Investigation of the Effect of Earnings Management on Stock Liquidity for the Case of the Tunisian Stock Exchange

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Abstract

Earnings management has often been percieved as manipulating financial statements in view of mistaking stakeholders about the firm's economic performance or influencing contractual relationships founded on accounting figures. In this study, we examine the relationship between disclosed accounting information quality and stocks liquidity. To this end, we examine a sample of 220 observations of Tunisian listed companies over the 2007-2016 period. The results indicate that there is a negative relationship between accounting information quality measured by quality of accruals and stocks liquidity. Our study aimsat examining the Tunisian context and tries to determine the effect of earnings management on stocks liquidity.The relationship between liquidity(via the ask-bid spread) and accruals was examined, usingtwo modified earnings management measurementmodels: modified model of Jones (1995)and model of Kothari*et al.* (2005). Considering the discretionary component of accounting accruals in the relationship between a firm's stocks liquidity and its accruals is a new controversialtopic. Using a panel data qualitative approach, the obtained results point to a positive relationship between discretionary accruals and Tunisian firms'ask-bid spread (as estimated by the two measurement models). This indicates that discretionary accruals allow Tunisian investors to optimally construct their stocksportfolios. The collected results also highlighted a negative and a significant impact of transaction size and volume on firms'ask-bid spread. Indeed, earnings management allows for increasingstocks uidity when discretionary accruals are negative and reducingtheir liquidity when these accruals are positive. This is confirmed by the two discretionary accrualsmodels.

Keywords: Earnings management, accruals, stock liquidity, pricing of discretionary accruals

I. Introduction

Accounting information represents a set of data considered which is the most appropriate to recreate a firm's financial reality. Its manipulation may affect how the market will react. Representing a firm's reality amounts to unveiling accounting information, without which the firm has no value. Disclosing accounting information is a mechanism that will ensure the sustainability of relationships between companies and their environments. Indeed, the quality of financial information has been the topic of countless debates in the accounting and financial literature. Indeed, according to Levitt (2000), it is the driving force of a powerful and an efficient market.Without it, liquidity diminishes and market efficiency ceases to exist. The authoradds that high quality accounting standards consist in improving liquidity and reducing capital cost.

Accounting figures, as one of the financial indicators, reduce inefficiency of information and contributes to improving market outlook and liquidity. Stocks liquidity can thus be perceived as a measure of market efficiency and used as an effective toolof disseminating useful information (Chung 2009). Bachtiar (2008) argues that high returnsdisclosed throughhigh quality accounting standards can eventually improve liquidity and reduce capitalcost.

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Furthermore, Bachtiar hecked the inherent hypothesis of a positive relationship between the quality of disclosedearnings of firms and the liquidity of their stocks through the ask-bid spread. By increasing the liquidity of stocks, transaction costs may decrease. Liquidity plays also an important role in the pricing process. It represents a key concept in emerging markets like Tunisia.

Numerous studies have focused on the relationship between earnings management and disclosure (Allayannis et al., 2009;Iatridis et al., 2009), while others have examined the relationship between information disclosure and stocks liquidity(Matoussi, Karaa, and Maghraoui 2004; Bhattacharya, Desai, and Venkataraman,2013; Fizazi *et al.*, 2009). Nevertheless, studies of the relationship between earnings and liquidity management remain rare, especially in emerging markets (Beneish*et al.*, 2012; Peterson *et al.*, 2015;Sohn 2016). Thus, our study aims inextending the debate on this issue by examining the impact of earnings management on market liquidity in the Tunisian context. In Tunisia, few researches have been focused on the relationship between the practice of earningsmanagement and liquidity, while the issue of accounting manipulation was regularly addressed by researchers.

In the United States, many researchers have explicitly addressed the practices of earnings management. Several recent studies, such as those ofMastumra (2003) and young (2005) have attempted to determine the impact of an earnings management policy on the financial market. Therefore, it seems appropriate to investigate this relationship in a sample of listed Tunisian companies. Indeed, studying emerging markets like the Tunis Stock Exchange (TSE), earnings management may be very revealing because it traces the specificity most pursued by stock market investors. Indeed, the proposed study of the Tunisian stock market comes under this perspective. The emerging and recent markets are known by a strong information asymmetry and very low information efficiency. These specificities may lead us to identify earnings management practices specific to the Tunisian market. Therefore, the impact of these accounting practices on investorbehavior via stocks liquidity cans bedetermined.

In this context, a review of relevant theoretical and empirical models focused on this issue was conducted in order to examinatethe discretionary accounting practices that may affect the disclosedearnings, while fully respecting the accounting principles and rules. Such discretionary practices nevertheless look like manipulation insofar as they aim at skillfully influencing a group or an individual to make them think or act as desired. According to Demsetz 1968 as well asto Biais*et al.,* 2005, a liquid market is defined as a fairly narrow ask-bid spread and small transactions that can be executed with little effect on prices.. In practice, liquidity measurement is complicated because it takes into account the three dimensions of volume, time and price. The large array of measurement methods used nowadays in literature confirms this assumption about transactions volume and the ask-bid spread [Amihud 2002].

The aim of this paper is to determine whether earnings management has an impact on stocks liquidity for the case of Tunisian firms. This amounts to study the relationship between liquidity (via the ask-bid spread) and accruals usingthe modified model of Jones (1995) and also the modelofKotari*et al.* (2005). Therefore, this paper is structured as follows: the first section reviews the relevant literature. The second section presents our research hypotheses and methodology, while the third section focus on the results obtained onthe Tunisian stock market. In the last section, a discussion of the results and a conclusion will be proposed.

II. Literature Review

II.1. Earnings management theories

The earnings management theories are based on two main hypotheses. The first hypothesis assumes that information asymmetry between informed and less informed shareholders is likely to be reduced by disseminating information (Glosten and Milgrom 1985). Such an accounting policy-based signaling leads to a reduction in the ask-bid spread and an increase in liquidity. The second hypothesis assumes that an information disclosure policy reduces information-searching costs. This results in lower transaction costs and a higher transactionvolume. Kraft et al. (2014) mentioned that reducing information asymmetry **could** be a basic fundamental to the decision to publish manipulated earnings.

Liquidity is considered as the facility to trade large volumes of stocks without causing any significant price shift during a narrow time span [Etemadi and Resayian 2010]. This concept heavily depends on informational transparency. Indeed, information asymmetry between investors reduces transparency of market transactions and may lead to dysfunctions. Botosan and Plumlee (2002) argue that information inefficiency reduces market liquidity and increases capital cost. Against this environment of information asymmetry, managers may seize the opportunity to disclose quality information and improve their disclosure policy in order to make the accounts appear profitable through earnings management. The main aim is to reduce information asymmetry between informed and uninformed investors such as to increase investor confidence and increase the firm's transactions volume.

Earnings management also helps to moderate information asymmetry, since stocks become more liquid (Chung, 2009). At present, only few studies have explored the relationship between earnings management and stocks liquidity. Richardson (2000) found that managers tend to manipulate earningswhen there is a strong information asymmetry.

Several published studies reveal that high-quality information reduces information asymmetry between informed and uninformed investors, promotes investor confidence and thus increases the firm's stocks transaction volume . Similarly, Cohen and Lys (2006) argue that a rich information environment tends to significantly narrow down the ask-bid spread. Heflin *et al.*, (2001) indicate that high quality accounting disclosure improves market liquidity through reducing information asymmetry. Thus, detecting information asymmetry between the firm and investors encourages market agents to increase the firm's spread in order to protect itselfagainst losses incurred in transactions. By improving disclosedinformation quality, firms could be able to reduce heterogeneity of external investors'forecasts. Thus, transparent information could be a factor that minimizes anti-selectionrisk perceived throughcontent and improves the liquidity of the issuer.

II.2. Earnings and liquidity management research

In literature, several measures of market liquidity can found. Among the most common measures, they are the transactions volume, the turnover ratio and the ask-bid spread. In this context, relevant empirical research can be classified into two main trends: The first trend included studies that focused on measuring liquidity through the ask-bid spread (Ascioglu*et al.*, 2012;Kan, 2013, Bafghi*et al.*, (2014)). These studies considered the ask-bid spread as the best estimator of stocks liquidity, and they focused on the adverse selection dimension of the ask-bid spread. They concluded that companies that use earnings management as their performance measurement disclose higher adverse selection costs. As a direct result of these costs, liquidity providers widen their spreads, reducing thus liquidity. To examinate a sample of US firms listed on the NYSE, Botosan and Forst (2000) investigated the relationship between disclosed information quality and stocks liquidity. They found a negative and non-significant relationship. Heflin *et al.*, (2005) further supported this relationship in a sample of 221 US firms examined over the 1989 to 1998period. Liquidity, measured by the ask-bid spread and market dynamics, positively correlates with the disclosed information quality. The authors argued that accounting information quality, available publicly to all investors, was a means of reducing information asymmetry between investors and increasing trading efficiency in terms of costs. Investors will no longer be forced to search for information privately. Indeed, market information asymmetry between the different stakeholders implies transaction costs, which were endured by the existing shareholders. By refraining from trading their portfolios, these shareholders had a negative impact on market liquidity. Quality information disclosure improved market liquidity through trading and adverse selection. Welker (1995) found similar results in a sample of US firms over the 1983 to 1990period.

Ascioglu*et al.*, (2012), examining a sample of US firms over the 1996 to 2001period, found that firms with high discretionary accruals have a low liquidity position. In the Spanish context, Livnat*et al.*, (2008) focused on the relationship between disclosure and stocks liquidity over the 1994-2000period. The authors found a positive relationship between liquidity and financial disclosure. Lakhal (2008) examined the effect of quarterly earningsdisclosureon market liquidity to investigate how they reduced information asymmetry between different market participants and improvedstocks liquidity. In the German context, Grüning et al. (2010) found that information disclosure in annual reports improves liquidity by acting on investor forecasts who adjust their portfolios.In the Tunisian context, Triki and Omri (2008), examining a sample of 20 Tunisian firms over the 2000-2005period,found a negative relationship between earnings quality and the ask-bid spread.

The second trendincluded studies that examined liquidity through transaction volume.These studies found a positive correlation between the amount of IAS to US GAAP-reconciliated earnings[2] and transaction volume (Peterson *et al.*, (2015), Yuan and Cheng (2016)). Chen and Sami (2006) examined the reaction of the US financial market in terms of transaction volume when changing accounting tools. The studied sample consists of 38 non-US companies (ten countries) listed on the American market between 1995 and 2001. After runningseveral statistical tests, positive correlation was found between the amount of readjustedearnings and transaction volume. Thus, it was concluded that US investors take into account earnings informational content in their investment decisions.

Most studies taking transaction volume as a liquidity measureexpand in three main directions: its relationship to the ask-bid spread, price change and information. Subscribing to this perspective, several studies conducted on the US marketexamined the reaction of stock prices following a disclosure of manipulated earnings as information to investors. This methodology consisted of determining the abnormal volumes around the disclosure date of managed earnings.

III. Methodology

Focusing on the Tunisian context, the stocks liquidity will be investigated through the ask-bid spread and discretionary accruals according to the modified model of Jones (M_1) and the model of Kothari *et al.*, (2005)(M_2).

III.1. Tunisian Context

In Tunisia, as soon as the NewMarketis created in 1996, new companies, small and with a high growth potential, can access equity markets in order to raise funds to ensure their growth (Matoussi 2004). These companies seemed to be highly motivated to manage their earnings. Tunisian accounting regulations are mainly legal in origin. In addition to the regulatory framework, companies should comply with the code of commercial rules, which contains few accounting rules or principles. In theory, such an absence of legal constraints offers companies a large number of accounting tools. This situation makes the Tunisian context as an interesting ground to study earnings management practice. First, Tunisian accounting standards offer managers considerable flexibility to choose accounting practices other than the Anglo-Saxon standards (companies must respect the Tunisian regulatory framework, with the possibility of presenting their accounts according to IFRS3 or US GAAP). Moreover, the Tunisian context is known by a concentration of corporate ownership and a relatively illiquid financial market. In Tunisia, unlike other countries like North America, earnings disclosure attracted particularly investors'attention, motivating thus firms to engage in earnings management. Our assumption is that the Tunisian market is likely to represent a fertile ground in terms of an upward earnings management.

III.2. Research Hypotheses

Based on previously mentioned theoretical and empirical foundations, some hypotheses can be deduced such as:

• H1: there is a negative relationship between discretionary accruals and market liquidity.Chung *et al.*, (2009) examined a sample of US companies, assuming that earnings management reduces stock liquidity. They measured earnings management through discretionary accruals over the October 2001 to December 2002period. The price range was also used as a liquidity indicator. Dumontier *and al.*, (2002) studying the French market found that investors admit manipulations as soon as they have the means to detect them. Accordingly, Ascioglu *and al.*, (2011) used a triple measure to determine the impact of earnings management on stock market liquidity. The first measure consists of accounting data while the other two relate to real earnings management, which included operating cash flow and discretionary costs. The results point to a direct relationship between illiquidity measure and earnings management through discretionary accruals.

• H2: discretionary accruals explain liquidity better than non-discretionary accruals. A   number of univariate regressions in which the dependent variable is liquidity should be run whereas the independent variable is one of earnings management components (discretionary, non-discretionary accruals) in each regression.

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[2]Reconciliation of profits prepared according to international accounting standards and the US accounting standards US GAAP

• H3: structuring total accruals into discretionary and non-discretionary accruals better explains liquidity. By decomposing total accruals into discretionary and non-discretionary accruals, their explanatory power improves.

• H4: investors react according to the direction of earnings management (upward or downward).

III.3. Variables and model

A panel data estimation technique was used in order to test the proposed hypothesis on the relation between earnings management and market liquidity. Specifically, we exploited the models of Chung et al. (2009) and Bafghi et al. (2014), based on the ask-bid spread as a measure of liquidity. The ask-bid spread is interesting in that it takes into account the notion information asymmetry. The market is all the more liquid because the difference between the best selling price and the best purchasing price is small (Ascioglu et al., 2012, kan 2013). It was proved to be the most appropriate measure for the Tunisian context and the most important determinant of liquidity of the Tunis stock exchange (Matoussi and Zemzem 2004). The proposed models are as follows (1-3):

$$SPRD_{it} = \beta_0 + \beta_1 TAC_{it} + \beta_2 Lev_{it} + \beta_3 ROA_{it} + \beta_4 SIZE_{it} + \beta_5 VOL_{it} + \beta_6 SP_{it} + \beta_7 VR_{it} + \varepsilon_{it} \quad (1)$$

$$SPRD_{it} = \beta_0 + \beta_1 DAC_{it} + \beta_2 Lev_{it} + \beta_3 ROA_{it} + \beta_4 SIZE_{it} + \beta_5 VOL_{it} + \beta_6 SP_{it} + \beta_7 VR_{it} + \varepsilon_{it} \quad (2)$$

$$SPRD_{it} = \beta_0 + \beta_1 NDAC_{it} + \beta_2 Lev_{it} + \beta_3 ROA_{it} + \beta_4 SIZE_{it} + \beta_5 VOL_{it} + \beta_6 SP_{it} + \beta_7 VR_{it} + \varepsilon_{it} \quad (3)$$

where :
$SPRD_{it}$: spread of firm i at moment t.
TAC : total accruals of firm i at moment t.
DAC_{it} : discretionary accruals of firm i at moment t.
$NDAC_{it}$: non-discretionary accruals of firm i at moment t.
$SIZE_{it}$: market value of firm i at moment t.
VOL_{it} : average trading volume of firm i at moment t.
Lev : Financial leverage ratio (total liabilities to total assets)
ROA : ROA (operating income over total assets)
SP_{it} : average stock price of firm i at moment t.
VR_{it} : stock return volatility of firm i at moment t.

Opting for the decomposition method is almost motivated by the specificity of the Tunisian context, as a controlled market. Therefore, we have chosen the model of Chung, Sheu, and Wang (2009). Bafghi et al. (2014), considered to be among the most suitable models to estimate the ask-bid spread. Moreover, the authors believe that this model provides the best liquidity estimators. Our models relate total accruals, discretionary and non-discretionary accruals to firms' stocks liquidity after checking for the contribution of each. They also enable to estimate the effect of earnings management on liquidity. First, they distinguish between discretionary and non-discretionary accruals as well as the perception of their effect on firm liquidity. Second, they take into account the effect of other variables likely to affect stocks liquidity. Comparing the coefficients of determination (R^2) of the models in (1) and (2) will allow us to check whether the variable "Discretionary Accruals (DAC)" explains liquidity and detects any additional information contained in the discretionary accruals likely to affect total accruals (TACs).

To this end, both the Jones's modified model of earnings management and the Kothari model were selected for this study. In summary, total accruals are decomposed in equations (2) and (3) into non-discretionary accruals (NDACs) and discretionary accruals (DACs). This will determine the additional explanatory power of the discretionary (non-discretionary) component of accruals in our liquidity measurement model.

1. The endogenous variables

Market liquidity

The theory provides a number of liquidity measures (the ask-bid spread of illiquidity ratio, transaction volume, etc.). In our study, we measured this variable by the average annual spread (Attig *et al.*, 2006) (Bafghi *et al.*, 2014), as it had been shown that it was the most appropriate measure for the Tunisian context and most likely to determine liquidity of the Tunis stock exchange (Matoussi *et al.*, 2004). The spread was calculated for each sample value and for each day, as the difference between the best purchasing price and the best selling price divided by the average of the two prices.

The spread of the Tunis stock exchange that corresponds to the indicated market costs was selected to measure liquidity (4).

$$SPRD_{it} = \frac{Ask_{it} - Bid_{it}}{\dfrac{Ask_{it} + Bid_{it}}{2}} \qquad (4)$$

With:

Ask_{it}: the price ask of stock i on day t.

Bid_{it}: the price bid of stock i on day t.

Earnings Management Component

As indicated above, both modified Jones (1995)and Kothari*et al.*, (2005) models were adopted for the earnings management measurement (5 and 6 respectively).

$$TAC_{it} / A_{it-1} = \alpha \, (1/ A_{it-1}) + \beta_1 (\Delta RE_{it} / A_{it-1}) + \beta_2 (PPE_{it} / A_{it-1}) + e_{it} \qquad (5)$$

$$TAC_{it} / A_{it-1} = \alpha_0 (1/ A_{it-1}) + \beta_1 (\Delta RE_{it} / A_{it-1}) + \beta_2 (PPE_{it} / A_{it-1}) + \beta_3 ROA_{i,t-1} + e_{it} \qquad (6)$$

with :

TAC_{it} :total accruals of firm i in year t.

A_{it-1} :total assets at the end of year t-1.

ΔRE_{it} : (CA) net total revenues between t and t-1 of firm i.

$$\Delta RE_{it} = \Delta Re\, v_{it} - \Delta Re\, c_{it}$$

ΔRev_{it} : total revenuesvariation between t and t-1 of firm i.

ΔRec_{it} : receiveables variation between t and t-1 of firm i.

PPE_{it} :gross provisions of firm i at moment t.

e_{it} :residuals of discretionary accruals model of firm i in year t (DAC_{it}).

β_i: Coefficients estimated for firm i.

$ROA_{i,\,t-1}$:return on assets ratio of firm i during year t-1.

α: Constant term

2. The Control Variables

The literature provides other possible variables that might affect market liquidity, including transaction volume, stock return, price volatility, stock price, ROA, LEV and firm size. A fortiori, Ascioglu *et al.*,(2012) highlighted the positive relationship between transaction volume and liquidity level, while others found a negative relationship with size and price (Amihud 2002). Stock return and price volatility are shown to affect market SPREADuidity (e.g., Amihud & Mendelson, 1986, 1989; Bhattacharya et al., 2012). It is also argued that financial leverage may be associated with market SPREADuidity (e.g., Amihud & Mendelson, 2012; Lang & Lundholm, 1993). Market SPREADuidity may also be affected by the profitability of the company as more profitable companies may attract more investors and thus increasing SPREADuidity. Hence, Return on Assets (ROA) is taken as a profitability measure.

Transaction volume

An increase in transaction volume involves a serious disequilibrium in the equity market. It implies additional costs that should be compensated for by widening the spread. Atiase and Bamber (1994) consider transactions volumeas a proxy of information asymmetry. Moreover, Stoll (1978) shows that transaction volume and risk affect the stock holding cost and that stock price is a proxy for the unobservable minimum cost. The authors argue that spreadsnegatively relate to transaction volume. Similarly, (Chen *et al.*, 2007) found that liquidity is an increasing function of transactionvolume. In this way, the greater the transactionvolume, the more liquid the market and the lower acquisition costs.

Transaction volume is a direct measure of liquidity. A similar variable is measured by the natural logarithm of the annual average of transaction volume. Ascioglu *et al.*, 2012 and Chung *et al.*, (2009) used this measure. No prediction is foreseenfor the relative spread and transaction volume. The latter is measured by the logarithm of the annual average of daily transaction volume.

Financial leverage

It is also argued that financial leverage may be associated with market SPREADuidity (e.g., Amihud & Mendelson, 2012; Lang & Lundholm, 1993). Market SPREADuidity may also be affected by the profitability of the company as more profitable companies may attract more investors and thus increasing SPREADuidity. Financial leverage (Lev) tends to be positively associated with B_As as suggested by Amihud and Mendelson (2012).

ROA

Market SPREADuidity may also be affected by the profitability of the company as more profitable companies may attract more investors and thus increasing SPREADuidity. Hence, Return on Assets (ROA) is taken as a profitability measure. Respectively the studies of Yosef and Prencipe (2013) found that bid-ask is negatively correlated with ROA.

Stock price

The financial literature assumes that price significantly explains stock liquidity. Indeed, the studies ofAttig *et al.*, (2006), Brockman and Chung (2001), and Ajina *et al.*, (2015) found that stock price positively correlates with liquidity. Ascioglu *et al.*, (2012) showed a negative relationship between stock liquidity and price. It is perceived as an approximate measure of information asymmetry and therefore estimates adverse selectioncosts. It is difficult to foresee at this level the meaning of the relationship between price and stock spreads.

Stock returns

Numerous models studying the relationship between returns and liquidity have been developed in the literature. Most of them indicate that the expected returns negatively correlate with liquidity (Amihud 2002). This negative sign is explained by investors requiring a liquidity premium to compensate for the high transaction costs. Thus, under equilibrium uninformed investors require compensation for holding stocks with high private information. The riskier a stock, the greater will be its expected returns. Nevertheless, Datar *et al.*, (1998) and Chan *et al.*, (2008) argue that the more liquid stocks have higher returns. It is, therefore, difficult to foresee the meaning of the relationship between stock returns and spreads.

Returns volatility

Asymmetry of market information is measured by returns volatility. Accordingly, any change in price produced by a change in investor forecasts results in an increase in returns variance (or volatility). In this regard, Ascioglu et al. (2007) show that volatility has an impact on inventory cost and stock risk management, and therefore widens the spread. Empirical studies in the US market such as those of Stoll (1978), Roulstone (2003) and Wang et al. (2009) found a positive relationship between volatility and the ask-bid spread. Indeed, the riskier the stock, the costly its detention. Such a trade-off is likely to increase the ask-bid spread. Moreover, Ascioglu *et al.*, (2012) predict that returns volatility negatively relates to liquidity. Studying the French market, authors like LaFond, Lang, and Skaife 2007found a positive relationship between the ask-bid spread and stock returns volatility. However, Livnat *et al.*, (2008) found a negative relationship between liquidity and stock volatility. Returns volatility is measured by the standard deviation of daily returns, which was calculated on a daily basis and then calculated on average over a year (So and Wang 2014). Returns volatility measures the risk of adverse price changes for an investor. We expect a positive correlation between the ask-bid spread and returns volatility.

Firm size

Firm size is considered to approximate the degree of information asymmetry and therefore adverse selection costs. Under the same perspective, Bhattacharya *et al.*, (2013) shown that small firms presented a larger information asymmetry than large firms. On the other hand, stocks of small-capitalized firms were less liquid than stocks of large-capitalized firms (Brown and Hillegeist 2007). Indeed, stock liquidity depended on firm size for two reasons.First, a large firm attracts the interest of analysts and investors.

Second, its size allows it to disseminate a large amount of information that leads to reducing information asymmetry and improving liquidity. Our expectations therefore bear on a positive relationship between firm size and liquidity. Size is measured by the natural logarithm of market capitalization at the end of the last month of the year. The same measure was also used by Chung *et al.*, (2009) and Bafghi *et al.*, (2014). The use of this logarithm has the advantage of circumventing a scale problem, which may result from the small measures of the other variables. Several authors such as Faez *et al.*, (2014) insist that small firms are known by a greater information asymmetry than large firms. Similarly, Shiri and Roshandel 2015 insist that stocks of small-capitalized firmsareless liquid than stocks of large-capitalized stocks. We therefore expect a negative relationship between firm size and stock spreads.

3. Sample and study period

With the aim of avoiding missing data problems that may result in biased estimations, stocks with a low number of trading days in our sample were disregarded, allowing us to retain the 23 most liquid stocks for our study. We then have 299 observations representing 23 firms over the 2010-2012period. As for the Tunisian data, firm liquidity data was collected from the Tunis stock exchange, and the accounting figures were extracted from the official bulletins published by the Financial Market Council (CMF).

IV. Results and discussion

The descriptive statistics of the studied variables will be detailed, with respect to various relevant tests. The models parameters will be estimated and the contribution of discretionary (non-discretionary) accruals to stock spreads will be determined.

IV.1. Descriptive analysis

Before presenting the results of the models, we carried out a descriptive analysis of the used variables and their evolution over time (table N ° 11 and Figures).

Descriptive statistics

The descriptive analysis of the used variables (Table N ° 1) yielded the following estimates. A descriptive analysis of the studied variables was carried out initially (Table 1). It resulted in the following observations:

Table 1. Descriptive Statistics

	VARIABLES	Average	Standard deviation	Min	Max
Dependent variable	SPREAD	0.776	1.322	-2.307	7.622
Independent variables	TAC1	0.0545	0.210	-0.258	0.891
	TAC2	0.0776	0.131	-0.243	0.890
	NDAC1	0.0572	0.0342	-0.147	0.123
	NDAC2	0.0551	0.0226	0.0157	0.101
	DAC1	6.12e-09	0.135	-0.311	0.745
	DAC2	0.00242	0.144	-0.263	0.792
Control Variables	SIZE	17.36	1.632	11.16	19.83
	Lev	19.23	1.780	13.89	18.75
	ROA	19.63	33.39	-32.31	25.65
	SP	23.45	23.61	2.487	29.46
	VOL	23.763	0.369	2.584	2.886

- Accounting resultsdisclosed by Tunisian firmsseems to be lower than cash flow, which explains the negative sign of total accruals. This negative sign is mainly generated by non-discretionary accruals.

- Earnings management through discretionary accruals carries additional information that does not necessarily exist in non-discretionary accruals, which confirms our hypotheses formulated above.

Graphic illustration

In order to examine the relationship between earnings management and the bid-ask spread, we make recourse to a graphic representation of the evolution of these two variables over time. Graphs allow us to follow how stocks liquidity of Tunisian listed firms progresses over time. This behavior is likely to result from managers' earnings management practices. The main graphic resultsare described below:

Figure N°1. Relationship Betwwen Discretionary Accruals And The Liquidity With Jones Modified Model
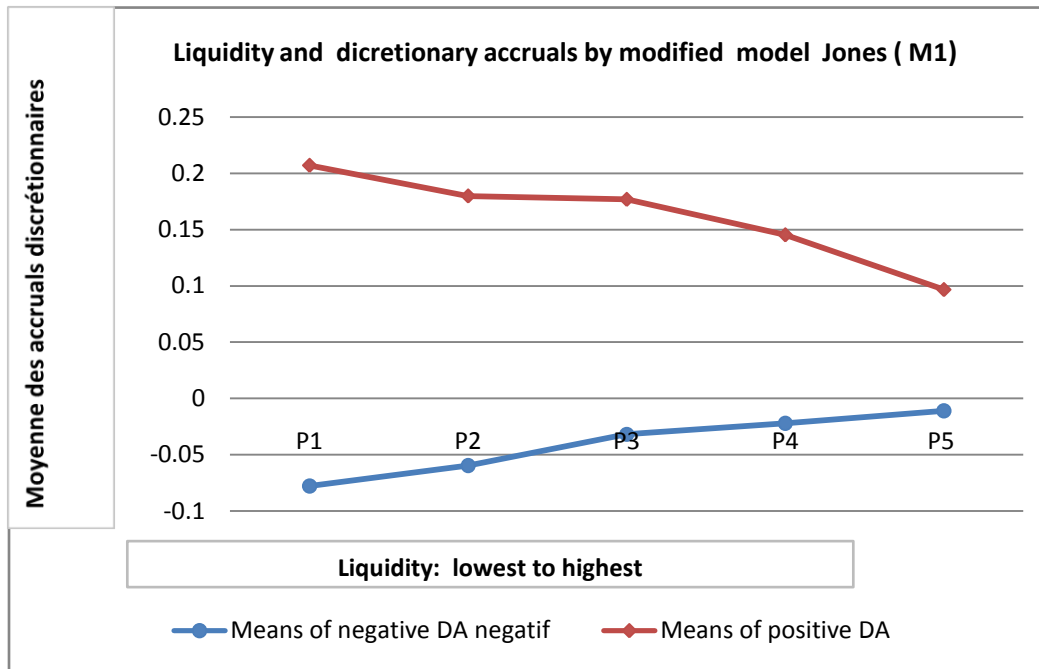
Looking at Figure N°1, we found a negative correlation between changes in liquidity and discretionary accruals over time. This allows us to point to the presence of a significant relationship between earnings management through discretionary accruals and liquidity of Tunisian companies. We can also notice the negative reaction of the Tunisian stock market to managers' earnings management.

Figure N°2. Relationship Betwwen Discretionary Accruals And The Liquidity With Kothari Model
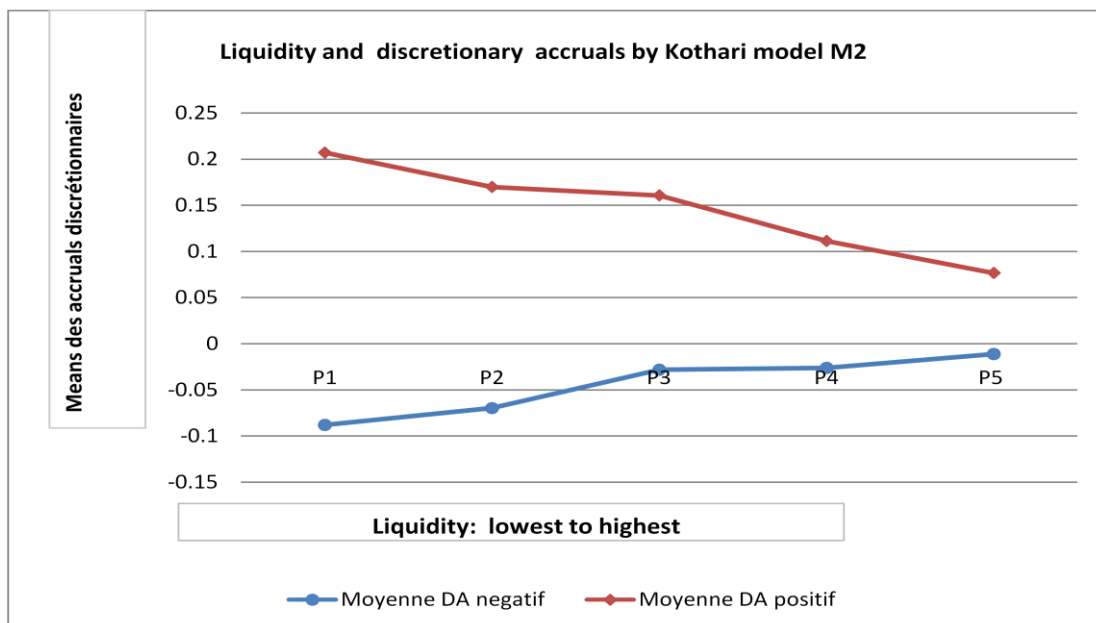
According to Kothari et al. (2005), discretionary accruals and stocks liquidity evolve in line with the previsions of the modified Jones model. This finding allows us to conclude to a negative and a significant correlation between earnings management via discretionary accrualsand stock market reaction in the form of stocks liquidity. These results are consistent with the widespread belief that accounting figures affect the stock market. Indeed, investors have probably given much importance to the accounting and financial measurement of Tunisian companies even if most of these companies are generally young and seem to find difficulties in evaluating their earnings management policy.

IV.2. Tests specific to panel data

To investigate the components of earnings management that explain stock liquidity of Tunisian firms, econometric regressions on panel data covering the 2000-2012period was carried out in order to deduce the appropriate estimation methods. To this end, we proceed in two steps: - First, the absence of any multicollinearity problem between the independent variables was checked, using the Pearson correlation test between the continuous variables and the Variance Inflation Factor (VIF) test. The VIF values were much lower than the generally required 5% or even 10% significance level. Therefore, correction can be avoided (Tables 1 and 2, Appendix I-1). Tables 2 and 3 present the Pearson correlation matrix, reporting the relationships between the variables of the modified Jones model (M_1-1, M_1-2 and M_1-3) and Khotari (M_2-1, M_2-2 and M_2-3). Therefore, testing for the presence of a multicollinearity problem between the independent variables was conducted. The VIF (Variance Inflation Factor)and Pearson correlation tests indicate that the correlation between the variables is acceptable since the variance inflation factors (VIF) have values below 10. All Pearson correlation coefficients do not exceed 0.8 (Tables 2 and 3). As shown in Table 2, no significant correlation was found between the dependent and independent variables. In addition, the correlation coefficients are small (maximum of 0.3453 for prices and SPREAD).This indicates a direct relationship between the dependent variables and the control variables.

Table 2. Results Of The Pearson Correlation Test (Modified Models Of Jones)

	SPREAD	Lev	TAC1	DAC1	NDAC1	SIZE	VOL	SP	R	VR
SPREAD	1.0000									
Lev	0.597	1.0000								
TAC1	0.0223	0.236	1.0000							
DAC1	0.0362	0.0236	0.69650	1.0000						
NDAC1	-0.0367	0.056	0.387	-0.0015	1.0000					
SIZE	-0.0387	0.364	0. 369	0.235	0.7878	1.0000				
VOL	0.396	0.234	0.036	0.0400	0.0017	0.0024	1.0000			
SP	0.398	0.112	0.0624	0.0689	-0.0465	-0.0551	0.364	1.0000		
ROA	0.0314	0.373	-0.0257	-0.0523	0.0375	-0.0525	-0.0379	0.0568	1.0000	
VR	-0.369	0.325	-0.0112	-0.0574	-0.0333	-0.0459	0.0200	-0.1123	-0.0314	1.0000

The results conclude to a positive relationship between stock spreads and discretionary accruals (M_{1-2}). This result validatesthe considered hypothesizes. A second measure of multicollinearity was thus used basing on VIF values. VIF values were rangedwithin1.02 and 2.69 when using the modified model of Jones. These values are perfectly below the accepted critical value of 10, which leads us to conclude that there is no multicollinearity problem. The correlation coefficients between the dependent and independent variables according to Kothari model M_2 are reported in Table 3. According to this Table 3, anabsence of correlation between the independent variables can be remarked. Moreover, they all have coefficients below 0.8 (maximum is 0.3658 for Size). The results of VIF obtained withthe model of Khotari (M_2-1, M_2-2 and M_2-3) have low values for each of the variables,less than the commonly accepted limit of 10. The mean VIF of the sample is 1.09, which is below the usual limit (Appendix III-1, Table 3).

Table 3. Results of the Pearson Correlation Test (Model of Kothari Et Al.2005)

	SPREAD	Lev	TAC1	DAC1	NDAC1	SIZE	VOL	SP	R	VR
SPREAD	1.0000									
Lev	0.2345	1.0000								
TAC1	0.0237	0.13589	1.0000							
DAC1	-0.0065	03876	0.6324	1.0000						
NDAC1	0.2398	0.5987	0.1864	0.0123	1.0000					
SIZE	-0.0234	0.02456	0.2374	0.3287	-.0423	1.0000				
VOL	-0.1235	0.2974	0.0126	-0.0089	0.234	0.0024	1.0000			
SP	0.2354	0.1397	0.1254	0.0694	0.0428	-0.0562	0.1234	1.0000		
R	0.2687	0.0456	-.12364	-0.0563	0.0323	-0.0514	-0.0624	0.0387	1.0000	
VR	-0.2345	0.0897	-0.2354	-0.023	0.0568	-0.0896	0.0547	-0.1231	-.04365	1.0000

As for the individual variables, the maximum VIF value is 1.18 (Size), making it possible to conclude that the regression models (M2-1, M2-2, M2-3) have no multicollinearity problem (Appendix I-2, Table 3). - Second, before estimatingthe models, it is necessary to run different preliminary tests in order to ensure an efficient use of data. Indeed, panel data requires adapted estimation methods. The results of these tests are presented in Table 4. The linearization of the panel data was performed and included the dependent variable ask-bid spread (SPREAD). Thus, the STATA software version 13.0 for Windows was used. At the beginning, the presence of specific effects was conducted and based on various homogeneity tests. The collected results led us reject the null hypothesis of homogeneity of all the parameters. The calculated Fisher statistics clearly exceed the tabulated threshold with zero probabilities (Prob> F = 0).Therefore, panel data estimation method is that with specific effects.

Table 4: Results Of The Hausman Test And The Validity Of Specific, Heteroscedasticity, Autocorrelation Effects (Models M_1 And M_2)

	Modigfied Jones' model M_1			Kothari Model M_2		
	(1)	(2)	(3)	(1)	(2)	(3)
Hausman test						
Chi-deux	22.85	42.31	53.86	52.30	36.56	48.99
P-value	0	0	0	0	0	0
Breuch-Pagan test						
LR2	2.303	23.46	25.48	23.48	23.46	23.77
P-value	0.144	0	0	0	0	0
Wooldridge test						
F	1.26	2.354	2.409	2.384	1.025	1.369
P-value	0.301	0.139	0.135	0.137	0.329	0.228

Thus, fixed and random effects modelswere estimated in order to test whether the specific effects result from the heterogeneity of the constants or that of the coefficients. Accordingly, the Hausman test was applied. The probability of the Chi-square statistics shows zero values for the modified models of Jones (M_1-1, M_1-2 and M_1-3) as well as the Kothari models (M_2-1, M_2-2 and M_2-3)leading us to select the fixed effects model. Finally, the Breush-Pagan and Wooldridge tests were conducted to control for heteroscedasticity and errors autocorrelation. The probabilities of each LR2test point to an errors heteroscedasticity problem and anabsence of autocorrelation. A re-estimation of the model after correction using the White method with the Robust command (Petersen, 2009), was finally done.

IV.3. Results of the regressions

The coefficients of determination (R^2) of the first three models were compared when running multiple regressions, with the aim of identifying the variablesdeterminingstock liquidity. These variables are total accruals, discretionary accruals and non-discretionary accruals. It aims at assessing the explanatory power of the three models (1), (2) and (3) in the Tunisian context. Multiple regressions were run by disaggregating total accrualsinto discretionary and non-discretionary components (DAC and NDAC) in order to testthe suggested hypotheses H1 and H2. The results are presented in Table 5.

The investigated models M_1 and M_2 have considerable explanatory powers. Indeed, the respective coefficients of determination R^2 are 82% for M_1-1, 76% for M_1-2 and 076% for M_1-3, while 86% for M_2-1, 75% for M_2-2 and 75 % for M_2-3. The Fisher test on the overall model significance shows that at the 1% level there is at least one independent variable whose impact on the dependent variable is significant. The respective Fisher's statistics for both models are F (6, 270) = 4.93 for M_1-1, 4.86 for M_1-2, 6.54 for M_1-3, 4.93 for M_2-1, 4.88 for M_2-2 and 5.11 for M_2-3. The coefficients of determination of these regressions reveal the relevance of the different components of accruals in explaining the ask-bid spread. If the coefficients are all significant, then each accruals component carries information about the ask-bid spread.

The regressions in Table 5 allow once to estimate the effect of earnings management on stock liquidity. The results indicate a positive and a significant relationship between accruals (TAC, CAD) and the ask-bid spread. However, the relationship between non-discretionary accruals and the ask-bid is insignificant (M1-3). In line with previous research, the results of the proposed study validate the hypothesis that market liquidity is a decreasing function of earnings management. These results are consistent with studies on the US market. This result corroborates those of Ascioglu *et al.*, (2012); Bafghi *et al.*, (2014); Peterson *et al.*, (2015) and Sohn (2016).

Similarly, Aharony *and al.*,(2000) indicated that Chinese firms do not have the same motivations for managing earnings like US firms. Worth noting is that the manager is not a shareholder in the Chinese sample. These firms have no interest in managing earnings. In such a context, it is the state which encourages firms to manage earnings in order to increase profits earned in terms of foreign currencies through selling stocks to foreign investors. Moreover, Hepworth (1953) argued that investors show more confidence to firms that generate stable and regular profits. Similarly, Faez *et al.*, (2014), using the modified Jones model on a sample of 72 firms examined over the 2005-2013period found that earnings management enhances information asymmetry and reduces liquidity. Indeed, studying an American sample, Ascioglu *et al.*, (2012) found the same result using two measures of liquidity, the ask-bid spread and transaction volume. The impact of the control variables on the ask-bid spread is assessed by the modified model Jones M_1-2 and M_2-2 of Kothari *et al.*, (2005).For both models M_1-2 and M_2-2, the t-Student test of the individual significance of the variables shows that firm size (size) and volume (volume) significantly affect the ask-bid spread respective at the 1% and 5 % significance levels. This validates the hypothesis that firm size and transaction volume are complementary tools to the ask-bid spread.

Consistent with our predictions, size of Tunisian firms negatively affects the ask-bid spread. This is consistent with several studies where size has a negative effect on the ask-bid spread. Many authors found similar results, likeDurnev and Kim (2003). These studies in different contexts found a negative relationship between size and the ask-bid spread.

The obtained results also show that stock price, returns and volatility do not significantlyaffectthe ask-bid spread. Moreover, we found that total accruals better explain the ask-bid spread than non-discretionary accruals. Furthermore the collectedresults reveal that earnings management increases agency costs and information asymmetry. Therefore, liquidity providers bear higher costs and therefore a higher ask-bid spread and a less liquid market. These results allowed us to conclude that liquidity providers are aware thatearnings management of the Tunisian firmsof our sample is not very high. Moreover, this result is in linewith the thesis that investors prefer firms with more stable earnings. Such a findingencourages us to test in a second phase the type of relationship between the direction of earnings management and market liquidity.

Researchers like Easton *and al.*, (1992) argue that investors buy profits. Institutional investors are not attracted byfirms with highly volatile earnings and are considered to be risky. Thus, institutional investors tend to favor firms that increase their profits. The finding on the study of the relationship between non-discretionary earnings and the ask-bid spread is that Tunisian investors do not give non-discretionary accruals its fair value. The explanatory power increases from 82% (R^2) for model M_1-1 to 70% for model M_1-3 (Table 5). Similar results are observedwith the model of Kothari *et al.*, (2005).

Table 5. Results Of The Regressions: Liquidity And Acruals (Modified Jones(M_1) And Kothari (M_2) Models)

	Modified models of Jones M1			Kothari models M2		
Earnings management Measures	TA	DA	NDA	TA	DA	NDA
VARIABLE	(M_1-1) SPREAD	(M_1-2) SPREAD	(M_1-3) SPREAD	(M_2-1) SPREAD	(M_2-2) SPREAD	(M_2-3) SPREAD
Earnings management	0.031	0.051	0.819	0.073	-0.039	-0.039
	(2.32)**	(1.01)**	(2.22)	(1.40)**	(0.755)**	(-0.31)**
LEV	1.0700	1.078	1.028	1.087	0.870	0.870
	(15.89)	(16.18)	(15.56)	16.38	9.69	(9.69)
ROA	-0.037	-0.036	-0.036	-0.035	-0.063	-0.063
	(-2.67)***	(-2.60)***	(-2.54)**	(-2.55)***	(-5.31)**	(-5.31)**
Size	-0.038	-0.040	-0.061	-0.041	-0.007	0.007
	(-3.10)	(-3.23)	(-3.75.)	(-3.30)	(0.29)	(0.29)
Vol	-0.003	-0.003	-0.003	-0.002	-0.011	-0.011
	(-1.59)*	(-1.62)*	(-1.40)*	(-1.50)*	(-5.72)*	(-5.72)
SP	-0.004	-0.004	-0.003	-0.004	-0.007	-0.007
	(-1.60)	(0.085)	(-1.36)	(-1.78)	(-2.65)	(-2.65)
VR	-0.008	-0.009	-0.001	-0.008	-0.011	-0.011
	(-0.36)	(0.699)	(-0.41)	(-1.78)	(-0.76)	(-0.76)
Constant	1.181	1.197	1.467	1.204	0.823	-0.823
	(15.19)***	(15.21)***	(9.93)***	(15.47)***	(2.42)***	(2.42)***
Observations	220	220	220	220	220	220
Number of firmes	22	22	22	22	22	22
R²	(0.83)	(0.77)	(0.71)	(0.86)	(0.83)	(0.76)
Stat -F	43.92	4.83	5.43	5.91	4.72	5.69
F Prob	0.000	0.000	0.000	0.000	0.000	0.000

Notes: ***, ** and * denote significance levels of 1%, 5% and 10% respectively. Values in parentheses are "t-Student".

However, the relationship between discretionary accruals and the ask-bid spread could bestudied. Comparing the investigated modified Jones and Kothari models reveals that, unlike non-discretionary accruals, Tunisian investors give importance to this earnings management component (M_1-2, M_2-2). Indeed, the explanatory power of M_1-1 (non-discretionary accruals) increases from 70% (R²) to 76% for M_1-2 (discretionary accruals). This result confirms the findings of Subramanyam (1996) indicating that the discretion of managers is mainly aimed at conveying private information about firm future. The results presented above show that the amounts manipulated by Tunisian firms positively correlate with the ask-bid spread. Nevertheless, the importance given by Tunisian investors to these accruals remains lower than that given to non-discretionary accruals insofar as the coefficient of discretionary accruals is 1,243 in model M_1-2and significant at the 5% level, while the coefficient of non-discretionary accruals, which is 1.411(M_1-3), is not significant. Based on the second model of Kothari (M_2), it seems that Tunisian investors giveequal importance to the two components (DA and NDA), as each has a significant coefficient at the 5% level. These results confirm the findings on stock market returns identified above. It should be mentioned that our interpretations rely on the ability of the modified models of Jones (1995) and kothari *et al.*, (2005) to detect such accounting practices. Indeed, the obtained results point to the superiority of the Kothari model over the modified Jones (1995) model where the explanatory power R²of M_2-2 (82%) is greater than M_1-2 (76%).Therefore the suggestedsecond and third hypotheses, indicating that the discretionary accruals of Tunisian firms have an additional information content compared to the non-discretionary accruals and better explain stock liquidity, could bevalidated. It should be noted that most of the studies, which used the ask-bid spread as a measure of liquidity, found a significant relationship with earnings management. However, using transaction volume as a measure of liquidity, some studies, such as those of Nowghabi *et al.*, (2015) foundnon-significant results. In order to find out whether liquidity providers respond to the direction of earnings management, we will incorporate a dichotomous variable representing an upward earnings management.

Inclusion of a dichotomous variable would allows us to assess the way in which investors interpret earnings management; upward and downward. The model can be written as follows in (7).

$$SPREAD_{it} = \beta_0 + \beta_1 DAC_{it} + \beta_2 DEM_{it} + \beta_3 SIZE_{it} + \beta_4 VOL_{it} + \beta_5 SP_{it} + \beta_6 LEV_{it} + \beta_7 VR_{it} + \varepsilon_{it} \quad (7)$$

Where DEM is a dichotomous variable equal to1 if the firm manages upward its earnings and 0 otherwise. In addition to high risk and high returns, liquidity is another factor that motivates investors to buy a particular stock or reduce their tendency to own another. This is particularly important for investors because it motivates them to compensatefor their lack of liquidity. In the same vein, it is assumed that an upward earnings management leads to higher liquidity costs and low stock liquidity. Thus, an aggressive earnings management reflects a low accounting information quality[4]. After carrying out all the necessary tests and the descriptive analysis[4], the obtained results of the regression are presented in Table 6. This Table 6 shows that for the two models M_1 and M_2 the Fisher's statistics are respectively 4.24 and 4.25 with zero probabilities. These models are globally significant, i.e. there is at least one independent variable that has an effect on the ask-bid spread. Furthermore, the coefficients of determination R^2 are better and are 82% and 83%, respectively. This finding points again to the superiority of the Kothari model over the modified model of Jones.

Table 6. Results of The Regression: Liquidity And Direction Of Accruals

	Modified Jones Model (M_1)	Kothari Model (M_2)
VARIABLE	SPREAD	SPREAD
Earnings management	1.365	1.186
	(2.58)*	(2.94)*
DEM	0.079	0.089
	(4.65)***	(5.73)***
Lev	3.896	1.597
	(3.569)***	(2.364)***
SIZE	6.621	-1.369
	(-15.66)**	(-18.25)**
SP	0.012	0.017
	(1.63)	(1.89)
Volume	-0.056	-0.632
	(-2.35)*	(-2.236)*
ROA	-2.369	-0.89
	(-1.32)	(-236)
VR	1.236	0.002
	(0.96)	(0.36)
Constant	-7.256	-5.693
	(-23.24)**	(-7.698)**
Observations	220	220
R-squared	0.83	0.84
Fisher	5.64	5.69
ProbF	0.000	0.000

Notes: ***, ** and * denote significance levels of 1%, 5% and 10% respectively. Values in parentheses are "t-Student".

As for the independent variables, we found that the two variables discretionary accruals and discretionary accruals directions (DEM) have respective t-student of 5.25 and 5.73, which exceed the critical value of 1.96. The sign of the two discretionary accruals and discretionary accruals (DEM) is positive in each of the two models, M_1 and M_2

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[4]See Appendix N°1 : descriptive analysis

Nonetheless, it could be important to note that these two variables have a positive and a significant impact on the ask-bid spread of Tunisian firms. Certainly, for modified Jones model (M_1), a 1% increase in discretionary accruals (DAC) and discretionary accruals direction (DEM) means a 125% increase and a 7.8% increase in the ask-bid spread.

Similarly, for the Kothari model (M_2), a 1% increase in discretionary accruals (DAC) and discretionary accruals direction (DEM) leads to an increase of 118% and 8.6% increase in the ask-bid spread. The results in the table 6 highlight the existence of a significant relationship between the direction of earnings management and the ask-bid spread. Explicitly, investors react in line with the direction of earnings management. This is validated by the two investigated measurement models.

Appendix.I. Earnings Management And Liquidity: Modified Jones Model$m_1$and Kothari Model M_2

Table 7.Vif Tests: Modified Jones Model M_1

M_{1-1}

Variable	VIF	1/VIF
LEV	1.32	0.896641
Size	1.16	0.859804
TAC	1.18	0.847450.920805
SP	1.09	0.943766
VOL	1.06	0.9708730.980392
VR	1.03	
ROA	1.01	
Mean VIF	1.12	0.90

M_{1-2}

Variable	VIF	1/VIF
LEV	1.03	0.970599
Size	2.69	0.371893
TAC	2.68	0.373029
SP	1.03	0.970599
VOL	1.06	0.944182
VR	1.03	0.970599
ROA	1.02	0.981440
Mean VIF	1.50	0.79

M_{1-3}

Variable	VIF	1/VIF
LEV	1.04	0.963947
Size	1.08	0.925347
TAC	1.03	0.970599
SP	1.04	0.963947
VOL	1.04	0.964137
VR	1.02	0.981468
ROA	1.06	0.943765
Mean VIF	1.04	1.13

Table 8.Vif Tests: Kothari Model M_2

M_{2-1}

Variable	VIF	1/VIF
LEV	1.02	0.981432
Size	1.17	0.857231
TAC	1.16	0.859804
SP	1.09	0.920805
VOL	1.06	0.943765
VR	1.02	0.981432
ROA	1.18	0.849868
Mean VIF	1.1	0.91

M_{2-2}

Variable	VIF	1/VIF
LEV	1.01	0.985642
Size	1.18	0.847105
TAC	1.18	0.849868
SP	1.09	0.920166
VOL	1.06	0.943758
VR	1.02	0.981492
ROA	1.01	0.985642
Mean VIF	1.07	0.93

M_{2-3}

Variable	VIF	1/VIF
LEV	1.02	0.989746
Size	1.02	0.984899
TAC	1.08	0.925319
SP	1.07	0.937034
VOL	1.02	0.981124
VR	1.02	0.984899
ROA	1.08	0.925319
Mean VIF	1.04	0.96

The result in Table 6 indicate that volume and size are significant at the 10% levelin M_1 and M_2 with negative signs. This finding implies a negative and a significant impact of transaction volume (Vol) and size on the ask-bid spread (SPREAD). However, returns (R) and volatility (RV) are not significant and have no effect on the ask-bid spread. The results reveal that transaction volumenegatively relates to spreads. Accordingly, the greater the transactionvolume, the more liquid the market and the lower the acquisition costs similar to other researchs (Chen (2007), Chung *et al.*, (2009)and Ascioglu *et al.*, (2012)) the ask-bid of Tunisian firms of our sample decreases as a function of transaction volume.

The size variable is negative and significant in the two earnings management measurement models (-1,291 in M_1, -1,272 in M_2). With respect to our predictions, size of Tunisian firmsnegatively affects the ask-bid spread. The larger the firm, the more incited its managers to adopt accounting and financial choices that reduce profits and negatively influence the ask-bid spread (positively to liquidity). The latter result is consistent with the political cost hypothesis as formulated by the politico-contractual theory. Similarly, it is consistent with previous studies of the US context (Brown *et al.*, (2007) and Bhattacharya *et al.*, (2013), which shows that stocks of small-capitalized firms are less liquid than stocks of large-capitalized firms.

Examining the results of the second model M_2on measuring the discretionary accruals variable reveals a slight improvement in the results compared to the M_1 model. Unlike model M_1, the second model includes the ROA variable explaining changes in accruals, i.e. the accounting and financial choices of firms. If, in model M_1, the results are consistent with previous findings, this variable, when introduced, also contributes to explaining managers' accounting choices, it affects them positively (R^2 increases from 82% to 83%). Finally the two models reveal that earnings management has a negative effect on stock liquidity. This result can be interpreted by the investors' attitudes that are aware of these long-term manipulation practices aiming at fluctuating earnings. This result finds its validity in the new 2011 budget law which aims at rationalizing exemption of capital gains resulting from selling stocks listed on the stock exchange. In order to consolidate the role of the financial market in the provision of long-term financial resources (incentives for long-term investment) and this with a view of discouraging and limiting speculation, which negatively impact market equilibrium. In order to refine our findings, we will carry out a graphical analysis of the discretionary accruals-liquidity relationship using our two earnings management measurement
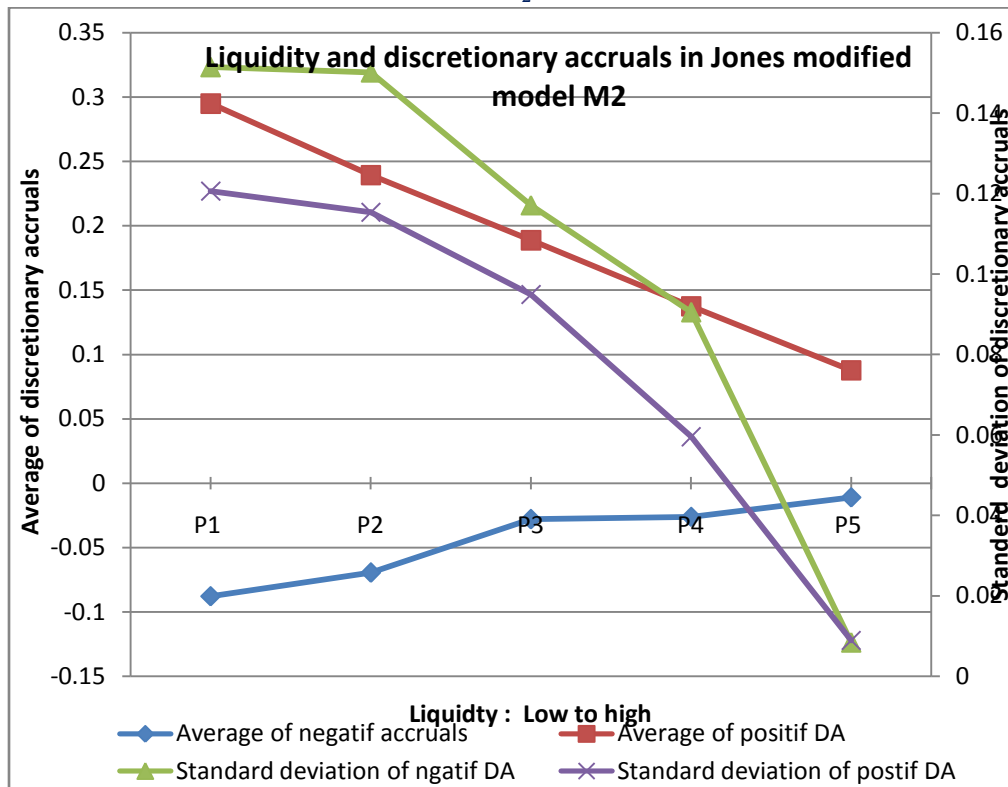
Figure N°3. LIQUIDITY AND DISCRETIONARY ACCRUALSIN JONES MODFIED MODEL M1
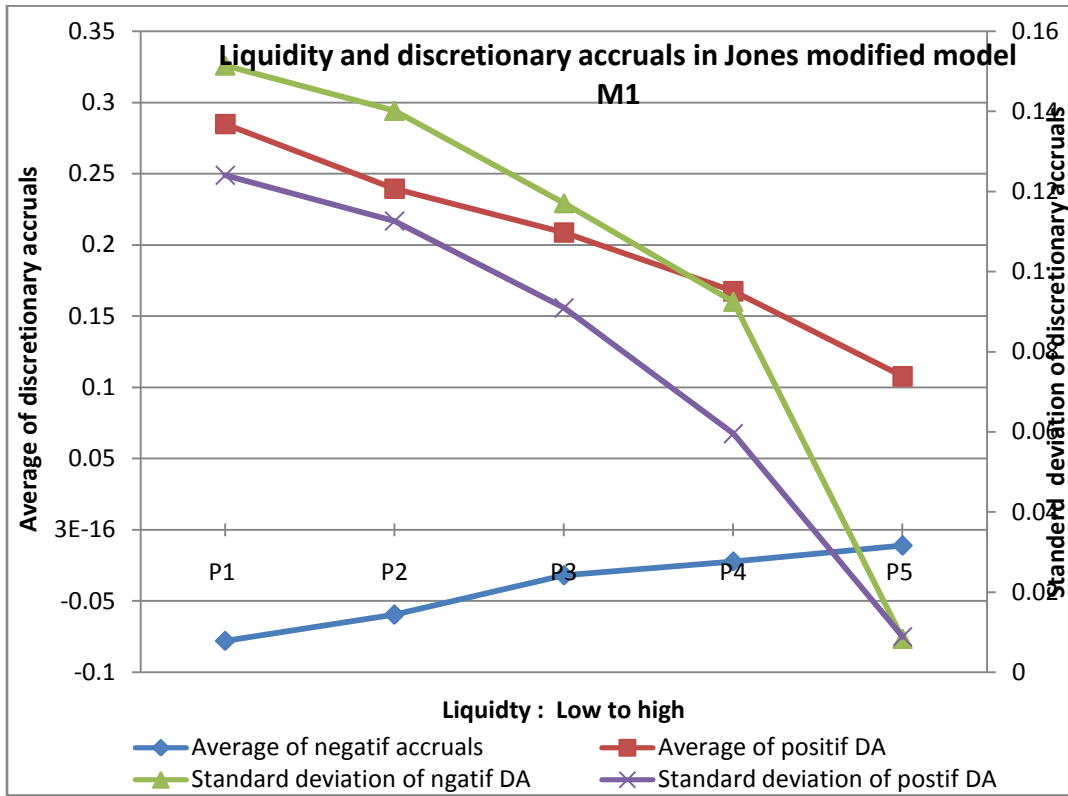
The This Figure N°3   illustrates he correlation between liquidity and discretionary accruals. To measure accruals, two estimates were used: the average of discretionary accruals and standard deviation. The investigated sample was divided into two groups according to earnings management direction (DA> 0 or DA <0) and the observations divided into 5 equal groups based on liquidity level. The sample is very scattered and the relationship between liquidity and discretionary accruals indicators is visible. In fact, the trend of discretionary accruals in both Figures N°3 and N°4 slightly decreasesindicating a negative relationship between liquidity and discretionary accrualsFurthermore the relationship between liquidity and the average of discretionary accruals (DA> 0 or DA <0) is negative In Figures N°3 and 4, the trend curve of the discretionary accruals-liquidity relationship is more important for positive discretionary accruals than for negative accruals. One possible explanation is that the effect of accruals on liquidity might results from the trade-off between short-term profit and expected long-term gains and that short-term commitment is riskier and costly for investors (Hirshleifer *et al.*, (2011)). The positive discretionary accruals are likely to cause overvaluation while the negative discretionary accruals are likely to generate undervaluation. In addition, both figures 1 and 2show that liquidity increaseswhen standard deviation decreases.

According to the earnings management regression results reported in Table 6, the liquidity coefficient is positive when discretionary accruals are negatives when discretionary accruals are positive, confirming then hypothesis 4. Whatever the sign of discretionary accruals, the regression coefficients of liquidity are statistically significant. Our findings on the other determinants of liquidity are generally consistent with those of previous studies published by Cohen *et al.*, (2008). Indeedinterpreting the regression coefficients of the other liquidity determinants,so we focus on the coefficients that are statistically significant . Examining a sample of US listed firms duringthe 1996 to 2001period, Ascioglu*et al.*, (2012) found that firms with high discretionary accruals have low stock liquidity. Studying a sample of 20 Tunisian firms over the 2000-2005period, Hakim *et al.*, (2008) found a negative relationship between profit quality and the ask-bid spread.

Figure N°4. LIQUIDITY AND DISCRETIONARY ACCRUALS IN KOTAHRI AND AL. (2005) MODEL M₂

It should be noted that the results obtained with the Kothari *et al.*, (2005) model are consistent with the results of modified Jones model, i.e. the trend curve of discretionary accruals-liquidity relationship is important for positive discretionary accruals than that of negative accruals Figure N°4. These results indicate that the higherdiscretionary accrualsfor Tunisian firms, i.e. they adoptupward accounting choices, the lower their liquidity (a wide spread). This allowed us to conclude that an upward earnings management results in higher liquidity costs and lower stock liquidity. Thus, an aggressive earnings management reflects a low accounting informationquality.

V. Conclusion

This paper is focused on empirically evaluation ofthe impact of discretionary accruals on liquidity through the ask-bid spread and the effect of discretionary accruals direction. To this end, a research models were selected to test the presence of a linear relationship and the effect of earnings management direction on the relationship between the spread and accruals by integrating a dichotomous variable. An explanation of the value of questioning the classical framework treating the relationship between liquidity and earnings management was done, such as to validate the negative relationship between these two variables in an emerging country like Tunisia. Moreover, a study of various approaches was proposed, and motivated by a wide range of theoretical arguments. In addition to high risk and returns, liquidity is another factor that motivates investors to purchase a given stock or reduce their ownership of another. This is particularly important for investors insofar as it motivates them to compensate for their lack of liquidity. Referring to experts' opinions, managing earnings is one of the factors that best determines liquidity. In the same vein, it is likely that upward earnings management will result in higher liquidity costs and lowerstock liquidity. As a result, aggressive earnings management reflects low accounting informationquality. As a first hypothesis, the relationship between earnings management (the various components of accruals) and the ask-bid spreadwas examined. We found that each of these earnings management components significantlyinforms about firm liquidity when using these two models: modified Jones (1995) and Kothari *et al.*, (2005). In line with previous research, the obtained results reveal the positive relationship between the ask-bid spread and earnings management of Tunisian firms.

An increase in discretionary accruals is perceived as anearnings management reflecting an unethical behavior or an unsatisfactory source of information. Such anassumption is consistent with the results of Francis *et al.*, (2007), Hakim *et al.*,(2008),Chung *et al.*, (2009),Xu *et al.*, (2010) and faez*et al.*,(2014). However, the importance given by Tunisian investors to non-discretionary accruals remains lower than that given to discretionary accruals. Moreover, our results corroborate those of Ascioglu*et al.*, (2012),kan (2013) and Bafghi*et al.*, (2014),who used the ask-bid spread as a measure of liquidity. The authors found that earnings management increases agency costs and informationasymmetry. According to this finding, liquidity providers bear higher costs and thus a widerspread and a less liquid market. Thus, liquidity providers are aware of earnings management and they prefer firms whichgenerate more stable profits. In particular, such a practice is not observed in the Tunisian firms of our sample. This led us to determineas a second step the type of relationship between earnings management direction and market liquidity.

It should be noted that our interpretations rely the ability of our measurement to detect such accounting practices. Like Yuan and Cheng (2016), our results highlight the superiority of the model of Kothari *and al.*, (2005) over the modified Jones model (1995). Therefore, the suggested second and third hypotheses, according to which the discretionary accruals of Tunisian firms contain additional information compared to non-discretionary accruals, can be confirmed and they better explain stock liquidity. To support these preliminary results, the relationship between earnings management direction and liquidity through the ask-bid spread and the different control variables (size, returns and transaction volume) was examined.The results pointed to a significant relationship between earnings management and the ask-bid spread. Explicitly, investors react according to earnings management direction. This is validated in the two measurement models (modified Jones model M_1, Kothari model M_2). Indeed, an increase in earnings management results in higher liquidity costs and lower liquidity. Accordingly, investors assume that an aggressive earnings management practice reflects a low accounting information quality. Our results are consistent with those of Ascioglu *and al.*, (2012), which indicate that firms with high discretionary accruals have low liquidity.
As for the control variables, the correlation analysis confirmed our conclusions as we found a negative and a significant correlation between the ask-bid spread and firm size in the two measurement models. This negative effect can be attributed to the substantial control practiced over large firms.

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Appendix II. The relationship between Earnings Management and Stock Liquidity: Modified Jones M_1 and Kothari Model M_2

TABLE N°1. Descriptive Statistics

	VARIABLES	AVERAGE	Standard deviation	Min	Max
Dependent variable	SPREAD	0.676	1.242	-2.207	7.821
Independent variables	DAC1	6.11e-09	0.125	-0.325	0.811
	AD2	0.00240	0.127	-0.271	0.796
	DEM1	-	-	0	1
	DEM2	-	-	0	1
Control variables	Size	16.37	1.707	12.13	19.83
	Lev	14.36	1.236	1.569	3.564
	SP	31.00	39.70	1.370	203.4
	ROA	2.754	1.467	-4.605	5.942
	Vol	2.700	0.169	2.212	2.886

TABLE N°2 : PEARSON CORRELATION TEST (MODEL M_1)

	SPREAD	AD1	LEV	DEM	SIZE	SP	VOL	ROA	VR
SPREAD	1.0000								
AD1	0.03624	1.0000							
LEV	0.23481	0.2315	1.0000						
DEM	-0.2356	0.3570	0.4562	1.0000					
SIZE	-0.2145	0.1484	0.5691	0.2418	1.0000				
SP	0.3544	-0.0010	0.3478	-0.1923	-0.0959	1.0000			
VOL	0.1423	0.0287	0.2397	-0.0623	-0.0184	0.2309	1.0000		
ROA	-0.0125	-0.1299	0.6456	-0.0837	-0.1206	0.0199	-0.1491	1.0000	
VR	-0.0719	0.0124	0.4123	-0.1284	0.1456	-0.0814	0.1365	-0.0154	1.0000

TABLE N°3 :PEARSON CORRELATION TEST (MODÈL M2)

	SPREAD	AD2	LEV	DEM	SIZE	SP	VOL	R	VR
SPREAD	1.0000								
AD2	-0.1264	1.0000							
LEV	0.2689	0.5324	1.000						
DEM	-0.0189	0.0256	0.3258	1.0000					
Taille	-0.2389	0.2360	0.9547	-0.2369	1.0000				
SP	0.2569	-0.0123	0.3541	0.1254	-0.0741	1.0000			
VOL	0.3654	0.0289	0.2458	0.1543	-0.0241	0.2546	1.0000		
ROA	-0.0532	-0.2147	0.3268	0.0354	-0.325	0.1245	-0.1491	1.0000	
VR	-0.0534	0.0312	0.1456	-0.0369	0.0128	-0.1456	0.0896	-0.0069	1.0000