studies (Chiang and Venkatesh 1988; Jacoby and Zheng 2010; Kini and Mian 1995; Tinic 1972). These studies have stated that larger firms are more dispersed; in other words, they have more shareholders. In particular, these studies conclude that, when the ownership is held by outsider shareholders, this will increase the probability that more investors will participate in the trading operation in the capital market; this leads to an increase in the stock's liquidity.

However, with respect to employee ownership (*NOSHEM*), it is noticeable from Table 2 that small firms have more employees holding. Existing literature has documented that the association between *NOSHEM* and bid-ask spread is significant and stronger than for small firms. Specifically, smaller firms have a higher insider ownership, which gives them more ability to access private information about a firm's prospect than outside investors that lower stock's liquidity (i.e., Jacoby and Zheng 2010; Kini and Mian 1995). With respect to the identity of institutional investors, it is noticeable from Table 2 that small firms have more investment company holding (*NOSHIC*), and other holdings (i.e., endowment and education institutions) (*NOSHOF*) relative to large firms. In contrast, larger firms have more government ownership (*NOSHGV*), cross-holdings (*NOSHCO*) and foreign ownership (*NOSHFR*). As a result, Table 2 shows that the government and cross-holdings are more pronounced in larger firms. Recent studies have suggested the firm's size effect as a robustness and consistency test to detect if the firm's size has an effect on the relationship between ownership composition and stock's liquidity (i.e., Jacoby and Zheng 2010; Kini and Mian 1995). This study notices from Table 2 that the firm's size has on average a strong effect on both stock's liquidity and owners'

identity variables. Consequently, the study tests the impact of firm size on the association between owners' identity and stock's liquidity as a further test to check the consistency of the results of firm's size effect with the main results, as we will see later in this research.

3.5. Correlation Matrix

This part presents the Pair wise correlations among the owners' identity, stock's liquidity proxies and control variables. It is noticeable from Table 3 that most of the correlation coefficients between the study's variables are low but there are still some relatively high correlations between some of those variables. The correlation coefficient can be explained as follows. From Table 3 it is noticeable that the highest correlation, compared with other variables, is found between the free float holding (*NOSHFF*) and foreign ownership (*NOSHFR*) is (-0.34) and employee ownership (*NOSHEM*) and cross-holding ownership (*NOSHCO*) is (-0.35). Moreover, the highest correlation is found between *NOSHFF* and *NOSHCO* is (-0.47). Nevertheless, in order to detect the problem of multicollinearity in the estimations; this research apply the variance inflation factor (VIF) test. Under the guidelines of this test, the existence of multicollinearity can be confirmed only in circumstances where the value of the VIF is more than 10. Both the VIF test and the Pair wise rank correlation validate that there is no intercorrelation among the study's explanatory variables in our models. Moreover, this study also estimates robust standard error to control for serial correlation and heteroscedasticity using the option "Robust" in STATA 11.

4. EMPIRICAL RESULTS AND ANALYSIS

4.1. The Effect of the Owners' Identity on Stock's Liquidity

This study conducts several method of estimation in order to test the association between owners' identity and stock's liquidity such as untabulated results of fixed and random regressions. Unlike other previous studies, this study follows Poon et al. (2013), and employs pooled OLS dummy industry and year in order to control for endogeneity and time invariant problems. The following model is used to examine this relationship:

$$LIQ_{it} = \alpha_0 + \beta_1 NOSHFF_{it} + \beta_2 NOSHIC_{it} + \beta_3 NOSHOF_{it} + \beta_4 NOSHGV_{it} + \beta_5 NOSHEM_{it} + \beta_6 NOSHCO_{it} + \beta_7 NOSHFR_{it} + \beta_8 NOSHOF_{it} + \gamma_1 SIZE_{it} + \gamma_2 PI_{it} + \gamma_3 VOL_{it} + \sum_{i=1}^n IND + \sum_{i=1}^n YEAR + \varepsilon_i \tag{2}$$

Where *LIQ* is market liquidity, *NOSHFF* is free float shares, *NOSHIC* investment company ownership, *NOSHGV* government ownership, *NOSHEM* employee ownership, *NOSHCO* cross-holding ownership, *NOSHFR* foreign ownership, *NOSHOF* other holding, *SIZE* is firm size, *PI* is shares price, *VOL* is volatility, and *IND* and *YEAR* is the industry and year dummies respectively.

Table 4 presents our multivariate regression findings on the association between stock's liquidity and owners' identity. To alleviate concerns about endogeneity problem, this research incorporates in all regressions the control variables that the literature considers as important determinants of stock's liquidity. All regressions include industry and time-fixed effects to control for time-invariant omitted industry-level factors that affect stock's liquidity following Poon et al. (2013). The multivariate regression analysis contains several regression models, each with different stock's liquidity measures as a dependent variable, and the identity ownership variables and the control variables as independent variables.

Table 4: Pooled OLS analysis for the effect of owners' identity on stock's liquidity

Variables	PBA	ILLIQ
<i>NOSHFF</i>	-0.18 (-2.82)*	-0.69(-2.97)*
<i>NOSHOF</i>	-0.12 (-1.92)***	-0.57 (-2.49)**
<i>NOSHIC</i>	-0.07 (-1.18)	-0.72 (-3.48)*
<i>NOSHGV</i>	0.04 (0.92)	0.01 (0.43)
<i>NOSHFR</i>	0.09 (2.60)*	0.37 (2.91)*
<i>NOSHCO</i>	0.02 (0.46)	-0.01 (-0.08)
<i>NOSHEM</i>	-0.12 (-3.12)*	-0.42 (-3.13)*
<i>SIZE</i>	-0.04 (-2.35)**	0.05 (0.91)
<i>RI</i>	0.01 (0.40)	0.02 (0.21)
<i>PI</i>	0.00 (0.09)	0.03 (2.74)*
Constant	0.03 (0.57)	-4.15 (-17.01)*
Industry dummy	Yes	Yes
Year dummy	Yes	Yes
Observations	1099	1099
Adjusted R ²	0.85	0.17

Where *1%, **5% and ***10%. Findings of the effect of owner's identities on stock's liquidity. The table contains coefficient values and t-statistics obtained from the run of the following model. Figures recorded in parentheses represent t-statistics which are based on robust standard errors,

$$LIQ_{it} = \alpha_0 + \beta_1 NOSHFF_{it} + \beta_2 NOSHIC_{it} + \beta_3 NOSHOF_{it} + \beta_4 NOSHGV_{it} + \beta_5 NOSHEM_{it} + \beta_6 NOSHCO_{it} + \beta_7 NOSHFR_{it} + \gamma_1 SIZE_{it} + \gamma_2 PI_{it} + \gamma_3 RI_{it} + \sum_{i=1}^n IND + \sum_{i=1}^n YEAR + \varepsilon_i \tag{3}$$

A brief description of the ownership structure, stock's liquidity and control variables is given below. Free float holding (*NOSHFF*), foreign holding (*NOSHFR*), investment company holding (*NOSHIC*), pension fund holding (*NOSHPPF*), government holding (*NOSHGV*), employee holding (*NOSHEM*), cross-holding (*NOSHCO*), other holding (*NOSHOF*), PBA spread, ILLIQ ratio, firm size (*SIZE*), share price (*PI*), total risk (*RI*), industry (*IND*) and year (*YEAR*) dummies. The t-statistics are presented in parentheses. See Appendix 1 for variables' definitions and measurements

The research finds evidence that the proportion of free float shares (*NOSHFF*) affects the level of stock's liquidity. This is consistent with H1, which expects that *NOSHFF* is positively related to the level of stock's liquidity. Free float ownership is found to significantly decrease with ILLIQ at 1% significance level. This result leads us to accept hypothesis H1, which states there is a positive relationship between free float share and stock's liquidity. This is again in line with Amihud et al. (1999), Bhide (1993), Holmstrom and Tirole (1993) and Zheng and Li (2008). With respect to investment banks (*NOSHIC*), this study's findings reveal that there is a negative and significant association between investment banks' ownership and stock's liquidity; this leads us to accept H2, which documents that there is a negative relationship between investment banks' ownership and stock's liquidity. In particular, this study concludes that there is a insignificantly positive association between *NOSHIC* and PBA and significantly negative association between *NOSHIC* and ILLIQ at 1% significance level. Our findings are similar to the work of Barabanov and McNamara (2002), Fehle (2004) and Syamala et al. (2014).

According to the adverse selection and trading hypothesis, this study hypothesized that the foreign ownership decreases or increases stock's liquidity. More interestingly, this study finds that foreign ownership increases with PBA and ILLIQ which lead us to accept H3a; that there is a significantly positive relationship between foreign ownership and stock's liquidity. This is due to the fact that foreign institutional investors are recognized as informed traders (Bacmann and Bolliger 2001; Grinblatt and Keloharju 2000; Khanna and Palepu 1999; Seasholes 2004). With respect to the employee ownership (*NOSHEM*), to the author's knowledge few studies in the ownership-liquidity relationship take into consideration the *NOSHEM* as one of the determinants of market liquidity.

Our results in Table 4 reveal that there is a negative relationship between stock's liquidity and employee ownership (*NOSHEM*). More specifically, the findings document that there is a significantly negative relationship between *NOSHEM* and PBA and ILLIQ at 1% significance level. With respect to cross-holdings and other holdings this research reports insignificantly positive association between cross-holdings and other holdings and PBA. Moreover, Table 4 shows an insignificantly negative association between cross-holdings and ILLIQ. These results are thus inconsistent with the result reported in Park (2009). The differences in findings of the two studies may be due to differences in the time-periods, sample size and market environment of this study, as compared to that of Park (2009).

With respect to government ownership (*NOSHGV*), inconsistent with hypothesis H4, which states that there is a negative association between *NOSHGV* and stock's liquidity, it is found that the *NOSHGV* is positively and insignificantly associated with PBAS and ILLIQ. These results indicate that the *NOSHGV* has positive impact on stock's liquidity. These findings imply that large government ownership plays a weaker role in monitoring management through increasing stock's liquidity. This leads us

to accept reject hypothesis H4. These findings are findings are in line with Brockman and Chung (2003).

Regarding control variables, this study documents a positive and significant association between total risk and information friction measures of stock's liquidity (PBA spread and liquidity ratio). Previous literature has documented that there is a negative relationship between total risk and stock's liquidity (Black 1986; French and Roll 1986; Poon et al., 2013; Rubin 2007). However, with respect to the firm size, this study shows that there is a negative relationship between firm size and PBA in the ASE sample. This negative relationship confirms that larger firms have higher stock's liquidity as they have a better access to the capital market. Furthermore, those large firms can deal with unpredicted liquidity problems in a more effective and flexible way than smaller firms can (Konishi and Yasuda 2004). Moreover, Table 4 shows that the share price is positively correlated with stock's liquidity (i.e., Adams et al., 2005).

Lastly, this study run the VIF in order to detect for the multicollinearity problem. The results of VIF tests indicates that

multicollinearity problem does not exist. From Table 5 it is clear that all values are <10. Moreover, the average VIF is 2.24.

5. FURTHER ANALYSIS AND ROBUSTNESS CHECKS

5.1. Small Firm versus Large Firm Sample Results

This research divides the data into small and large firms according to their market value of equity and re-examine the association between owners' identity and stock's liquidity. In fact, this analysis helps us to test if the nature of the relationship between stock's liquidity and owners' identity will change between small and large firms. Small (large) firms are considered as firms that have a market value of equity smaller (equal to or greater) than the median market value of equity of million for the entire sample of 131 firms. In Table 6 Panels A and B, this research shows the multivariate regression year and industry dummies findings for large and small firms respectively.

With respect to owner's identity, Table 6 Panels A and B reveal that *NOSHOF* has a stronger negative and significant association with PBA and ILLIQ for small firms than large firms. Moreover, *NOSHIC* has a stronger negative and significant relationship with ILLIQ in comparison with large firms. In contrast, for large firms Table 6 Panel A reveals that government ownership (*NOSHGV*) has a positive and insignificant relationship with ILLIQ, whereas it has a negative and significant impact on ILLIQ ratio and PBA.

It is noticeable from Table 6 Panels A and B that employee holding (*NOSHEM*) has a stronger and more negative effect on PBA spread and ILLIQ ratio for small firms. As shown in Table 6 Panels A and B that the free float shares (*NOSHFF*) there is a negative association between stock's liquidity and free float shares. Specifically, there is a negative relationship between *NOSHFF* and PBA spread and ILLIQ ratio. Our findings are in line with Amihud et al. (1999), Bhide (1993), Holmstrom and Tirole (1993) and Zheng and Li (2008).

Table 5: VIFs test

Variables	PBA	ILLIQ
<i>NOSHFF</i>	2.47	2.47
<i>NOSHOF</i>	1.12	1.12
<i>NOSHIC</i>	1.12	1.12
<i>NOSHGV</i>	1.24	1.24
<i>NOSHFR</i>	1.41	1.41
<i>NOSHEM</i>	1.96	1.96
<i>NOSHCO</i>	1.81	1.81
<i>SIZE</i>	1.15	1.15
<i>RI</i>	1.22	1.22
<i>PI</i>	1.19	1.19
Industry dummy	Yes	Yes
Year dummy	Yes	Yes
Mean VIF	2.24	2.24

PBA: Proportional bid-ask spread, ILLIQ: Illiquidity ratio, *SIZE*: Firm size, *RI*: Total risk, *PI*: Share price VIF: Variance inflation factors

Table 6: The firm's size effect on the relationship between the owners identity and stock's liquidity

Variables	Constant	<i>NOSHFF</i>	<i>NOSHOF</i>	<i>NOSHIC</i>	<i>NOSHGV</i>	<i>NOSHFR</i>	<i>NOSHEM</i>	<i>NOSHCO</i>	<i>RI</i>	<i>SIZE</i>	<i>PI</i>	Adjusted R ²
Panel A : Small firms												
PBA	0.20	-0.25	-0.23	-0.06	-0.15	0.09	-0.14	-0.02	-0.01	-0.08	-0.11	0.81
	(1.71)***	(-2.51)**	(-2.55)*	(-0.84)	(-2.09)**	(1.72)***	(-2.24)**	(-0.33)	(-0.26)	(-1.17)	(-2.26)**	
ILLIQ	-1.16	-1.22	-0.97	-0.59	-0.86	0.57	-0.28	-0.17	-0.04	-0.70	-0.74	0.17
	(-2.24)**	(-2.77)*	(-2.48)**	(-1.91)***	(-2.69)*	(2.37)**	(-1.06)	(-0.69)	(-0.22)	(-2.32)**	(-3.60)*	
Panel B: Large firms												
PBA	0.03	-0.28	0.08	-0.04	0.10	0.08	-0.11	0.04	0.06	-0.00	-0.10	0.90
	(-9.31)*	(-3.57)*	(0.89)	(-0.33)	(2.11)**	(1.88)***	(-2.65)*	(0.89)	(2.02)**	(-0.09)	(-3.01)*	
ILLIQ	-3.70	-1.12	0.70	-0.61	0.35	0.37	-0.58	0.15	0.08	0.16	-0.49	0.14
	(-9.31)*	(-2.77)*	(1.44)	(-0.96)	(1.41)	(1.74)***	(-2.63)*	(0.65)	(0.54)	(1.43)	(-2.74)*	

Findings of the effect of owner's identities on stock's liquidity. The table contains coefficient values and t-statistics obtained from the run of the following model. Figures recorded in parentheses represent t-statistics which are based on robust standard errors, where * ** ** * mean significance at the 1%, 5% and 10% levels respectively.

$$LIQ_{it} = \alpha_0 + \beta_1 NOSHFF_{it} + \beta_2 NOSHIC_{it} + \beta_3 NOSHOF_{it} + \beta_4 NOSHGV_{it} + \beta_5 NOSHEM_{it} + \beta_6 NOSHCO_{it} + \beta_7 NOSHFR_{it} + \gamma_1 SIZE_{it} + \gamma_2 PI_{it} + \gamma_3 RI_{it} + \sum_{i=1}^n IND + \sum_{i=1}^n YEAR + \varepsilon_i \tag{3}$$

A brief description of the ownership structure, stock's liquidity and control variables is given below. Free float holding (*NOSHFF*), foreign holding (*NOSHFR*), investment company holding (*NOSHIC*), pension fund holding (*NOSHFF*), government holding (*NOSHGV*), employee holding (*NOSHEM*), cross-holding (*NOSHCO*), other holding (*NOSHOF*), PBA spread, ILLIQ ratio, firm size (*SIZE*), share price (*PI*), total risk (*RI*), industry (IND) and year (YEAR) dummies. The t-statistics are presented in parentheses. See Appendix 1 for variables' definitions and measurements

6. CONCLUSIONS

This research has provided important evidence on the role of owners' identity on stock's liquidity in Jordan. This study investigates how insider and outsider ownership identity are related to stock's liquidity. This study covers all the publicly listed firms on the ASE in Jordan. The sample of the current study is constructed from non-financial sectors. The study covers a 10-year time period from 2006-2014. The existing literature provides support for the importance of studying owner's identities. For instance, larger institutional owners have greater ability and incentives to acquire value-relevant information, relative to smaller institutional owners; this results in a lower stock's liquidity (Fehle 2004; Neas 2004).

Regarding outsider ownership identities, this study finds that for all controlled shareholders (investment companies, foreign, government, and pension fund) there is a negative association between these controlled shareholders and stock's liquidity. In particular, after this study controls for the well-known trading activity measures such as number of trades and trade size, still there is a positive relationship between controlled shareholders' ownership and PBA spread. As a result, the findings are consistent with the adverse selection hypothesis that employee ownership inversely affects stock's liquidity.

With respect to cross-holdings and other holdings this study reports insignificantly positive relationship between cross-holdings and other holdings and the PBA spread. The findings also show an insignificantly negative relationship between cross-holdings and number of trades and trade size. Regarding employee ownership, the findings show an insignificantly positive relationship with price impact ratio. This study therefore notices a marginally negative relationship between cross-holdings, other holdings and employee ownership and stock's liquidity. The results of this research are thus inconsistent with the result reported in Park (2009). This may be due to differences in the time-periods, sample size and market environment of this study as compared to that of Park (2009).

Nevertheless, with respect to the free float shares, to the author's knowledge few studies in the ownership- liquidity relationship take into consideration the free float as one of the determinants of stock's liquidity (Ginglinger and Hamon 2007; Park 2009). Our results show that there is positive relationship between stock's liquidity and free float shares. Specifically, there is a negative association between PBA spread and price impact ILLIQ ratio and positive impact on the real friction of stock's liquidity. Our results are in line Amihud et al. (1999), Bhide (1993), Holmstrom and Tirole (1993) and Zheng and Li (2008).

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