Audit Quality, Timely Disclosure, and the Cost of Debt: Tunisian Evidence

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The aim of this study is to investigate the effect of auditor type and earnings reporting lag on the cost of debt for the Tunisian setting. Our sample consists of 32 Tunisian companies for the period of 2003-2012. Audit quality is measured by auditor size (Big 4 versus non-Big 4) and timely disclosure is proxied by earnings reporting lag. Results show that auditor type is negatively associated with the cost of debt. By contrast, the association between earnings announcement lag and the cost of debt is positive and significant. When testing for the moderating effects of industry and listing status, we document that these associations are more pronounced for industrial companies and listed firms. Finally, the period of investigation slightly moderates the examined associations, since financial institutions become more sensitive to the tardy communication of information and less concerned with auditor type following some economic and political troubles in Tunisia between 2010 and 2012. Our findings have policy implications for managers in the Tunisian setting and other developing economies similar to Tunisia given the crucial role played by debt as an important source of external finance for companies.

Keywords: cost of debt, auditor type, earnings reporting lag, Tunisia

Introduction

Recent financial scandals (e.g., Enron, WorldCom) have raised questions about the audit quality and timely disclosure worldwide since financial statement credibility relies strongly on them. DeAngelo (1981, p. 117) defined audit quality as “the probability that an auditor will both detect material misstatements in the client’s financial statements and report these misstatements”. The question of whether audit quality and timely disclosure affect the cost of debt represents an important issue in accounting and finance (Causholli & Knechel, 2012). To respond to this question, several studies have been conducted to examine such a question in developed countries (e.g., Sengupta, 1998 in USA, Piot & Missonier-Piera, 2009 in France, Anderson, Mansi, & Reeb, 2004 in USA, Karjalainen, 2011 in Finland, Causholli & Knechel, 2012 in USA, Fung & Goodwin, 2013 in USA, Koren, Kosi, & Valentincic, 2014 in Slovenia). However, this topic remains under-researched in emerging economies where financial institutions play a critical role in financing firms’ activities (Guidara, Khelif, & Jarboui, 2014) and where audit quality substitutes for conventional corporate control mechanisms such as boards of directors (Fan & Wong, 2005).

Therefore, it becomes important to examine such question in emerging market where financial institutions play a critical role in financing firms’ activities (Khelif, Samaha, & Azzam, 2015). In this study, we focus on the

Tunisian setting which represents a French civil law country characterized by low legal enforcement (World Bank, 2006). This context is representative for MENA countries and shares several similarities with them. In addition, there is a lack of empirical evidence on Tunisia compared to other countries such as Egypt, Qatar, and Saudi Arabia. In an attempt to fill this gap, we try to focus on such setting to examine how audit quality and timely disclosure may affect the cost of debt financing in a weak legal system. According to recent report prepared by the African Development Bank (2012), the bank credit to the private sector as a percentage of Gross Domestic Product (GDP) ranges from 58% in 2006 to 62% in 2009, implying that the private sector in Tunisia relies strongly on financial institutions.

Given these unique characteristics of Tunisian setting and the crucial role played by banks in Tunisia, it becomes important to understand how creditors (banks) react to audit quality and reporting lag. Therefore, the aim of our study is to investigate the relationship between audit quality and timely disclosure on the cost of debt in Tunisia from 2003 to 2012. Audit quality and timely disclosure are respectively estimated using auditor type (Big 4 versus non-Big 4 auditors) and earnings reporting lag. We try to test also whether industry, listing status, and legal and institutional changes moderate the examined relationships.

We find that auditor type is negatively associated with the cost of debt. By contrast, the association between earnings reporting lag and the cost of debt is positive and significant. When testing for the moderating effects of industry and listing status, we provide evidence that these associations are more pronounced for industrial companies and listed firms. Furthermore, the legal and institutional changes across the period of investigation slightly moderate the examined associations.

Our paper contributes to the extant accounting literature dealing with the effect of audit quality and timely disclosure on the cost of finance by focusing on Tunisian setting. Our paper highlights the importance of audit quality and the timely communication of financial statements in reducing the information asymmetry and the agency costs between companies and creditors. Therefore, managers will have more incentives to increase corporate transparency to get loans at a lower cost.

The rest of the paper is structured as follows. Section 2 provides an overview about the major legal and institutional changes from 2003 to 2012. Section 3 reviews the prior literature and develops the hypotheses. Section 4 discusses the research design. Section 5 reports the empirical findings. The final section concludes and offers ideas for future research.

Major Legal, Institutional, and Political Changes From 2003 to 2012

Since legal and political changes in one country may affect audit quality and financial institutions' policies, we try to present the major reforms and changes in Tunisia during the period of investigation (2003-2012).

Tunisia is a French civil law country located in North Africa characterized by low legal enforcement (World Bank, 2006). From 2003 to 2012, several legal, institutional, and political changes have accrued. For instance, after the adoption of the Code of Commercial Companies in 2001, Tunisian financial authorities have promulgated new rules respectively in July 2005 and October 2005 to enhance corporate governance and audit quality (Khanchel El Mehdi, 2007). These new reforms aim at increasing auditor independence and financial statement credibility among shareholders and creditors. According to Khanchel El Mehdi (2007), these legal reforms represent a major progress towards enhancing corporate transparency. With respect to political changes, Tunisia has witnessed, by the end of 2010, a popular uprising and a political turmoil leading to some troubles in its economic situation during 2011 and 2012.

Literature Review

Audit Quality and the Cost of Debt

In a bank-based financial system like Tunisia, financial institutions need to rely on alternative information sources, when assessing the borrowing firms' credit risk and monitoring debt contracts. Quality auditors may play an important role in mitigating information asymmetry between management and creditors through an increased credibility of financial information (Karjalainen, 2011). This implies less information uncertainty and debt monitoring costs faced by banks and thus lower cost of debt (Jensen & Meckling, 1976).

However, audit quality is unobservable and users of financial statements rely on other observable indirect indicators such as auditor size (Karjalainen, 2011). DeAngelo (1981) and Francis and Wilson (1988) suggested that larger auditors, commonly named Big 4, are expected to have more incentives to preserve their independence and provide high-quality audit services to maintain their reputation and enlarge their portfolio. DeAngelo (1981) added that audit quality is not independent of audit firm size and that higher-quality auditors are more likely to improve accounting controls and detect accounting irregularities due to greater knowledge and skills.

Furthermore, it could be argued that Big 4 audit firms provide superior audit since they enjoy quality robust training programs, standardized audit methodologies, and more industry specialization and knowledge to detect problems related to companies' financial reporting policy (Krishnan, 2005). All these characteristics may improve the perceived audit quality by creditors, which in turn leads to lower information asymmetry between managers and creditors and reduced monitoring costs in debt contracts implying a lower cost of debt (Karjalainen, 2011; Causholli & Knechel, 2012). For instance, the audit quality literature suggests that Big 4 auditors are associated with an increased probability of issuing modified audit reports (Francis & Krishnan, 1999) and more informative signals of financial distress for creditors (Lennox, 1999).

Empirical evidence provided by Karjalainen (2011) in Finland suggests that the presence of Big 4 audit firms is negatively and significantly associated with the cost of debt. Thus, we test the following hypothesis:

H1: The association between audit quality and the cost of debt is negative and significant in the Tunisian setting.

Timely Disclosure and the Cost of Debt

Earnings announcement represents an important element of corporate transparency since it gives rise to the value relevance of information disclosed (Bushman, Piotroski, & Smith, 2004). Guidara et al. (2014) suggested that longer earnings announcement lag may increase the information asymmetry between firm and creditors, which translates into a high uncertainty level leading to a higher cost of debt. This is particularly true in emerging economies characterized by long delays in communicating financial statements such as Tunisia (World Bank, 2006). Accordingly, timely disclosure in the Tunisian setting may increase the value relevance of information disclosed among debt-holders implying a lower cost of debt.

Empirical evidence in emerging economies is limited. For instance, Guidara et al. (2014) have examined the association between cost of debt and earnings reporting lag in an African setting, namely, South Africa and they documented that there is an insignificant association between both variables. In addition, Khelif et al. (2015) examined the effect of earnings announcement delay on cost of equity capital in Egypt and they documented a significant positive association between both variables. Thus, we test the following hypothesis:

H2: The association between timely disclosure and the cost of debt is positive and significant in the Tunisian setting.

The Effect of Industry, Listing Status, and Legal and Institutional Changes on the Associations Between Audit Quality, Timely Disclosure, and the Cost of Debt

The effect of industry. Debreceny and Rahman (2005) suggested that different corporate reporting policies and accounting choices could prevail in different industries given the differences in technologies and the nature of activity. For instance, Dechow and Dichev (2001) pointed out that the industrial sector is characterized by a longer firm production cycle due to unfinished production activities and the completion and sale of their products. This implies that the audit procedures in the industrial sector will be different from other sectors (Khlif & Samaha, 2014). In addition, industrial firms need more external finance to extend their activity which implies that they will have more incentives to communicate rapidly their financial statements to get loans at low costs. Therefore, we test the following hypothesis:

H3a: Industry has a moderating effect on the associations between audit quality, timely disclosure, and the cost of debt.

The effect of listing status. The listed firms are expected to be more transparent than unlisted firms because, on one hand, they must meet the regulatory requirements, and on the other hand, they must voluntarily disclose more information to reassure creditors and obtain better financing conditions. A listed company is subject to more stringent regulation compared to unlisted companies. This is particularly true in Tunisia where there are additional listing requirements, compared to non-listed companies, which are applied to all companies listed on the Tunis Stock Exchange. Such companies must comply with the Financial Act 94-117 and the Securities and Exchange Commission (Conseil du Marché Financier) regulations (Khanchel El Mehdi, 2007). This implies that banks will require more transparency from listed companies given the stringent listing and legal requirements.

Several empirical studies show that listed companies tend to require higher audit quality and timely disclosure (Lee, Stokes, Taylor, & Walter, 2003). A differentiated audit quality positively affects the confidence of investors in the information certified by the auditor and potentially determines the value of securities traded introduced (Titman & Trueman, 1986; Datar, Feltham, & Hughes, 1991; Lee et al., 2003). Thus, we test the following hypothesis:

H3b: Listing status has a moderating effect on the associations between audit quality, timely disclosure, and the cost of debt.

The effect of legal and political changes. As mentioned above (see Section 2), Tunisia has witnessed several legal changes during the period of investigation (2003-2012). This first period is between 2003 and 2005 and it comes after the enactment of the Code of Commercial Companies in 2001. This period is also characterized by the collapse of BATAM, a listed Tunisian company, placed under judicial administration in October 2002 following the irregularities discovered in its accounts and the impossibility to pay its debts.¹ The

¹ According to World Bank (2006, p. 16), "In 2002, Tunisia experienced a severe enterprise failure when a listed company, BATAM, went into receivership. The group did not prepare consolidated financial statements and the mother company reported net income of TND 3 million. During the receivership, three audit firms were appointed to determine the actual group net income, which turned out to be a loss of TND 67.5 million. The lack of consolidated financial statements precluded the investors, including 4,000 individual investors representing 7 percent of the share capital, and lenders from assessing the group's true financial condition and performance. Credit institutions are reported to have incurred loan losses amounting to TND 33 million in addition to a debt equity swap amounting to TND 37 million".

second period is from 2006 to 2009. This period is specifically characterized by the adoption of new governance rules to strengthen the security of financial transactions for either listed or unlisted companies. Finally, the Tunisian revolution period was characterized by some economic troubles which may affect financial institutions' behaviors with respect to the cost of debt. This period was characterized by the fragility of the economic and financial systems and more seriously the problem of trust between the different economic agents: managers, investors, and banks.

Accordingly, we expect that these economic and political changes may affect the association between audit quality, timely disclosure, and the cost of debt. Thus, we test the following hypothesis:

H3c: Legal, institutional, and political changes have a moderating effect on the associations between audit quality, timely disclosure, and the cost of debt.

Research Methodology

Sample and Data Collection

The data collected for the purpose of the study involve the examination of annual reports for the years from 2003 to 2012 of a sample of commercial and industrial companies listed on the Tunis Stock Exchange and other unlisted firms. Our empirical study focuses specifically on three periods: the first period before the adoption of the law of financial security from 2003 to 2005; the second period after the adoption of the law and before the Tunisian revolution from 2006 to 2009; and finally, the revolution period from 2010 to 2012. The companies included in our study are selected as follows. First, all financial firms are excluded since they are considered as a highly regulated sector. Second, we eliminated firms whose annual reports are not available or do not close their accounts on December 31. Therefore, our sample² includes 32 companies from the Tunisian setting (320 firm-year observations). Sectors represented in our sample include industrial, services, and commerce. Table 1 provides further information about the sample of companies included in our study.

Table 1

Sample Description

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Sector											
Industrial	18	18	18	18	18	18	18	18	18	18	180
Commercial	14	14	14	14	14	14	14	14	14	14	140
Total	32	32	32	32	32	32	32	32	32	32	320
Listing status											
Listed companies	23	23	23	23	23	23	23	23	23	23	230
Unlisted companies	9	9	9	9	9	9	9	9	9	9	90
Total	32	32	32	32	32	32	32	32	32	32	320

Table 2 lists the variables included in our model. Data are collected from the official website of the Tunis Stock Exchange (<http://www.bvmt.com.tn>) and from the annual reports published on the website of the Financial Market Council (<http://www.cmf.org.tn>). Table 2 provides more detail about the data sources used to measure each variable in our model.

² After excluding all financial companies, we undertake a selection of 32 listed and unlisted companies that meet the following criteria: (1) Financial statements are available; and (2) Data are available for the entire period of investigation.

Table 2

Data Sources

Variable	Required data	Source of information
Dependent variable		
Cost of debt	Cost of debt is measured using the rate of interest paid defined as the interest expense for firm <i>i</i> and year <i>t</i> divided by the short-term and long-term liabilities at the beginning of year <i>t</i> for firm <i>i</i> .	Annual reports (financial statements)
Independent variables		
Test variables		
Auditor type	Dummy variable equaling to 1 if an audit report is signed by at least one auditor representing one of the Big 4 audit firms, and 0 if otherwise.	Annual reports
Earnings reporting lag	The number of days between the fiscal year-end and the publication date of financial statements.	Auditor reports
Control variables		
Ln (asset)	Natural logarithm of assets.	Annual reports (financial statements)
Maturity	The ratio of short-term debt to total debt.	Annual reports (financial statements)
Plant, property, and equipment	The ratio of plant, property, and equipment to total assets.	Annual reports (financial statements)
Loss	Dummy variable equaling to 1 if a firm reports negative earnings and 0 if otherwise.	Annual reports (financial statements)
Variation of earning	The net income for the year <i>N</i> minus the net income for the year <i>N</i> – 1.	Annual reports (financial statements)
Listing status	Dummy variable equaling to 1 if the company is listed and 0 if otherwise.	BVMT
Industry	Dummy variable equaling to 1 if the firm belongs to the industrial sector and 0 if otherwise.	Annual reports

Dependent Variable

Cost of debt is proxied by the rate of interest paid defined as the interest expense for firm *i* and year *t* divided by the short-term and long-term debts at the beginning of year *t* for firm *i* (Sengupta, 1998; Orens, Aerts, & Cormier, 2010; Guidara et al., 2014):

$$COD_{it} = \frac{Interest\ Expenses_{it}}{Short\ and\ Long\ Term\ Liabilities_{it}}$$

Audit Quality

Audit quality is proxied by auditor type. It is a dummy variable that takes the value of 1 if the audit firm is Big 4 and 0 if otherwise. Francis and Wilson (1988) also suggested that the international affiliation status of Big 4 audit firms allows them to provide more high-quality and faster audit services in order to distinguish themselves from local audit firms especially in emerging economies where there is a low accounting and auditing infrastructure (Elbannan, 2011). Finally, Lawrence, Minutti-Meza, and Zhang (2011) stated that the structured audit approach is generally adopted by Big 4 audit firms.

Timely Disclosure

Timely disclosure is proxied by earnings reporting lag that represents the number of days between the fiscal year-end and the publication date of financial statements. In Tunisia, it is difficult to determine, in an accurate manner, this date since this information is not available for listed companies in the official website of the Tunis Stock Exchange and in firms' annual reports. Similarly, this information is not available also for unlisted companies in the official website of the Financial Market Council and in firms' annual reports. Given this difficulty, we consider the date of signature of the independent auditor's report. This approach has also been

used in other empirical studies in developing economies (Guidara et al., 2014 in South Africa and Owusu-Ansah & Leventis, 2006 in Greece). According to Owusu-Ansah and Leventis (2006), this date represents a good proxy for the publication date of financial statements, because companies are allowed to publish their annual reports and earnings following the certification of financial statements by an independent auditor.

The Moderating Variables

As shown in H3a, H3b, and H3c, we have three moderating variables dealing respectively with the effects of industry (commercial versus industrial), listing status (listed versus unlisted), and legal and political changes on the association between audit quality, timely disclosure, and the cost of debt.

Control Variables

In our analysis, we include five control variables that have been hypothesized to influence the cost of debt. Large firms generally communicate more information than small ones (Ahmed & Courtis, 1999). More voluntary disclosure implies less creditors' perceived default risk and thus lower cost of debt (Sengupta, 1998). In addition, since collateral on debt capital may mitigate agency costs of debt (Karjalainen, 2011), we control for plant, property, and equipment scaled by total assets to proxy for the collateral value of assets (Pittman & Fortin, 2004). Agency theory predicts the risk shifting and underinvestment between insiders and outside creditors increases with leverage maturity structure (Jensen & Meckling, 1976). Therefore, we control for maturity and we expect that the cost of debt increases with maturity. In addition, high earnings variability implies more risk and less capability to estimate the future earnings of firms (Orens et al., 2010). Accordingly, it is expected that high earnings variability will increase the cost of debt. Finally, firms reporting negative earnings are characterized by greater uncertainty concerning future profitability (Orens et al., 2010). Therefore, we expect that a negative earning implies a higher cost of debt.

The Model

To examine the relationship between audit quality, timely disclosure, and the cost of debt, the following model is used:

$$COD_{it} = \alpha_0 + \alpha_1 Big\ 4_{it} + \alpha_2 ERL_{it} + \alpha_3 \ln(TA)_{it} + \alpha_4 MAT_{it} + \alpha_5 PPE_{it} + \alpha_6 LOSS_{it} + \alpha_7 VEAR_{it} + \alpha_8 List_{it} + \alpha_9 Ind_{it} + \varepsilon_{it} \quad (1)$$

where:

COD_{it} = Cost of debt is measured using the rate of interest paid defined as the interest expense for year t and firm i scaled by the short-term and long-term financial debts at the beginning of year t for firm i ;

$Big\ 4_{it}$ = Dummy variable: 1 if an audit report is signed by at least one auditor representing one of the Big 4 audit firms, and 0 if otherwise;

ERL_{it} = The number of days between the fiscal year-end and the publication date of financial statements;

$\ln(TA)_{it}$ = The natural logarithm of total assets;

MAT_{it} = The ratio of short-term debts to total debts;

PPE_{it} = The ratio of plant, property, and equipment to total assets;

$LOSS_{it}$ = A dummy variable, taking the value of 1 if the firm reports a negative earning in the fiscal year-end and 0 if otherwise;

$VEAR_{it}$ = The variability of earnings [(net income for the year N – net income for the year $N - 1$)/net income for the year $N - 1$];

$List_{it}$ = A dummy variable equaling to 1 if the company is listed and 0 if otherwise;

Ind_{it} = A dummy variable equaling to 1 if the firm belongs to the industrial sector and 0 if otherwise.

Results

Results in this study are presented as follows. First, we display the descriptive statistics and univariate analysis, and then, we present the results of multivariate analyses.

Descriptive Statistics

Part A of Table 3 presents the descriptive statistics for continuous variables in our study. Cost of debt has a mean of 10.300% and ranges between 4.500% and 17.900%. Earnings reporting lag has a mean of 126 days and ranges between 24 and 283 days. This means that some firms do not respect the maximum period of six months after the fiscal year end required by the Code of Commercial Companies to submit their financial statements to the General Assembly of Shareholders. Maturity has an average of 0.329 and ranges between 0 and 1, while, in average, the ratio of plants and equipments to total assets accounts for 0.316 and ranges from 0.009 to 1.036.

Part B of Table 3 displays the proportion for dummy variables. The percentage of companies audited by Big 4 auditors in our sample accounts for 18.437% and 33.962% of the firms included in the analysis report negative earnings. Finally, 71.875% of firms examined are listed in the Tunisian Stock Exchange, while 56.250% of them belong to industrial sector.

Table 3

Descriptive Statistics

A: Continuous variables				
Variable	Mean	Std. dev.	Min.	Max.
<i>COD</i> (%)	10.300	5.500	4.500	17.900
<i>ERL</i>	126.156	38.854	24	283
$\ln(TA)$	17.691	1.038	13.465	21.112
<i>MAT</i>	0.329	0.329	0	1
<i>PPE</i>	0.316	0.189	0.009	1.036
<i>VEAR</i>	2.09	4.88	-2.14	3.00
B: Proportions for dummy variables				
Variable	Definition	Percentage		
<i>Big 4</i>	Dummy variable: 1 if an audit report is signed by at least one auditor representing one of the Big 4 audit firms, and 0 if otherwise.	18.437		
<i>LOSS</i>	Dummy variable equaling to 1 if a firm reports a negative earning and 0 if otherwise.	33.962		
<i>List</i>	Dummy variable equaling to 1 if the company is listed and 0 if otherwise.	71.875		
<i>Ind</i>	Dummy variable equaling to 1 if the firm belongs to the industrial sector and 0 if otherwise.	56.250		

Notes. *COD* is measured using the rate of interest paid defined as the interest expense for firm i and year t divided by the short-term and long-term liabilities at the beginning of year t for firm i ; *ERL* is the number of days between the fiscal year-end and the publication date of financial statements; $\ln(TA)$ is the natural logarithm of assets; *MAT* is the ratio of short-term debt to total debt; *PPE* is the ratio of plant, property, and equipment to total assets; *VEAR* is the net income for the year N minus the net income for the year $N - 1$; *Big 4* is the size of the firm; *LOSS* is a dummy variable equaling to 1 if the result of the firm is negative and 0 if otherwise; *List* is a dichotomous variable equaling to 1 if the company is listed and 0 if otherwise; *Ind* is a dummy variable equaling to 1 if the firm belongs to the industrial sector and 0 if it belongs to the commercial sector.

Univariate Analysis

Table 4 displays the correlation between the cost of debt and continuous independent variables. Results show that earnings reporting lag is positively associated with the cost of debt with a Pearson coefficient accounting for 0.373 ($p < 0.01$). This result provides a preliminary support for H2 and implies that banks penalise firms communicating their results in a tardy manner with a higher cost of debt. With respect to control variables, maturity seems to have a significant positive effect on the cost of debt, while the presence of a high proportion of plants and equipments to total assets has a negative effect on the same variable.

Table 4

Pearson Correlation Matrix

Variable	<i>COD</i>	<i>ERL</i>	$\text{Ln}(TA)$	<i>MAT</i>	<i>PPE</i>
<i>COD</i>	1.000				
<i>ERL</i>	0.373***	1.000			
$\text{Ln}(TA)$	0.040	0.040	1.000		
<i>MAT</i>	0.060*	0.024	-0.211***	1.000	
<i>PPE</i>	-0.061*	-0.027	0.201***	-0.221***	1.000

Notes. *COD* is measured using the rate of interest paid defined as the interest expense for firm i and year t divided by the short-term and long-term liabilities at the beginning of year t for firm i ; *ERL* is the number of days between the fiscal year-end and the publication date of financial statements; $\text{Ln}(TA)$ is the natural logarithm of assets; *MAT* is the ratio of short-term debt to total debt; *PPE* is the ratio of plant, property, and equipment to total assets. *, **, and *** indicate significance at the levels of 10%, 5%, and 1%.

Table 5 presents the test of equality of means for the cost of debt and all dichotomous variables (*Big 4*, *LOSS*, *List*, and *Ind*). With respect to audit quality, the cost of debt is significantly lower for firms audited by Big 4 firms with a mean of 4.900%, while it is about 11.600% for companies audited by non-Big 4 audit firms. The difference of means is about 6.700%, and it is highly significant with the t -statistic of 3.878. Similarly, industrial firms are associated with a higher cost of debt compared to companies operating in commercial industry with two means amounting to 11.700% and 8.600% respectively and the t -statistic of -2.216. By contrast, neither listing status (*List*) nor *LOSS* variable has a significant effect on the cost of debt for Tunisian companies.

Table 5

Test of Equality of Means

Variable	Category	Number of observations	Mean (%)	Std. dev.	t -statistic (p -value)
<i>Big 4</i>	0	261	11.600	0.129	3.878***
	1	59	4.900	0.046	(0.000)
<i>LOSS</i>	0	212	10.800	0.129	0.968
	1	108	9.400	0.105	(0.333)
<i>List</i>	0	90	9.300	0.076	-0.868
	1	230	10.700	0.135	(0.385)
<i>Ind</i>	0	140	8.600	0.082	-2.261**
	1	180	11.700	0.143	(0.024)

Notes. *Big 4* is a dummy variable: 1 if an audit report is signed by at least one auditor representing one of the Big 4 audit firms, and 0 if otherwise; *LOSS* is a dummy variable equaling to 1 if the result of the firm is negative and 0 if otherwise; *List* (listing status) is a dichotomous variable equaling to 1 if the company is listed and 0 if otherwise; *Ind* (industry) is a dummy variable equaling to 1 if the firm belongs to the industrial sector and 0 if it belongs to the commercial sector. *, **, and *** indicate significance at the levels of 10%, 5%, and 1%.

Table 6

Multiple Regression Analysis

Independent variable	COD (Model 1)		COD (Model 2)	
	Coeff.	<i>t</i> -statistic	Coeff.	<i>t</i> -statistic
Constant	0.077	0.630	-0.396***	-2.500
Test variables				
<i>Big 4</i>	-0.060***	-3.650	-0.061***	-3.670
<i>ERL</i>	0.001***	6.330		
<i>Ln ERL</i>			0.118***	5.630
Control variables				
<i>Ln(TA)</i>	-0.008	-1.160	-0.006	-0.890
<i>MAT</i>	0.022	1.200	0.023	1.220
<i>PPE</i>	-0.032	-0.890	-0.033	-0.900
<i>LOSS</i>	-0.010	-0.790	-0.013	-1.010
<i>VEAR</i>	4.450***	3.320	4.620***	3.400
<i>List</i>	0.028	1.690	0.030	1.760
<i>Ind</i>	0.025	1.830	0.025	1.850
2004	0.003	0.120	0.006	0.230
2005	0.014	0.530	0.020	0.730
2006	0.015	0.560	0.017	0.620
2007	0.015	0.560	0.019	0.700
2008	0.001	0.040	0.003	0.110
2009	0.012	0.440	0.018	0.650
2010	-0.003	-0.130	-0.001	-0.060
2011	0.044	1.600	0.045	1.620
2012	0.059**	2.140	0.061**	2.190
Number of observations	320		320	
Adj. <i>R</i> -square	0.204		0.183	
<i>F</i> (<i>p</i> -value)	5.52 (0.000)		4.97 (0.000)	
Max. VIF	1.910		1.940	

Notes. COD is measured using the rate of interest paid defined as the interest expense for firm *i* and year *t* divided by the short-term and long-term liabilities at the beginning of year *t* for firm *i*; *Big 4* is a dummy variable: 1 if an audit report is signed by at least one auditor representing one of the Big 4 audit firms, and 0 if otherwise; *ERL* is the number of days between the fiscal year-end and the publication date of financial statements; *Ln ERL* is the natural logarithm of *ERL*; *Ln(TA)* is the natural logarithm of assets; *MAT* is the ratio of short-term debt to total debt; *PPE* is the ratio of plant, property, and equipment to total assets; *LOSS* is a dummy variable; *VEAR* is the variation of the net income; *List* is a dichotomous variable equaling to 1 if the company is listed and 0 if otherwise; *Ind* is a dummy variable equaling to 1 if the firm belongs to the industrial sector and 0 if it belongs to the commercial sector. *, **, and *** indicate significance at the levels of 10%, 5%, and 1%.

Multivariate Analysis³

The results of multivariate analysis are reported in Table 6 (Model 1). The findings show that audit quality as proxied by *Big 4* is negatively and significantly associated with the cost of debt ($t = -3.650$; $p < 0.01$). In addition, earnings reporting lag is positively and significantly associated with the cost of debt ($t = 6.330$; $p < 0.01$). Therefore, H1 and H2 are supported. The type of auditor reduces the cost of debt in the Tunisian setting and the presence of *Big 4* auditor ensures creditors about the credibility of firms' financial statements in

³ Checking for multicollianrity, all maximum VIFs in multivariate regressions are under 2, suggesting the absence of such problem in our multivariate analyses.

a setting characterized by low audit and accounting infrastructure (World Bank, 2006). In addition, the tardy communication of financial statements reduces the value relevance of information disclosed among debt-holders, implying more uncertainty and a higher cost of debt. With respect to control variables, it seems that earnings variability is positively and significantly associated with the cost of debt in the Tunisian setting ($t = 3.320$; $p < 0.01$). Similarly, listed and industrial companies are associated with a higher cost of debt ($t = 1.690$; $p < 0.1$ and $t = 1.830$; $p < 0.1$) respectively.

As a robustness check for these results, in Model 2, we replace the number of days for earnings reporting lag by the natural logarithm of number of days as suggested by Jaggi and Tsui (1999) and Khlif and Samaha (2014). The previous results remain stable since the Big 4 variable has a significant negative effect on the cost of debt, while the natural logarithm earnings reporting lag is positively and significantly associated with the same variable.

The Moderating Effects of Industry, Listing Status, and Legal and Political Changes

Industry. H3a tests for the effect of sector type on the association between auditor type, earnings reporting lag, and the cost of debt in the Tunisian setting. As reported in Table 7, the association remains significant for industrial firms with respect to auditor type ($t = -4.020$; $p < 0.01$), while it becomes insignificant for commercial companies. With respect to the association between earnings reporting lag and the cost of debt, the association remains significant for both sectors with a more significant relationship observed for industrial firms ($t = 6.280$; $p < 0.01$) compared to commercial ones ($t = 3.830$; $p < 0.01$). These findings provide support for the moderating effect of industry on the examined associations and H3a. These results may be explained by the specificity of audit procedures in industrial sector compared to other sectors and the industrial firms' need for external finance from banks in emerging economies where stock exchanges are less developed (Doupnik & Salter, 1995).

Table 7

Industry Effect

Independent variable	COD (Industrial firms)		COD (Commercial firms)	
	Coeff.	<i>t</i> -statistic	Coeff.	<i>t</i> -statistic
Constant	-0.391	-1.500	0.176*	1.770
Test variables				
<i>Big 4</i>	-0.093	-4.020***	-0.016	-0.850
<i>ERL</i>	0.001	6.280***	0.001	3.830***
Control variables				
<i>Ln(TA)</i>	0.013	0.910	-0.009	-1.500
<i>MAT</i>	0.057	1.960**	-0.008	-0.400
<i>PPE</i>	-0.024	-0.410	-0.026	-0.750
<i>LOSS</i>	-0.028	-1.400	0.003	0.230
<i>VEAR</i>	8.460	4.040***	1.460	0.100
<i>List</i>	0.073	2.710***	-0.009	-0.540
2004	-0.015	-0.380	0.009	0.340
2005	0.003	0.070	-0.023	-0.850
2006	0.035	0.860	-0.028	-1.030
2007	0.027	0.670	-0.021	-0.750
2008	0.004	0.110	-0.020	-0.710
2009	0.009	0.220	-0.031	-1.110
2010	0.011	0.280	-0.039	-1.400
2011	0.020	0.500	0.043	1.550

(Table 7 continued)

Independent variable	COD (Industrial firms)		COD (Commercial firms)	
	Coeff.	<i>t</i> -statistic	Coeff.	<i>t</i> -statistic
2012	0.036	0.880	0.064	2.250**
Number of observations	180		140	
Adj. <i>R</i> -square	0.308		0.206	
<i>F</i> (<i>p</i> -value)	5.650*** (0.000)		3.130*** (0.000)	
Max. VIF	1.990		1.920	

Notes. COD is measured using the rate of interest paid defined as the interest expense for firm *i* and year *t* divided by the short-term and long-term liabilities at the beginning of year *t* for firm *i*; *Big 4* is a dummy variable: 1 if an audit report is signed by at least one auditor representing one of the Big 4 audit firms, and 0 if otherwise; *ERL* is the number of days between the fiscal year-end and the publication date of financial statements; *Ln(TA)* is the natural logarithm of assets; *MAT* is the ratio of short-term debt to total debt; *PPE* is the ratio of plant, property, and equipment to total assets; *LOSS* is a dummy variable; *VEAR* is the variation of the net income; *List* is a dichotomous variable equaling to 1 if the company is listed and 0 if otherwise. *, **, and *** indicate significance at the levels of 10%, 5%, and 1%.

Table 8

Listing Effect

Independent variable	COD (Listed firms)		COD (Unlisted firms)	
	Coeff.	<i>t</i> -statistic	Coeff.	<i>t</i> -statistic
Constant	0.021	0.120	0.333**	2.040
Test variables				
<i>Big 4</i>	-0.062***	-3.370	-0.016	-0.320
<i>ERL</i>	0.001***	5.840	0.001***	2.680
Control variables				
<i>Ln(TA)</i>	-0.004	-0.480	-0.017*	-1.860
<i>MAT</i>	0.036	1.500	-0.006	-0.250
<i>PPE</i>	-0.069	-1.420	0.040	0.900
<i>LOSS</i>	-0.009	-0.550	-0.002	-0.170
<i>VEAR</i>	4.050***	2.700	2.180***	3.970
<i>Ind</i>	0.048***	2.670	-0.046***	-2.640
2004	0.017	0.510	-0.071**	-2.210
2005	0.019	0.540	-0.079***	-2.490
2006	0.018	0.510	-0.078***	-2.460
2007	0.004	0.140	-0.072**	-2.330
2008	-0.005	-0.160	-0.089***	-2.780
2009	0.011	0.310	-0.078**	-2.380
2010	-0.000	-0.010	-0.082***	-2.590
2011	0.029	0.840	-0.089***	-2.920
2012	0.037	1.040	0.024	0.790
Number of observations	230		90	
Adj. <i>R</i> -square	0.224		0.283	
<i>F</i> (<i>p</i> -value)	4.880*** (0.000)		3.040*** (0.000)	
Max. VIF	1.910		2.010	

Notes. COD is measured using the rate of interest paid defined as the interest expense for firm *i* and year *t* divided by the short-term and long-term liabilities at the beginning of year *t* for firm *i*; *Big 4* is a dummy variable: 1 if an audit report is signed by at least one auditor representing one of the Big 4 audit firms, and 0 if otherwise; *ERL* is the number of days between the fiscal year-end and the publication date of financial statements; *Ln(TA)* is the natural logarithm of assets; *MAT* is the ratio of short-term debt to total debt; *PPE* is the ratio of plant, property, and equipment to total assets; *LOSS* is a dummy variable; *VEAR* is the variation of the net income; *Ind* is a dummy variable equaling to 1 if the firm belongs to the industrial sector and 0 if it belongs to the commercial sector. *, **, and *** indicate significance at the levels of 10%, 5%, and 1%.

Listing status. H3b tests for the effect of listing status on the association between auditor type, earnings reporting lag, and the cost of debt in the Tunisian setting. As shown in Table 8 above, the relationship remains significant for listed Tunisian firms with respect to auditor type ($t = -3.370$; $p < 0.01$), while it is insignificant for unlisted companies. With respect to the association between earnings reporting lag and the cost of debt, the association remains significant for both groups with a more significant relationship observed for listed firms ($t = 5.840$; $p < 0.01$) compared to unlisted ones ($t = 2.680$; $p < 0.01$). These findings provide support for the moderating effect of listing status on the above relationships and thus H3b is supported. These results may be explained by the additional listing requirements and regulations for listed Tunisian firms (Khanchel El Mehdi, 2007), implying that banks will require more transparency from listed companies given the stringent listing and legal requirements.

Table 9

The Moderating Effect of Legal and Political Changes

Independent variable	COD (2003-2005)		COD (2006-2009)		COD (2010-2012)	
	Coeff.	t-statistic	Coeff.	t-statistic	Coeff.	t-statistic
Constant	-0.317	-1.980	0.322	1.220	0.061	0.250
Test variables						
Big 4	-0.048***	-2.440	-0.072***	-2.380	-0.065*	-1.820
ERL	0.001***	5.380	0.001***	2.510	0.001***	4.530
Control variables						
Ln(TA)	0.014	1.630	-0.022	-1.390	-0.006	-0.450
MAT	0.040**	2.060	0.034	1.020	-0.001	-0.020
PPE	-0.012	-0.300	-0.002	-0.040	-0.089	-1.250
LOSS	0.004	0.260	-0.020	-0.840	0.008	0.310
VEAR	7.590***	3.340	7.000***	2.480	4.060	1.670*
List	0.029	1.550	0.048	1.570	0.001	0.030
Ind	-0.016	-0.980	0.049*	1.930	0.022	0.830
2004	-0.010	-0.590				
2005	0.000	0.010				
2006						
2007			0.014	0.460		
2008			-0.000	-0.000		
2009			0.013	0.410		
2010						
2011					-0.059	-1.970
2012					-0.007	-0.250
Number of observations	97		126		97	
Adj. R-square	0.263		0.162		0.263	
F (p-value)	4.090 (0.000)		3.010 (0.001)		4.090 (0.000)	
Max. VIF	1.700		1.950		1.700	

Notes. COD is measured using the rate of interest paid defined as the interest expense for firm i and year t divided by the short-term and long-term liabilities at the beginning of year t for firm i ; Big 4 is a dummy variable: 1 if an audit report is signed by at least one auditor representing one of the Big 4 audit firms, and 0 if otherwise; ERL is the number of days between the fiscal year-end and the publication date of financial statements; Ln(TA) is the natural logarithm of assets; MAT is the ratio of short-term debt to total debt; PPE is the ratio of plant, property, and equipment to total assets; LOSS is a dummy variable; VEAR is the variation of the net income; List is a dichotomous variable equaling to 1 if the company is listed and 0 if otherwise; Ind is a dummy variable equaling to 1 if the firm belongs to the industrial sector and 0 if it belongs to the commercial sector. *, **, and *** indicate significance at the levels of 10%, 5%, and 1%.

Legal and political changes in Tunisia. H3c tests for the effect of legal and political changes on the association between auditor type, earnings reporting lag, and the cost of debt in the Tunisian setting. As reported in Table 9 above, we consider three periods. The first period spans from 2003 to 2005 and it comes after the enactment of the Code of Commercial Companies in 2001. The second period (2006-2009) is characterized by the adoption of new governance rules to strengthen the security of financial transactions for either listed or unlisted companies. Finally, the ultimate period (2010-2012) is characterized by some economic and political troubles which may affect financial institutions' behaviors with respect to cost of debt. With respect to auditor type, the association with the cost of debt remains negative and significant for the three periods considered with a less significant association observed for the period of 2010-2012 ($t = -1.820$; $p < 0.10$). This implies that the economic and political troubles have reduced creditors' confidence in audit quality regardless of the auditor type. With respect to earnings reporting lag, the association with the cost of debt is more significant for the period of 2010-2012 ($t = 4.530$; $p < 0.01$) than for that of 2006-2009 ($t = 2.510$; $p < 0.05$). A plausible explanation for the result is that Tunisian financial institutions become more sensitive to the tardy communication of financial statements following the economic and political troubles in Tunisia.

Overall, it seems that legal and political changes in Tunisia have slightly influenced the associations between auditor type, earnings announcements, and the cost of debt since financial institutions become more sensitive to the tardy communication of information and less concerned with auditor type following some economic and political troubles in Tunisian between 2010 and 2012.

Concluding Remarks

A basic and fundamental question is whether audit quality and the tardy communication of information have an effect on the cost of debt in developing countries where financial institutions play an important role in financing private sector. Given this importance, we examine, in this study, the empirical relationship between these variables in Tunisia for the period spanning from 2003 to 2012.

We find that auditor type is negatively associated with the cost of debt, while earnings reporting lag is positively and significantly associated with the cost of debt. When testing for the moderating effects of industry and listing status, we provide evidence that these associations are more pronounced for industrial companies and listed firms. Furthermore, the legal and institutional changes across the period of investigation slightly moderate the examined associations since financial institutions become more sensitive to the tardy communication of information and less concerned with auditor type following some economic and political troubles in Tunisian between 2010 and 2012.

Our paper contributes to the extant accounting literature dealing with the effect of audit quality and timely disclosure on cost of finance by focusing on the Tunisian setting characterized by low accounting and auditing infrastructure. Our paper highlights how sector characteristics and legal requirements (e.g., listing rules) may affect the relationships between audit quality, timely disclosure, and the cost of debt in an emerging economy. Therefore, managers will have more incentives to increase their commitments towards corporate transparency to increase financial statements' credibility among creditors and reduce accordingly the cost of debt. Finally, our empirical findings highlight the importance of a political and economic environment when one analyses the determinants of the cost of debt.

Given the fact that financial institutions play a crucial role in emerging economies, future research could address the same question in other African markets. In addition, this stream of research should be extended to examine the empirical linkage between audit quality, earnings reporting lag, and the cost of equity capital.

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