The Impact of Corporate Governance and Earnings Management on Stock Liquidity: Empirical Study of Jordanian Industrial Firms

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ABSTRACT

This study aims to examine the impact of corporate governance and earnings management on stock liquidity. A sample of 53 Jordanian industrial firms listed in Amman Stock Exchange (ASE) during the period (2008-2017) was included in the analysis. Trading volume and bid-ask spread were used in order to measure stock liquidity. As for corporate governance, three indicators related to the board of directors were employed; board size, board independence and CEO duality, whereas earnings management was tested through discretionary accruals proxy by using the modified Johns model.

The major findings obtained indicated that there is a significant impact of corporate governance and earnings management on stock liquidity. In particular; the results indicated that an increase in corporate governance practices results in increasing stock liquidity. The results also indicated that an increase in earnings management practices results in decreasing stock liquidity.

The study's results indicated that corporate governance practices have a positive significant impact on stock liquidity. Therefore, the Ministry of Commerce and Industry and the Securities Commission should verify the activation of the systems of corporate governance in the Jordanian industrial firms, especially with regard to the chief executive officer duality and board size. Also, Amman Stock Exchange and the Securities Commission must consider imposing penalties on companies that do not apply corporate governance mechanisms as soon as possible.

Keywords: Corporate governance, Earnings management, Stock liquidity, Jordanian industrial firms.

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Received on 15/5/2019 and Accepted for Publication on 16/2/2020.

أثر حوكمة الشركات وإدارة الأرباح على سيولة السهم: دراسة تطبيقية للشركات الصناعية الأردنية

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ملخص

هدفت هذه الدراسة إلى معرفة أثر حوكمة الشركات وإدارة الأرباح على سيولة السهم، باستخدام عينة من الشركات الصناعية المساهمة العامة المدرجة في سوق عمان المالي تتكون من 53 شركة للفترة بين 2008 و2017.

تم استخدام حجم التداول وتكلفة السيولة من أجل قياس سيولة الأسهم. أما بالنسبة لحوكمة الشركات، فقد تم توظيف ثلاثة مؤشرات تتعلق بمجلس الإدارة هي: استقلالية المجلس، وحجم مجلس الإدارة، والفصل بين مهام الرئيس التنفيذي والإدارة، في حين تم اختبار إدارة الأرباح من خلال الاستحقاقات المقدرة باستخدام نموذج جونز المعدل. وأشارت النتائج الرئيسية التي تم الحصول عليها في الدراسة إلى أن حوكمة الشركات وإدارة الأرباح تؤثران بشكل كبير على سيولة الأسهم؛ فقد أشارت النتائج إلى أن تحسين حوكمة الشركات يؤدي إلى زيادة السيولة في الأسهم، بينما تؤدي زيادة ممارسات إدارة الأرباح إلى انخفاض سيولة الأسهم.

أما أهم توصيات الدراسة فتتمثل في قيام وزارة التجارة والصناعة وهيئة الأوراق المالية بمتابعة تفعيل أنظمة الحوكمة في الشركات المساهمة العامة الأردنية، خاصة فيما يتعلق بحجم مجلس الإدارة وفصل مهام الرئيس التنفيذي عن مهام رئيس مجلس الإدارة.

الكلمات الدالة: حوكمة الشركات، إدارة الأرباح، سيولة السهم، الشركات الصناعية الأردنية.

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تاريخ استلام البحث 2019/5/15 وتاريخ قبوله 2020/2/16.

INTRODUCTION

After the occurrence of financial scandals along with the industrial revolution followed by globalization, great focus was headed towards rendering reliable financial information and creating an increased confidence of stock markets. The emergence of corporate governance was one of the ways with the purpose of controlling the financial information quality, which in turn had a huge effect on many aspects of stock markets, such as market liquidity, since the efficient functioning of stock markets depends on the quality, accuracy and transparency of financial information (Riahi et al., 2013).

In theory, corporate governance affects stock liquidity in light of the fact that effective corporate governance prevents managers from concealing information and decreases information asymmetry (Prommin et al., 2014). Many mechanisms were considered as indicators of corporate governance efficiency in previous studies. Some are related to directors' and executives' stock compensation and stock ownership, while others are related to independence and effective functioning of the board. The corporate governance mechanisms that we are using in this study are: the degree of board independence, CEO duality and board of directors' size.

Another factor that has a huge effect on stock liquidity is earnings management (Nowghabi et al., 2015), which refers to "managers' use of judgment in financial reporting in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers" (Healy and Wahlen ,1999: 6).This factor is also considered an important determinant of the financial information quality (Mezerji et al., 2013).

Stock liquidity refers to the ability of investors to buy and sell securities in the stock market with easy transfers (Abdul-Khaliq, 2013). The extant literature on the association between stock liquidity, earnings management and corporate governance suggests that bid–ask spreads (B_A) as a stock liquidity indicator are positively correlated with earnings management levels and negatively associated with better corporate governance mechanisms (Bar-Yosef and Prencipe, 2013).

Previous research conducted in Jordan has tackled the relation between corporate governance and stock liquidity (Khan and Sajjad, 2013); other studies have dealt with the relation between earnings management and stock liquidity (Sayari and Omri, 2017). However, less attention has been paid to the linkage between corporate governance quality, earnings management and stock liquidity at once. The current research tries to fill this gap and provides an analysis about the impact of corporate governance and earnings management on stock liquidity in Jordan.

The Problem Statement

This study is conducted in order to study the relationship between earnings management, corporate governance and stock liquidity through answering the questions of the research problems that are stated as follows:

Does corporate governance have an impact on stock liquidity?

Does earnings management have an impact on stock liquidity?

Do corporate governance and earnings management have an impact on stock liquidity?

The Importance of the Research

The study importance is derived from:

1. The importance of understanding what affects stock markets' liquidity, as well as the means of

providing a fair, efficient and transparent stock market in Jordan, with a secure and stable securities trading environment, in order to increase confidence in the securities market, as stock markets play a vital role in serving the national economy through mobilizing national savings, providing the necessary financing to establish important economic projects and attracting inside and outside investments to the market.

2. The immense value to investors, regulators, industrial companies, shareholders and other financial statements' users, provided from the insight into the impact of corporate governance and earnings management on stock liquidity and the existence of earnings management practices in Jordan and the level of complaints by industrial companies in Jordan in pertinence to corporate governance practices.

The Objectives of the Research

This study aims at achieving the following main objectives:

- Investigating the impact of corporate governance on stock liquidity.
- Investigating the impact of earnings management on stock liquidity.
- Investigating the impact of corporate governance and earnings management on stock liquidity.

Literature Review and Theoretical Framework

Stock Liquidity

The extant literature considers liquidity as a multifaceted term and provides various definitions to it, as it varies according to the nature and field of study in which it is presented.

Gopalan et al. (2012) defined liquidity as the degree to which an asset can be realized without loss, while stocks are liquid if they are instantly executable with irrelevantly little effect on the price of security regardless of the size of the transaction (Faez et al., 2014; Putyatin et al., 1999).

Yeyati et al. (2007) defined a liquid market as "a market where participants can rapidly execute large-volume transactions with a small impact on prices"; that is, at a low cost.

Stock liquidity constitutes an important area in the literature and is considered one of the most crucial market performance measures (al-Abed and Al-Khouri, 2006). Moreover, it represents a huge concern to exchange organizations (Masoud, 2013), as it contributes to attracting surplus capital to finance national projects that need funding through offering shares or bonds to subscribe in.

Liquidity is not considered a one- dimensional term. Different dimensions were presented in previous studies (Kumar and Misra, 2015). Different measurement was presented in previous studies in order to measure these dimensions. According to Wyss (2004), the bid-ask spread is one of stock liquidity measures, which refers to the difference between the price at which an investor buys the stock and the price he/she sells it for, where spread represents the bulk of the transaction cost. Gregoriou et al. (2002) pointed out that bid-ask spread has a negative impact on liquidity.

Oskuee and Samimi (2016) and Chung et al. (2010) debated that the volume-based measures are primarily incorporated into the breadth and depth of the market. These measures distinguish liquid markets by the volume of transactions compared to the price variability. Furthermore, Wyss (2004) believed that the trading volume is considered one of the easy measures, as it needs only the trade data which is easily obtainable.

Earnings Management

Earnings are considered one of the important

resources of accounting information for investors, creditors and other users of accounting information.

Earnings management is the act of managers using their personal estimates in the preparation of published financial statements in order to mislead users or with the intention of influencing the level of achievements of companies for the purpose of the contractual serving relationship between managers and owners (Healy and Wahlen, 1999; Azzoz and Khamees, 2016). Managers have incentives to manipulate earnings in order to achieve analysts' earnings' benchmarks. Matsunaga and Park (2001) found that reporting quarterly earnings below the analyst forecast has a negative significant effect on managers' bonuses.

According to the political cost hypothesis (Watts and Zimmerman, 1978), firm size affects its accounting practices. Therefore, big companies tend to decrease the reported earnings amount to avoid the legal costs imposed by governments and regulators incurred as a result of high reported earning costs by adopting certain accounting policies (Degeorge et al., 2005).

Cornanic and Novak (2015) pointed out that the widespread use of accounting information by investors and financial analysts is to value the firm share and this can generate incentives for managers to manipulate earnings in order to influence the share price. Masoud (2016) and Bataineh et al. (2019) also believed that management in the process of income preparation seeks to reduce the volume of fluctuations in the periodic earnings, in order to reduce the risk element surrounding the chances of achieving these earnings in the future and in order to provide the company's earnings with a feature of continuity, which would positively reflect on the quality of those earnings and on the share price in the financial market.

Corporate Governance

The origin of the term governance is the Greek word "kyberman", meaning to govern, control, direct and guide the actions of something or someone (Abdullah and Valentine, 2009). Corporate governance is the system that is used to direct and manage a company. It is aimed to the allocation of rights and responsibilities between different participants in the company, such as the board of directors, managers, stockholders and other beneficiaries (Abbasi et al., 2013).

In the context of many financial crises and scandals that occurred over time, huge public and political interest was targeted towards corporate governance regulations all over the world, especially since the high-profile collapse of many companies during the period 2001-2002, as well as after the financial crisis that occurred in 2008.

Corporate governance primary concern is to protect weak shareholders and mitigate agency costs derived from agency theory which defines agency as "a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf involving delegating some decision-making authority to the agent "(Jensen and Meckling, 1976). However, the agency theory is not the only theory that explained corporate governance, but it is one of the fundamental ones in this regard (Abdullah and Valentine, 2009).

Stock Liquidity, Corporate Governance and Earnings Management

Chang et al. (2010) believed that earnings management reflects greater agency costs and asymmetric information costs. Evidence demonstrated that market imperfection factors, such as asymmetric information, lead to an inefficient allocation of capital which would ultimately reduce the quality of stock markets as a financial intermediary and would harm the economy (Stiglitz and Weiss, 1992). The most ideal approach to address these issues is by a public

body and regulators, the presence of whom would improve the economic growth (Fitzgerald, 2006). Several researchers investigated the relationship between earnings management and stock liquidity, such as Khaddaf et al. (2014) who suggested that earnings' smoothing, which is one method of practicing earnings management, has a negative significant effect on trading volume activity as well as on stock return. Moreover, Riahi et al. (2013) believed that earnings management is associated with stock liquidity, because investors tend to purchase the earnings.

Market liquidity is also found to be affected by earning announcements. Bafghi. Et al. (2014) concluded that market liquidity decreases at the time of earnings announcement, as information asymmetry increases and therefore bid-ask spread increases. He also suggested that public disclosure may result in increasing trading volume, as informed opinions would increase.

Abed et al. (2012) and Elghuweel et al. (2016) debated that the activation of governance systems in the companies and the rules set in regulations that support the role of independent members in the boards of directors, as well as activating the role of audit committees, create an appropriate environment and would limit the practice of earnings management and avoid its negative impact on published financial statements of public shareholding companies. Independent directors have the ability to withstand pressure from the firm to manipulate financial information. Epps and Ismail (2009) argued that the separation of the CEO and chairman is a powerful mechanism that helps in reducing manipulation, because CEO in that condition is monitored by an independent chairman, which would result in reducing the likelihood of the CEO disregarding the interests of shareholders (Alzoubi and Selamat, 2012). Audit committees also play a vital role in monitoring management and protecting shareholders by maintaining the credibility of a firm's financial statements (Dalvi and Baghi, 2014).

Corporate governance implementation also affects firms' value through the cost of equity capital, as it increases the expected return of shareholders (Chung et al., 2010). Kahyani et al. (2016) and Marashdeh (2014) proved that corporate governance has a significant effect on firms' performance, which was explained through the resource dependence theory that states that corporate governance mechanisms related to the board of directors have a crucial role in accessing resources essential for firm independence. This in turn would increase market liquidity, as performance is one of the important indicators of a company's value influencing investors' decisions.

Previous researchers have documented factors affecting stock liquidity. Yu-Thompson et al. (2016) investigated the association between corporate governance quality and stock liquidity dimensions and found that corporate governance quality has a significant positive relationship with stock liquidity. Their results also showed that better enforcement of corporate governance practices would result in higher stock liquidity due to the increased information disclosure. Moreover, Mohamed and Elewa (2016) considered two dimensions of market liquidity in their study; stock price and trading volume in their study which examined corporate governance impact on Egyptian Stock Exchange liquidity, where the results revealed that corporate governance has an effect on stock price, but no effect on trading volume, while Oskuee and Samimi (2016) showed that corporate governance mechanisms have a significant negative impact on market liquidity.

In the context of Jordan, Elshandidy and Neri (2015) attempted to examine the effect of corporate governance on stock liquidity in the financial sector. Their results revealed that corporate governance is negatively related to stock spread, since it contributes

to the minimization of liquidity costs, thus maximizing market liquidity.

Shehadeh et al. (2018) examined the relationship between earnings management and the stock price liquidity of Jordanian service companies listed in Amman Stock Market for the period (2010-2015). The results of the study accepted the hypothesis: (there is an insignificant relationship between earnings management and stock liquidity in service companies listed in Amman Stock Exchange) and the authors concluded that earnings management can be used to develop and expand the company's performance.

Chung et al. (2010) examined the effect of corporate governance on stock liquidity. The results showed that firms with better corporate governance generally have greater stock liquidity which was measured by: narrower quoted and effective spreads, higher market quality index, smaller price impact on trade and lower probability of information-based trading. It was also found that liquidity measures are significantly related to changes in the governance index over time, suggesting that firms can improve stock liquidity by adopting better corporate governance standards.

The second stream of literature has addressed the issue of earnings management effect on stock liquidity. However, previous research has reported mixed results about the nature of this relationship. Al-Jaifi (2017) examined whether ownership concentration and earnings management affect stock liquidity. The findings indicated that higher ownership concentration results in higher information asymmetry, thus causing lower market liquidity. It was also found that firms with higher earnings management experience greater liquidity. Nowghabi et al. (2015) revealed that there is a significant negative relationship between accrual-based earnings management and stock liquidity. Furthermore, Ajina and Habib (2017) indicated that earnings management and share price increase B-A spread, which in turn would decrease stock liquidity. It was also found that firm's size has a positive significant impact on stock liquidity as well as on financial leverage. Bafghi et al. (2014) documented the existence of a positive relationship between earnings management and relative bid-ask spread, while a negative association was found between earnings management and stock flow rate and therefore a negative association with stock liquidity.

Another stream of literature has focused on combining the impact of both corporate governance and earnings management on stock liquidity. Bar-Yosef and Prencipe (2013) examined the impact of corporate governance and earnings management on stock liquidity in a highly concentrated ownership capital market, after controlling ownership concentration level. The results of the study showed that corporate governance does improve stock liquidity positively in terms of B-A spread as well as in terms of trading volume, while an insignificant relationship was found between earnings management and B_A spread. In addition, ownership concentration is found to be significantly and positively correlated to B_As and negatively correlated to volume of trade. It was also observed that when controlling the corporate governance characteristics, earnings management tends to be positively related to the trading volume.

As shown in the literature review, previous studies in Jordan have focused on the separate effect of corporate governance and earnings management on stock liquidity; therefore, our study has tackled the joint effect of corporate governance and earnings management on stock liquidity.

Research Hypotheses

In order to reach answers to the research

questions, the following hypotheses were stated and tested:

* **H0-01:** Corporate governance has no impact on the B_A spread of the industrial firms in Amman Stock Exchange.
* **H0-02:** Corporate governance has no impact on trading volume of the industrial firms in Amman Stock Exchange.
* **H0-03:** Earnings management has no impact on the B_A spread of the industrial firms in Amman Stock Exchange.
* **H0-04:** Earnings management has no impact on trading volume of the industrial firms in Amman Stock Exchange.
* **H0-05:** Corporate governance and earnings management have no impact on stock spread of the industrial firms in Amman Stock Exchange.
* **H0-06:** Corporate governance and earnings management have no impact on trading volume of the industrial firms in Amman Stock Exchange.

Empirical Model

This study will investigate the effect of the independent variables (corporate governance and earnings management) on the dependent variable (stock liquidity), through the following models:

To test the main hypotheses related to corporate governance and liquidity, two models were used as follows:

$$B\text{-}Ait = \beta 0 + \beta\ 1Indepit + \beta\ 2Dualit + \beta\ 3BSizit + \beta\ 4ROAit + \beta\ 5\ TobQit + \varepsilon it.$$

$$Volumeit = \beta 0 + \beta\ 1Indepit + \beta\ 2Dualit + \beta\ 3BSizit + \beta\ 4ROAit + \beta\ 5\ TobQit + \varepsilon it.$$

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$$Volumeit = \beta 0 + \beta\ 1EM + \beta\ 2ROAit + \beta\ 3\ TobQit + \varepsilon it.$$

To test the main hypotheses (the joint effect of corporate governance and earnings management on liquidity), the following regression models were used:

$$B\text{-}Ait = \beta\ 0 + \beta\ 1Volumeit + \beta\ 2EM + \beta\ 3Indepit + \beta\ 4Dualit + \beta\ 5BSizit + \beta\ 6ROAit + \beta\ 7TobQ + \varepsilon it.$$

$$Volumeit = \beta\ 0 + \beta\ 1\ B\text{-}Ait + \beta\ 2EM + \beta\ 3Indepit + \beta\ 4Dualit + \beta\ 5BSizit + \beta\ 6ROAit + \beta\ 7TobQ + \varepsilon it.$$

where:

B_A: (bid price) and (ask/offer price), deflated by the midquote.

Volume: the trading volume as the number of shares transacted every day.

Indep: the degree of board independence estimated as the ratio of the number of independent directors to the total number of board members.

Dual: whether the roles of CEO and chairman are separated.

BSiz: the number of board members.

EM: earnings management.

ROA: Return on assets.

TobQ: Tobin's Q.

εit: Random error.

Study Population

The study population was obtained by analyzing all industrial firms listed in Amman Stock Exchange during the period (2008-2017). The total number of the industrial firms listed was 71, where 18 of them were excluded, as they could disturb the data gathered, thus creating misleading results. Exclusion was undertaken based on the following criteria:

1. Firms with less than 300 trading days in the year for the period (2008-2017) (5 firms).
2. Firms that were subject to voluntary or compulsory liquidation through the study period (5 firms).
3. Firms that were listed after 2010 (3 firms).

4. Firms with missing data for more than five years.
5. Firms engaged in mergers during the study period (5 firms).

The final number of companies included in the analysis is 53 companies with 530 firm-year observations.

Variables' Measurements

In order to analyze the impact of corporate governance and earnings management on stock liquidity, the study used the following measurements.

Dependent Variable: Stock Liquidity

Researchers have argued that market liquidity has no specific measure and that liquidity results varied due to differences in measurements. Thus, two proxies were employed in this study as was conducted by Bar-Yosef and Prencipe (2013).

1. B-A Spread

B_A: The B_A is the difference between the price at which the market maker (the liquidity provider) or investors in general buy a security (bid price) and the price at which the market maker or investors are willing to sell the security (ask/offer price) (Bar-Yosef and Prencipe, 2013). It is calculated for each company yearly through calculating the B-A spread for each firm every day and then taking the average of B-A spread based on yearly trading days. The standardized spread is computed as the B_A deflated by the midquote to allow for cross-company comparability and to overcome nonlinearity issues in B-As (Callahan et al, 1997).

$B\text{-}A_{it} = (AskPrice\_BidPrice_{it}) / Midquote_{it}$

$Midquote_{it} = (AskPrice+BidPrice\ t)/2$

where i and t represent the stock i and month t.

2. Trading Volume

Trading volume is the other indicator of liquidity applied in this study, which is defined as the number of shares transacted every day. It is measured by the logarithm of the monthly average of daily trading volume as follows:

$Volume_{it}$ = Monthly Average of Daily $Volume_{it}$

Independent Variables

The following variables are used in the study as independent variables:

1-Corporate governance

Prior literature has documented how corporate governance can be tested. Several studies (Bassiouny et al., 2016; Epps and Ismail, 2009) have used the board size, the degree of board independence and CEO duality as indicators of the strength of corporate governance practices in firms. The board governance can directly affect managers' decisions and activities and can influence choosing, hiring and controlling external auditors and internal control mechanisms through the audit committee (Abbadi et al., 2016). Three indicators of corporate governance were used in this study:

- The degree of board independence: estimated as the ratio of independent directors to total board members.
- CEO duality: measured through a dummy variable assuming value 1 for duality if the chairman is the same as the CEO and 0 if the role of the chairman is separated from that of the CEO.
- Board size: refers to the number of board members.

2-Earnings Management

Many methods were used as a mean for measuring earnings management from 1991 till now, yet the modified Jones model (1995) proved to be the best model for detecting manipulation of financial results, which is consistent with earlier empirical studies

conducted in the United States, Malaysia, Taiwan and India (Elshandidy and Neri, 2015).

This study adopts the modified Jones model (Jones, 1991) to measure earnings management using the following steps:

$$TACC_{it} = NI_{it} - OCF_{it} \quad (1)$$

where: $TACC_{it}$ = total accruals for company i in year t.

NI_{it} = net income before extraordinary items for company i in year t.

OCF_{it} = operating cash flows for company i in year t.

Equation 2 below is estimated for each firm and fiscal year combination; thus the industry specific parameters of the Jones model are estimated as follows:

$$\frac{TACC_{it}}{TA_{it}-1} = \alpha_1\left(\frac{1}{TA_{it}-1}\right) + \alpha_2\left(\frac{\Delta REV_{it}}{TA_{it}-1}\right) + \alpha_3\left(\frac{PPE_{it}}{TA_{it}-1}\right) + \varepsilon_{it} \quad (2)$$

$TACC_{it}$ = total accruals for company i in year t.

$A_{it}-1$ = lagged total assets for company i.

ΔREV_{it} = change in operating revenues for company i in year t.

PPE_{it} = gross property, plant and equipment for company i in year t.

$\alpha_1 - \alpha_3$ = regression parameters. e = error term.

Non-discretionary accruals are measured for each year and fiscal year combination using Equation 3 as follows:

$$NDAC_{it} = \hat{a}\left(\frac{1}{TA_{it}-1}\right) + \hat{a}_2\left(\frac{\Delta REV_{it} - \Delta REC_{it}}{TA_{it}-1}\right) + \hat{a}_3\left(\frac{PPE_{it}}{TA_{it}-1}\right) \quad (3)$$

$NDAC_{it}$ = non-discretionary accruals for company i in year t.

$A_{it}-1$ = lagged total assets for company i.

ΔREV_{it} = change in operating revenues for company i in year t.

ΔREC_{it} = change in net receivables for company i in year t.

PPE_{it} = gross property, plant and equipment for company i in year t.

$\hat{a}_1 - \hat{a}_3$ = regression parameters.

The difference between total accruals and the non-discretionary components of accruals is considered as discretionary accruals (DACC) as stated in Equation 4.

$$DACC_{it} = TACC_{it} - NDACC_{it} \quad (4)$$

$DACC_{it}$ = discretionary accruals for company i in year t.

$TACC_{it}$ = total accruals for company i in year t.

$NDACC_{it}$ = non-discretionary accruals for company i in year t.

Positive or negative discretionary accruals are considered an earnings management behavior (Abbadi et al., 2016); therefore, we used the absolute value.

Control Variables

Two control variables were employed that have been found to affect liquidity by prior research (Bar-Yosef and Prencipe, 2013; Elshandidy and Neri, 2015). These variables are profitability indicators, as market liquidity may be affected by profitability as profitable companies attract more investors and thus increase liquidity.

The following two control variables are used in the current study:

- Return on Assets (ROA): operating income over total assets.
- Tobin's Q = (firm market value +book value of debt (total liabilities) divided by total assets.

Data Analysis and Hypotheses Testing

This section is aimed to present and discuss the results of the analysis that was performed on the collected data in order to test the stated hypotheses; the analysis was conducted using the Statistical Package for Social Sciences (SPSS).

Descriptive Analysis

Table (1) represents the descriptive analysis, which results in calculating minimum and maximum values, standard deviations and means.

Table (1): Descriptive analysis for the whole set of observations for industrial sector for the period (2008-2017)

	Minimum	**Maximum**	**Mean**	**Std. Deviation**
Independence Variables				
Board size	4.000	13.000	8.044	1.908
Degree of board independence	0.000	1.000	0.356	0.289
CEO duality **(Dummy Variable)**	**Frequency Valid Percent (1)**		**Frequency Valid Percent (0)**	
	30%		70%	
Earnings management	0.000	0.779	0.126	0.134
Dependence Variables				
B_A spread	0.003	0.155	0.021	0.014
Trading volume	4.113	16.103	9.295	1.889
Controlling Variables				
Return on assets	-0.587	0.439	0.019	0.103
Tobin's Q	0.116	7.936	1.305	0.919

The first four rows of the Table show the results of the independence variables (corporate governance indicators and earnings management). As for the board size, the maximum number is 13 members, whereas the minimum number is 4, which implies that not all companies are complying with the Jordanian corporate governance code that requires board members to be at least five members. The degree of board independence percentage has an average of 35.6 % and lies between 0 and one and the minimum value of zero is considered a bad indicator.

Duality that is measured by dummy variable reflects whether the CEO is the same person as the chairman. The results indicated that 70% of the companies have different people holding the position of CEO and thus most companies follow the Jordanian corporate governance code (chapter two, section 5) that is issued by Amman Stock Exchange.

Earnings management was measured by the discretionary accruals. The average level of earnings management is 0.126 which is higher than the result of Riaha et al. (2013) on the Tunisian markets which was 0.084 and is higher than the average value in studies conducted at developed markets such as Italy (Bar-Yosef and Prencipe, 2013) which had an

earnings management average of 0.051. This indicates that companies in Jordan tend to practice earnings management more than companies in developed markets. This may be due to the weak implementation of corporate governance in developing countries.

According to the table, the analysis of stocks' spread in the Jordanian stock market showed that B-A spread varies between 0.003 and 0.155 with an average of 0.021 with 0.014 standard deviations. The average result of stocks' spread at the Jordanian markets is considered high in comparison with developed markets as Washington market that had an average of 0.0026 at NYSE firms and 0.0087 at NASDAQ firms (Chung et al., 2010).

It is also observed that the trading volume lies between 4.113 and 16.103 and has an average of 9.295, which is less than the average of trading volume in studies conducted at developed markets such as Italy, where the trading volume average equals 11.2500 (Bar-Yosef and Prencipe, 2013), indicating that developed markets are more liquid than our markets.

The study used two control variables; the first is the return on assets (ROA) which reflects the efficiency of utilizing the company's assets by management. The ROA results ranged from 43.9% to -58.7% with an average of 1.9% and 10.3% standard deviation.

Tobin's Q is another important control variable that is used for evaluating companies' performance. As has been stated in the literature review, when Tobin's Q is greater than one, it indicates that the investment in assets has created income that is worth more than the capital expenditure. In contrast, when Tobin's Q is less than one, it suggests that investing in property is not suitable and did not have return (Dalvi and Baghi, 2014). In our case, Tobin's Q gives a good indication, since it has an average of 1.305.

Correlation Analysis

Table (2) presents the Pearson correlations between the dependent variables, independent variables and control variables. As the results indicate, Tobin's' Q has an insignificant relationship with all variables except for earnings management and ROA, whereas the other control variable ROA has a significant relationship with all variables except for board size and independence. ROA is positively correlated with CEO duality and volume and negatively correlated with B-A spread and earnings management, which implies that companies with high profitability tend to have a greater stock liquidity and lower earnings management.

Board size and trading volume are negatively correlated with earnings management and B-A spread and positively correlated with each other, indicating that an increase in corporate governance practices results in a decrease in earnings management and an increase in stock liquidity. Trading volume results indicate that it has a significant relationship with all variables except for board independence and Tobin's Q.

As for market liquidity indicators, B-A spread and trading volume have a negative significant relationship, which implies that an increase in spread would result in a decrease in trading volume, which is consistent with Khan and Sajjad (2013) who believed that decreasing costs and spread associated with trading would increases stock trading volume.

Table (2): Correlations between variables for industrial sector for the period (2008-2017)

		EM	ROA	TOBQ	BSIZ	INDEP	DUAL	B-A	VOLUME
EM	Pearson Correlation	1							
	Sig. (2-tailed)								
ROA	Pearson Correlation	-0.323**	1						
	Sig. (2-tailed)	0.000							
TOBQ	Pearson Correlation	0.177**	0.165**	1					
	Sig. (2-tailed)	0.000	0.000						
BSIZ	Pearson Correlation	-0.198**	0.083	0.022	1				
	Sig. (2-tailed)	0.000	0.057	0.617					
INDEP	Pearson Correlation	-0.110*	0.047	0.029	0.018	1			
	Sig. (2-tailed)	0.012	0.280	0.505	0.689				
DUAL	Pearson Correlation	-0.134**	0.178**	0.055	0.179**	0.038	1		
	Sig. (2-tailed)	0.002	0.000	0.215	0.000	0.396			
B-A	Pearson Correlation	0.279**	-0.199**	0.026	-0.259**	0.025	-0.130**	1	
	Sig. (2-tailed)	0.000	0.000	0.553	0.000	0.571	0.003		
VOLUME	Pearson Correlation	-0.202**	0.213**	0.075	0.172**	0.014	0.171**	-0.443**	1
	Sig. (2-tailed)	0.000	0.000	0.089	0.000	0.746	0.000	0.000	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Multicolinearity of Independent Variables

In order to investigate the existence of multicolinearity between independent variables, variance inflation factors test was conducted as presented in Table (3). As suggested in previous studies, it would be a problem if VIF exceeded 10, since it would indicate that there is a high correlation between independent variables in the same model. In this situation, methods of analysis cannot fully distinguish the explanatory factors from each other or isolate their independent influence (Abdalla and Almghari, 2011). Therefore, our results show no indications of such a problem since all VIF values are less than 10.

Table (3): Variance inflation factors' test results

Model	Collinearity Statistics	
	Tolerance	VIF
BSIZ	0.936	1.068
INDEP	0.985	1.016
DUAL	0.936	1.068
ROA	0.825	1.212
TOBQ	0.900	1.112
EM	0.797	1.254

Multivariate Analysis

Multiple regression analysis was conducted in order to study the effect of corporate governance and earnings management on stock liquidity in the industrial listed companies in Jordan through testing the validity of the hypotheses mentioned earlier in the study.

- The first hypothesis that was tested states that:

H0-1: Corporate governance has no impact on the B_A spread.

Model (1)

$$B-A_{it} = \beta_0 + \beta_1 Indep_{it} + \beta_2 Dual_{it} + \beta_3 BSiz_{it} + \beta_4 ROA_{it} \beta_5 TobQ + \varepsilon_{it}$$

The results in Table 4 show that 9.7% of the variability of the stock spread is explained by this model, the p value of the model equals 0.000 and the F value equals 11.856, which means that the model is considered significant.

Table (4): Regression results for hypothesis (1): the dependent variable is B-A spread

R Square	0.106		
Adjusted R	0.097		
F	11.856		
Sig.	0.000		
Model	**Beta**	**t**	**Sig.**
(Constant)		11.591	0.000
BSIZ	-0.229	-5.332	0.000
INDEP	0.035	0.830	0.407
DUAL	-0.061	-1.409	0.159
TOBQ	0.068	1.575	0.116
ROA	-0.183	-4.203	0.000

Dependent Variable: B-A Spread.

For individual independent variables, Table (4) results show that board size has a significant negative relationship with B-A spread at 1% significance level, indicating that the increase in board size would lead to a decrease in B-A spread and therefore an increase in stock liquidity. Therefore, the null hypothesis which states that corporate governance has no impact on the B_A spread is rejected and the alternative one is accepted. This finding is consistent with Khan and Sajjad (2013) and Chung et al. (2010) who provided evidence that a better governed firm would have a lower sock spread and therefore a higher stock liquidity. As for ROA, it is found to be negatively related to B-A spread at 1% significance level, which indicates that an increase in profitability would increase stock liquidity.

The Table also shows that the relationship between the other corporate governance indicators: board independence and CEO duality have an insignificant relationship with B-A spread.

H0-2: Corporate governance has no impact on trading volume.

Model (2):

$$Volume_{it} = \beta_0 + \beta_1 Indep_{it} + \beta_2 Dual_{it} + \beta_3 BSiz_{it} + \beta_4 ROA_{it} + \beta_5 TobQ + \varepsilon_{it}$$

Table (5): Regression results for hypothesis (2): The dependent variable is trading volumes

R Square	0.085		
Adjusted R Square	0.076		
F	9.26		
Sig.	0.000		
Model	**Beta**	**t**	**Sig.**
(Constant)		21.427	0.000
BSIZ	0.123	2.819	0.005
INDEP	-0.004	-0.093	0.926
DUAL	0.114	2.578	0.010
ROA	0.189	4.270	0.000
TOBQ	0.037	0.847	0.397

a. Dependent Variable: Trading Volume.

The estimation results for the regression model (2) presented in Table (5) indicate that this model is significant (F = 9.260, P-Value = 0.000) and that the variability of the independent variables explains around 7.6% of the variation of the dependent variable. Specifically, trading volume was found to be significantly and positively related to board size and CEO duality at 1% significance level. Therefore, we reject the null hypothesis which states that corporate governance has no impact on the trading volume. This implies that an increase in these variables is associated with an increase in trading volume and therefore an increase in stock liquidity, as

applying corporate governance mechanisms increases market liquidity through the increased transparency and protection of shareholders which in turn would increase firm value.

As for ROA, it is found to be positively related to trading volume at 1% significance level, which indicates that an increase in profitability would increase stock liquidity.

H0-3: Earnings management has no impact on the B_A spread.

Model (3):

$$B-A_{it} = \beta_0 + \beta_1 EM + \beta_2 ROA_{it} + \beta_3 TobQ_{it} + \varepsilon_{it}$$

The results of Table (6) show that this model is significant (F = 17.448, P-Value = 0.000) at 1% significance level, indicating that the B-A spread is significantly affected by earnings management.

Table (6): Regression results for hypothesis (3): The dependent variable is B-A spread

R Square	0.092		
Adjusted R Square	0.087		
F	17.448		
Sig.	0.000		
Model	**Beta**	**t**	**Sig**.
(Constant)		14.606	0.000
EM	0.240	5.223	0.000
ROA	-0.123	-2.690	0.007
TOBQ	0.012	0.281	0.779

b. Dependent Variable: B-A Spread.

The model significantly explains 8.7% of the variance in B-A spread, as the relationship between B-A spread and earnings management is statistically positive and significant at 1% significance level. This suggests that an increase in earnings management results in an increase in B-A spread and therefore a decrease in stock liquidity. This is consistent with Sayari and Omri (2017), Bafghi et al. (2014) and Fathi et al. (2011) who documented that higher earnings management results in increasing information asymmetry and transaction costs, which reduces the interest of traders in stock market and reduces market stock liquidity. Therefore, we reject the null hypothesis which states that earnings management has no impact on the B_A spread.

As for B-A spread relationship with the control variables, the results suggest that B-A spread is not affected by Tobin's Q, since the P-value is greater than 5%, while it has a negative significant relationship with ROA at 1% significance level, indicating that an increase in profitability would result in a lower B-A spread and a higher stock liquidity, which is consistent with the results of model (1).

H0-4: Earnings management has no impact on the trading volume.

Model (4):

$$Volume_{it} = \beta_0 + \beta_1 EM + \beta_2 ROA_{it} + \beta_3 TobQ_{it} + \varepsilon_{it}$$

The results of regression analysis of model 4 are presented in Table 7. We note that the regression model is significant with an adjusted R^2 of 0.066, a p-value of 0.000 and an F value of 13.016.

Tobin's Q and ROA confirm to be positively and significantly related to trading volume at 5% significance level, while earnings management has a negative significant relationship with trading volume at 1% significance level. This is consistent with model (3) results which implied that an increase in earnings management results in decreasing stock liquidity. Therefore, we reject the null hypothesis which states that earnings management has no impact on the trading volume.

Table (7): Regression results for hypothesis (4): The dependent variable is trading volume

R Square	0.071		
Adjusted R Square	0.066		
F	13.016		
Sig.	0.000		
Model	**Beta**	**t**	**Sig.**
(Constant)		59.873	0.000
EM	-0.166	-3.547	0.000
ROA	0.144	3.083	0.002
TOBQ	0.092	2.051	0.041

Dependent Variable: Trading Volume.

Earnings Management, Corporate Governance and Stock Liquidity

After analyzing the separate effects of corporate governance and earnings management on stock liquidity, we have examined the joint effect of these determinants on stock liquidity.

Considering the joint impact of corporate governance and earnings management is a vital step for a suitable test of the hypotheses, because as was concluded in previous studies, corporate governance has a significant effect on earnings management. In light of that fact, controlling earnings management or corporate governance effect while studying the other variables' effects on liquidity would be essential to examine. Therefore, we test the following hypotheses to examine the combined effect of earnings management and corporate governance on market liquidity at once:

H0-5: Corporate governance and earnings management have no impact on B-A spread.

Model (5):

$$B-A_{it} = \beta_0 + \beta_1 EM + \beta_2 Indep_{it} + \beta_3 Dual_{it} + \beta_4 BSiz_{it} + \beta_5 ROA_{it} + \beta_6 TobQ + \varepsilon_{it}$$

The results of this model indicate that this model is significant with (F = 13.429, P-Value = 0.000) and that the independent variables' variability explains around 12.9% of the variation of the dependent variable.

The impact of the corporate governance variables on B-A spread is similar and consistent with the results reported in Table (4), as the corporate governance is significantly and negatively related to B-A spread at 1% significance level, indicating that better corporate governance mechanisms tend to improve market liquidity in terms of the B_A spread, which confirms that such indicators help in evaluating the risk of information asymmetry.

Also, earnings management seems to share a negative significant relationship with stock liquidity at 1% significance level. Therefore, we reject the null hypothesis which states that corporate governance and earnings management have no impact on B-A spread. This indicates that earnings management used in Amman Stock Exchange-listed companies tends to be more opportunistic than informative. This result is consistent with (Fathi et al., 2013 and Nowghabi et al., 2015) who believed that firms that manage earnings have wider bid-ask spreads and therefore less stock liquidity. However, this result contradicts the finding of Bar-Yosef and Prencipe (2013) who suggested that trading volume increases when earnings management increases, because earnings management leads to increasing investors' disagreement.

Other researchers who had the opposite opinion explained it with the signaling theory which suggests that financial information send signals and indicators about the future financial situation; therefore, traders pay huge concern to the firm earnings level. This supports the results of Riahi et al. (2013) who found that high earnings management leads to more liquidity. Another researcher who shared the same opinion was Rahman et al. (2016) who provided evidence that Malaysian firms with high level of earnings management exhibited low information asymmetry. Lin and Hoang (2014) also mentioned that informative earnings management is beneficial to those external investors who cannot have direct access to private managerial information.

As can be observed from Table (8) results, Tobin's Q has no effect on B-A spread, while ROA has a negative significant effect on B-A spread at 5% significance level.

Table (8): Regression results for hypothesis (5): The dependent variable is B-A spread

R Square	0.14		
Adjusted R Square	0.129		
F	13.429		
Sig.	0.000		
Model	**Beta**	**t**	**Sig.**
(Constant)		9.570	0.000
EM	0.202	4.337	0.000
ROA	-0.117	-2.542	0.011
TOBQ	0.027	0.615	0.539
BSIZ	-0.197	-4.584	0.000
INDEP	0.055	1.300	0.194
DUAL	-0.051	-1.177	0.240

Dependent Variable: B-A Spread.

H0-06: Corporate governance and earnings management have no impact on trading volume.

Model (06):

$$Volume_{it} = \beta_0 + \beta_1 EM + \beta_2 Indep_{it} + \beta_3 Dual_{it} + \beta_4 BSiz_{it} + \beta_5 ROA_{it} + \beta_6 TobQ + \varepsilon_{it}$$

As shows in Table (9), the results of the regression model indicate that the model is significant with (F = 9.218, P-Value = 0.000) and that around 9% of the variation of trading volume is explained by earnings management and corporate governance.

In terms of control variables' relationship with trading volume, the impact of Tobin's Q is less clear compared to ROA. As for board independence, it looks less clear for all the models, where the coefficient of board independence in all the B_A models and volume models is insignificant at 5% significance level.

The impact of earnings management on stock liquidity is similar to results reported in Tables (6 and 7). The coefficient of discretionary accruals in the volume models is negative and significant at 1% significance level. On the other hand, the impact of board size and duality is significantly positive at 1% significance level, suggesting that earnings management decreases stock liquidity, while corporate governance increases stock liquidity, which confirms the previous results, implying that we should reject the null hypothesis which states that corporate governance quality and earnings management have no impact on trading volume.

Table (9): Regression results for hypothesis (6): The dependent variable is trading volume

R Square	0.101		
Adjusted R Square	0.090		
F	9.218		
Sig.	0.000		
Model	**Beta**	**t**	**Sig.**
(Constant)		21.133	0.000
EM	-0.138	-2.874	0.004
BSIZ	0.102	2.306	0.022
INDEP	-0.016	-0.378	0.705
DUAL	0.106	2.406	0.016
ROA	0.140	2.966	0.003
TOBQ	0.082	1.823	0.069

a. Dependent Variable: Trading Volume.

Results of the Study

This study has examined the impact of corporate governance and earnings management on stock liquidity, through using three mechanisms to test corporate governance (board independence, CEO duality and board size), discretionary accruals as a proxy for

testing earnings management and stock spread and trading volume as proxies for testing stock liquidity. Panel data, descriptive statistics, correlation analysis and multiple regression were employed as analysis methods. The sample consisted of 53 industrial companies listed in Amman Stock Exchange for a period of ten years (from 2008 till 2017).

The results of the study indicate that stock liquidity is negatively affected by earnings management practices and positively affected by corporate governance. In addition, stock liquidity is positively related with the control variable ROA which characterizes firm performance and profitability, which suggests that companies with high ROA have more stock liquidity in comparison to companies with low ROA. Also, all models are significant with a P value less than 0.05. Board size results are significantly related with B-A spread and trading volume, as it has a negative relationship with B-A spread and a positive relationship with trading volume, indicating that as board size increases, stock liquidity increases. Finally, earnings management has a significant positive relationship with B-A spread and a significant negative relationship with trading volume, suggesting that an increase in earnings management would result in a decrease in stock liquidity.

Recommendations

This study recommends that the Ministry of Commerce and Industry and the Securities Commission should verify the activation of the systems of corporate governance in the Jordanian industrial firms, especially with regard to the chief executive officer duality and board size. Further, due to the negative impact of earnings management on stock liquidity, deterrent sanctions to executives who exercise harmful methods in managing profits should be applied and they should be prevented from including in their contracts any condition that links the bonuses they receive with the periodic profit number, but use other more effective indicators such as net cash flow.

Furthermore, other measurements must be employed in future studies, in addition to liquidity measurements that we used in this study, in order to observe the differences in results and therefore adopt the most suitable measure, such as liquidity ratios and volatility. Also, researchers should consider applying the study analysis on companies in different sectors.

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