

The Quality of Institutions on Capital Structure: Evidence from MENA Region

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Abstract: We propose the GMM model to analyze the link between the quality of institutions and capital structure in the MENA region for the period 2000 - 2017 of 442 listed companies from ten selected countries. We demonstrate that, with an active and well-developed financial market, it is easier for companies to increase long-term capital and improve companies' access to long-term debt. By testing the impact of institutional quality, and financial development on capital structure, empirical results show that improving the quality of institutions, strengthening institutional infrastructure can promote the development of finance. We analysed then the mediating effect between leverage and growth opportunities, we notice that the cross effect is insignificant and positive at the same time. Indeed, the effect of debt overcomes the effect of growth opportunities. Lastly, we analyze the existence of a non-linear relationship between the size of the company and the maturity of the debt, Results show that there is a non-linear relationship between the size and the maturity of the debt. In other words, there is a certain value at which the relationship between company size and debt maturity becomes negative.

Keywords: structure; debt maturity; MENA region; quality of institutions

1 Introduction

For more than fifty years, the financial structure has been the central theme of corporate finance and a hot issue in international financial research. The question pertinent to the financial structure adopted by businesses is drawing ever-increasing attention in the literature and thus it can be considered a hot topic. Many studies focused on the issue in different economic settings. These socio-economic settings included the developing countries, the European Union, five developed countries, Asia and for samples of countries from different parts of the world [2,3,9,14,18,20,23].

What is surprising is that the financial structures adopted by businesses in the MENA region are still an under-researched area.

This study has two overarching objectives. The first is to identify specific factors of the firm that affect in the same manner the measures of capital structure since empirical evidence and theoretical hypotheses on the determinants of debt maturity and leverage are not always correlated which stimulates testing new hypotheses. The second is to investigate whether country-specific factors play a role on capital structure determinants [40] Also, the country-level factors play an important role in

determining firm access to credit. In fact, such institutions have been showed how to affect the use of debt. [34] defined institutions as constraints designed by humans. He distinguishes between informal institutions (tradition, trust, social capital, etc.) and formal institutions (laws, property rights, etc.).

The second point is already guaranteed by several authors such as [18] who showed that corruption leads to greater use of debt. [21] concluded that institutions with a good creditor rights strategy are associated with long-term debt. In their study on the South American context, [29] analyzed whether the level of financial development and/or the quality of the institutions affect the maturity of the debt. The results show that the quality of institutions (democracy, freedom of speech, freedom of assembly, accountability, political stability, freedom from violence, quality of public services and policy formulation, quality of regulation, the rule of law, and the control of corruption) have a positive impact on the maturity of the debt.

Motivated by this body of work highlighting the role played by the quality of institutions in the capital structure, our goal is to analyze the role of the variables of the institutional environment in the capital structure in the

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first step and to test in the second step the indirect impact of leverage and growth opportunities and the non linear effect of size. To this end, we attempt to answer the following question:

Do the institutional indicators affect the capital structure of companies in the MENA region?

Is there a significant impact of the moderating effect of leverage and growth opportunities?

Is there a non linear impact of size on debt maturity?

To answer these questions, we use data from 442 listed companies in ten countries in the MENA region over the period stretching from 2000 to 2017.

Several factors have led us to study the capital structure in the MENA region. First, and following the unstable geopolitical environment due to the uprisings in the area dubbed as The Arab Spring, several constraints were experienced in the MENA region. Second, 40.2% of companies in this area are constrained on external financing. Third, the region is characterized by a weak institutional environment in terms of the efficiency of government and law enforcement. Finally, few studies focused on a sample of countries that belong to the developed world. An example is the work of [7] and there is a lack of research on how the relation is between size and debt maturity.

Our paper contributes to the existing literature in several ways:

First, there is a handful of papers that studied the capital structure in the MENA region ([7]).

Second, to our knowledge, it is the first paper to test the mediating effect between leverage and growth opportunities and to treat the non-linear relation between size and size².

The remainder of the paper proceeds as follows: after the introduction, the second section presents the hypothesis and the method of the study. The fourth section outlines the results and discussions of the study. The final section summarizes our key conclusions.

2 Hypothesis and method

Recent international financial research finds that capital structure is influenced not only by company-specific determinants but also by country-specific factors. Many studies on the country effect accentuate that country financially, institutional factors may affect importantly on capital structure.

2.1 Legal institutions and capital structure

In their study of 30 countries during the period 1980 to 1991, [16] examined the maturity of the debt. The results indicate that large companies have more long-term debt with active stock markets; in contrast with a large banking market, small businesses have less short-term debt. The

results also show that large companies, with a good legal system, have more long-term debt with greater maturity. The same conclusion was reached in [30].

[21] investigated how firm characteristics, laws in force, and financial development affect business financing decisions in 8 European countries. The sample is based on unlisted companies to see if institutions play an important role in determining the magnitude of agency problems. The results showed that institutions with a good creditor rights strategy are associated with higher indebtedness and long-term debt with firms; this can only result in significant leverage in countries where the stock market is less developed.

[24] examined international differences in the cost of equity for firms in 40 countries over the period 1992-2001; they studied whether differences in countries' legal institutions and, in particular, of securities regulation, are systematically linked to an international cost of capital differences. This depends on the degree of market integration and whether disclosure of regulations and legal enforcement is reflected in the systematic risk differences between countries.

By introducing legal institutions into the analysis, these same authors showed that firms in countries with strong legal institutions have lower levels of cost of capital compared to countries with weak legal systems even after controlling risk factors and countries. Also, these effects are strongest for institutions that impose disclosure on investors. They are also present for other institutions that facilitate the execution of financial contracts, either by providing effective courts or by lowering the burden of evidence in securities litigation. Yet, these effects become significantly smaller or insignificant as the financial markets get more integrated.

We hypothesize that: a well developed legal institutions impact positively the debt maturity of firms.

2.2 Corruption and capital Structure

By considering a sample of firms from 39 countries¹ and using the Corruption Detection Index, [18] showed that corruption leads to greater use of debt. They also stated that corruption reduces the mature structure of debt.

Using the GMM method, [18] traced the effect of the institutional environment on the choices of the capital structure and the maturity of the debt with a sample of firms in 39 developed and developing countries (272,092 firms) during the period 1991 -2006. The results show that a country's legal and tax system, level of corruption,

¹ List of countries : Australia , Austria, Belgium ,Brazil, Canada, Switzerland, Chile, China, Germany, Denmark, Spain, Finland ,France, UK ,Greece ,Hong Kong ,Indonesia ,India ,Ireland ,Israel ,Italy ,Japan, Korea, Mexico Malaysia, Netherlands, Norway, New Zealand ,Pakistan, Peru, Philippine, Portugal, Singapore, Sweden ,Thailand, Turkey, Taiwan, USA, South Africa

and supplier preferences of capital account for much of the change in debt ratios and debt maturity. Indeed, firms in the most corrupt countries use less equity and more debt (relatively short-term), while companies with a better protection legal system use more equity and more debt to short-term, which holds true even in sub-groups and sub-periods.

Our hypothesis : corruption reduces the debt maturity.

2.3 Political stability and capital Structure

Over a sampling period from 1991 to 2006 and considering 114,723 firms from 40 countries, [42] showed that the national culture helps to explain the variations between countries in the maturity structure of corporate debt. Indeed, firms with high uncertainty, strong collectivism, high power distance, and strong masculinity tend to use more short-term debt after controlling for legal, political, financial, and economic factors. [12] analyzed the role of political uncertainty in decisions to adjust the capital structure. They used a simple model to see the crucial role of government in creating a link between credit supply and business financing choices using a new measure of political uncertainty developed by [4]. One of the key findings in [4] is the strong negative effect of political uncertainty on the choice of capital structure. The study also revealed that the adjustments in the inter-temporal capital structure are less sensitive to political uncertainty for firms that can borrow on public debt markets. Thus, it is safe to claim that political uncertainty has first-order effects on corporate financing decisions, and this by increasing financial frictions.

The study of [13] showed that political uncertainty increases the costs of financial intermediation and thus slows the companies' adjustments to the structure of the optimal capital of each firm. Indeed, when political uncertainty is high, adjustment costs increase and the rate of adjustment of leverage decreases. On the other hand, some political institutions and systems can partly offset the negative effects of political uncertainty on leverage adjustments.

Hypothesis: political uncertainty affect negatively the maturity of the debt

2.4 Quality of Institutions and capital Structure

On a sample of 7 European countries with 800,000 firms of different sizes over a study period of 10 years (2000-2009), and using a simultaneous equation model (SEM), [39] tested the direct effects of the country's characteristics on the decisions of the capital structure. The model included variables such as the specific characteristics of size and industry as well as the mediating role on the effects of firm and industry-specific determinants. The results show that the characteristics of

the country have a significant effect on the leverage of the firm, both directly and indirectly. It was also found that the institutional determinants are the most influential. However, the tax implications of debt and the macroeconomic characteristics of a country are complementary to the country's effect on the choice of capital structure: inflation, economic growth, and capital formation reduce the use of debt.

[29] investigated whether the level of financial development and/or the quality of the institutions affect the decisions of the companies about the maturity of the debt of 359 non-financial enterprises from 5 South American countries over a 12-year study period. Using dynamic analysis on panel data, these authors have studied the effect of some of the most well-known explanatory variables in the literature.

The results point out that:

The level of financial development does not influence the maturity of the debt.

The quality of institutions (democracy, freedom of speech, freedom of assembly, accountability, political stability, peace, quality of public services and policy formulation, quality of regulation, rule of law, and control of corruption) have a positive effect on the maturity of corporate debt.

In a recent study, [10] examined the effect of financial liberalization and political institutions on short-term external debt in 42 countries in sub-Saharan Africa. With a dynamic panel analysis, they showed that external financial liberalization in the context of democracy leads to a reduction in external debt in the short term. Recently, [7] considered a sample of 444 listed companies and a period from 2003 to 2011 of 3717 observations to analyze the effect of institutional determinants on debt maturity in the MENA region. Their results show that leverage, firm size, and tangibility of assets are positively related to the use of long-term debt. On the contrary, firms facing higher default risk tend to use short-term debts. Besides, [7] suggested that better institutional quality leads to the use of long-term debt in the MENA region. A strong rule of law, better regulatory efficiency, and better legal protection of creditors are associated with greater use of long-term borrowing by companies in the MENA region.

[40] by using simultaneous equation model (SEM), test, on a sample of seven apparently similar European countries and more than 800,000 variously sized firms (from the BACH-ESD database) over a ten year period (2000-2009), the direct effects of country characteristics on leverage, as well as their mediating role on the effects of the firm- and industry-specific determinants. The empirical evidence shows that the relevance of many institutional, financial, and macroeconomic country characteristics confirms the better ability of banks in selecting, monitoring, and financing small and risky firms and shows that the demand-side perspective can better explain some counter-intuitive effects of some determinants on leverage.

[37] examine the impact of capital structure, working capital, and governance quality on the financial performance of small- and medium-sized enterprises in Taiwan. Using a sample of more than 2000 firms from the Taiwan Economic Journal (TEJ) during the period of 1995–2018, result shows that a firm's capital structure has a significantly negative impact on return on assets (ROA) and return on equity (ROE).

- definition of the data

The measurement of long-term maturity has been widely used in the literature [1,7,16,18,42].

Debt maturity is measured by the proportion of long-term debt to total debt (long-term debt/ total debt).

These variables are used to explain the maturity of the debt:

Leverage: it is a proxy of the shareholders in case of liquidation. Measured as the ratio of total liabilities to total assets. This is a measure used in the literature on developing countries [9,16,17,35]. Debt maturities include both long-term and short term debts. Long-term debt is the ratio of long-term liabilities to total assets, while short-term debt is the ratio of current liabilities term on total assets ([17]). [17] stated that firms in developing countries tend to use more indebtedness in the short term. In our study, we expect as our first hypothesis a positive relationship between debt and debt maturity.

Growth Opportunities: According to [32], firms with growth opportunities can mitigate underinvestment due to the conflict of interest between shareholders and debt holders through the use of debt to short term. In the same vein, [5,22] gave ample evidence that debt maturity is negatively associated with growth opportunities. The Growth Opportunity (GROWTH) is measured by the ratio of the market value of equity plus the book value of debt to total assets. The hypothesis is that debt maturity of a firm decreases with growth opportunities.

The risk of default: companies with a high probability of default are excluded from the long-term debt market. The first work that addressed the risk of default is that of [28]. The model of the optimal debt policy, the authors offered, showed that firms with less volatile asset returns have a low default risk and hence an optimal debt maturity. [35] tried to see the decision of the maturity of the debt in the presence of the risk of default. He concluded that the maturity of the bonds decreases with the risk of default. Empirical studies confirmed a negative correlation between default risk and debt maturity. The default risk is measured by the Ecart type (ROA) A negative association between debt maturity and default risk is then expected as firms with a low probability of default have more access to long-term debt.

Quality of firm (return on assets): In the presence of information asymmetry, debt maturity is used as a signal of investment quality ([19,27] Given the high sensitivity of long-term debt to the value of the company, long-term debt may be misjudged compared to the short-term debt. In fact, companies with good quality investments use more short-term under-valued debt, while companies with

low investment quality use more over-valued long-term debt. The return on assets is the indicator of the quality of the projects. It is, therefore, expected to be negatively correlated with the maturity of the debt. The hypothesis is that the debt maturity decreases with the quality of the business.

Firm size: The maturity of the debt is affected by the size of the company for several reasons, not least asymmetry of information. Large firms have less information asymmetry, and therefore use more long-term debt . In the same vein, [39] stated that small firms use more short-term debt compared to larger firms that have more access to the long-term debt due to their better financial situation . Empirical studies predict a positive relationship between firm size and debt maturity ([5,22,36,41]. The size is measured by the natural logarithm of the total assets. A positive correlation is expected in the MENA region. The hypothesis is that the maturity of debt increases with the firm size.

Effective tax rate: [28] considered the costs of bankruptcy, issuance costs, and tax benefits of debt in their study. They showed that the maturity of the debt increases with the fall of the tax advantage.

The relationship between effective tax rate and debt maturity varies from one study to another. [22] found that the corporate tax rate is negatively correlated to the maturity of the debt, whereas [1] and [41] did not find any significant correlations. The effective tax rate is measured by the ratio of income taxes to pre-tax income. We expect a positive correlation between debt maturity and effective tax rate.

Tangibility of the asset: [8] showed that the more tangible the assets, the more the company can be financed by long-term debts. Recent studies, such as those of [29] who showed a positive relationship between asset tangibility and long-term debt. The proxy for the tangibility of assets is the ratio of tangible assets to total assets.

Asset maturity: according to [25] debt repayment is affected both by the duration of project assets and by the maturity structure of project returns. Empirical studies show that asset maturity affects debt maturity positively [1,5,11,22,36]. It is expected that companies with more asset maturity use more long-term credit.

Financial development: financial development ameliorates the access of firms to external finance by facilitating the quality of information. [15] suggest that corporate debt increase in a larger and more liquid stock market .

In this paper, we take as an indicator of financial development the domestic credit to private sector as it captures the activity of financial intermediaries which matters to firms financing decisions. We expect that with a good financial development , the financial system is more developed.

Quality of institutions: To examine the role played by institutional quality in firm decisions in the MENA region , we depend one variable of financial development and

three variables of quality of institutions judged as they capture three different dimensions: political stability, control of corruption and rule of law.

Political stability: we use the indice of political stability from world governance indicators as it measures the perception of the likelihood of political instability and/or politically-motivated violence, including terrorism. The indice ranges from -2.5 (weak) to 2.5 (strong). We expect a negative impact of political instability on debt maturity.

Rule of law: We test the law enforcement quality by the indice of world governance indicators which reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence. The index ranges from 2.5 (weak) to 2.5 (strong) we expect that strong rule of law is associated with an increase in debt maturity.

Control of corruption: The corruption can discourage firms to raise debt so that the corruption affect negatively debt maturity but an other view suggest that corruption can be an efficient tool against severe economic regulation which facilitates access to credit specially in countries where the environment is not friendly

we use the indice of world governance indicators which reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests. The indice from -2.5 (weak control of corruption) to 2.5 (strong control of corruption).

It's the empirical issue to see if the impact of corruption is positive or negative on debt maturity.

The objective, here, is to explain how firm specific factors and institutional quality affect debt maturity in this specific zone. We aim to see if the debt maturity of firms in the MENA countries are affected by the same firm characteristics as others regions in the first step. In the second step, we test the impact of institutional quality as well as the financial development. In the third step, we tried to test the indirect and the non linear effect.

Specific variables characteristics are from world scope database. The macroeconomic data GDP and inflation are obtained from world bank and the institutional variables are from world governance indicators database. The description of all variables used in the analysis is reported in Table 1

Focusing on the relationship between the quality of institutions and capital structure is an over-researched area in the literature. Yet research which takes the MENA region as an investigation area is scarce. In fact, the paper of [7] is the first to treat this zone. In this paper, we intend to extend their study by focusing on the dynamic method GMM.

We consider 442 non-financial listed firms for the period that extends from 2000 to 2017 for selected MENA countries: Tunisia, Bahrain,

Qatar, Jordan, Kuwait, Maroc, Egypt, UAE, Oman and Saudi Arabia. We exclude financial firms because there capital decisions bow to other factors. We consider all listed non-financial companies for which data is available for three consecutive years at least.

We choose this period to avoid the effect of the COVID 19 pandemic.

To explain how corporate characteristics and institutional quality factors affect debt maturity, we consider the following dynamic model (GMM):

$$Debt - mat_t = Debt - mat_{t-1} + \alpha + \beta X_t + \theta Z_t + \varepsilon_t, \quad (1)$$

$Debt - mat_t$ and $debt - mat_{t-1}$: The maturity of corporate debt i at date t and date $t-1$ respectively.

X_t : The set of factors specific to the company and macroeconomic factors

Z_t : Institutional factors.

ε_t : the error term.

3 Results and discussions

3.1 Impact of quality of Institutions on debt maturity:

Table 2 shows the GMM estimates for the impact of firm characteristics and quality of institutions on debt maturity. Column (1) shows that the one period lagged variable affect positively and significantly the debt maturity. So that, the choice of the dynamic model is well justified since the delayed variable of debt maturity is significant and positive in all specifications.

The same column shows that companies with a large size, with more tangible assets, and a higher risk are more likely to use long-term debts. This is in collaboration with the theories of trade off and agency. More specifically, a large company has a low cost of bankruptcy and low information asymmetry. It, therefore, finances its activity more by long-term debts. Similarly, the more the firm has tangible assets, the more collateral it has to provide long-term credits, which highlights the importance of real assets (collateral) in the company's ability to borrow on longer maturities. Also, the most risky companies have to resort to long-term debts to face the risk of bankruptcy, according to the compromise theory.

In the first estimate, we note that larger and more tangible enterprises use more long-term debt, which matches the agency theory of debt maturity. Large companies have less bankruptcy costs, less asymmetry of information, better credit quality, and therefore better access to long-term credit.

For asset tangibility, the more real assets there are the more collateral that has an important role to play in long-term lending. Thus, companies, with more tangible assets, can borrow in long-term debt markets. This

highlights the important role of assets as collateral in the granting of long-term loans.

In column (2), We add macroeconomic variables: GDP and inflation. The positive effect of GDP is explained by the fact that high economic growth are associated with long term debt and the inflation present a negative impact.

From column (3) to column (5), we add each variables of institutional quality separately to remove to the effect of multicollinearity .The effect of control of corruption is negative and significative in the level of 5%,implying that a lower corruption is associated with greater borrowing by frms in MENA countries.This can be explained that corruption is a tool that firms use to avoid regulations and bank requirements associated with default risk and this is usual in MENA countries.This is consistent with the work of [18] who found that *“debt is expected to be used relatively more than equity when the public sector is more corrupt, since it is easier to expropriate outside equity holders than debt holders”*(p.27).

The effect of rule of law is positive and significative at the level of 1% showing that debt maturity increases where rule of law are strong. Therefore, firms borrow more in countries where property rights are protected

Results show that all institutional quality variables show positive and significant effects at the 1%, 5%, and 10% thresholds and one negative and significant effect at the 5% threshold for the control of corruption. The results of the estimates also show a positive and significant effect of the legal rules on the maturity of the debt and a negative effect of corruption on the maturity of the debt. Indeed, the more corruption there is, the more the company uses more short-term debt and difficult access to long-term debt. These findings prove that companies with better quality institutions use long-term debt. This result is reinforced by previous studies, such as those of [18,29] on the countries of South America, [7] which show that the maturity of a company’s debt is determined more by the country in which it finds itself than by its specific characteristics.

3.2 Impact of Institutions and Financial development on debt Maturity:

In this part, we aim to test the impact of quality of institutions and financial development on debt maturity. The add of financial variables is not arbitrary. Indeed, this choice is already confirmed in the literature such as [16]. The financial development has a positive effect on debt maturity. It seems that, whatever the institutional variable is used, with an active and well-developed financial market, it is easier for companies to increase long-term capital and improve companies’ access to long-term debt. To see the effect of financial development on the maturity of the debt, the measure of financial development taken into account is the credit granted to the private sector by GDP; this is a measure of financial intermediation.

We did three regressions as we integrate in each time one variable of institutional quality to avoid multicollinearity problem.

The results (Table 3) suggest that large, more tangible and risk-taking firms use more long-term debt because they have positive and significant effects at the respective thresholds. This gives further confirmatory evidence to the agency theories. In fact, large enterprises have a low cost of bankruptcy, less asymmetry of information, good credit quality and therefore they are the better enabled to finance themselves in the long run. In addition, companies with high tangibility, more assets, and collateral can borrow in the long-term debt markets. Indeed, the more collateral the company has, the more the company can handle its borrowing at longer maturities.

All company-specific variables, as well as macroeconomic variables, show the same signs as those presented earlier.

In all regressions , the effect of credit by private sector as it presents the proxy of financial development, presents a positive and not significative effect on debt maturity. This is explained that an increase in the financial system of a country can ameliorate the access of firms to debt maturity. But we can say that the impact of institutional quality is more important that financial development.

It’s important to notice that including institutional quality has no impact on firm variables wich shows that institutional quality play an important role on debt maturity and these institutional factors are important in financing decisions in MENA countries.

Overall, a well developed financial sector, strong rule of law, good political stability increase the access of firms to debt .

3.3 Impact of the indirect effect of growth opportunities on debt maturity

Any profitable investment is divided between the shareholders and the lenders. If the lenders take all the benefits of a project (which causes the project not to give shareholders a normal return), the shareholders reject these projects with a negative VAN, this is the problem of underinvestment. Which prompts us to question whether companies with high growth opportunities have short debt maturity in order to minimize or reduce underinvestment issues. We extend empirical work on debt maturity ([5]) in several dimensions, trying to see the interaction effect between debt and growth opportunities in order to study the interaction between debt maturity, leverage and growth opportunities.

To analyze the effect of the delayed debt maturity, we will use the dynamic GMM model. Theoretical and empirical results prove that companies have an optimal debt maturity structure ([27]) to adapt in the long term ([1]). To see the indirect effect of institutions, we tried to

make an interaction effect between the debt / growth opportunity duo.

Our model looks like this:

$$Debt - mat_t = \alpha + Debt - mat_{t-1} + \beta X_t + \vartheta Z_t + leverage_{growth} + \varepsilon_t \quad (2)$$

With:

Debt-mat_t and debt-mat_{t-1}: The maturity of the debt of company i at date t and date t-1 respectively.

X_t: All the factors specific to the business.

Z_t: Institutional factors.

Leverage_{growth}: debt * growth opportunities

ε_t: The error term.

The choice of the mediating effect between indebtedness and growth opportunities is not arbitrary. In fact, this interaction effect is useful in capturing a debt mitigation effect of the negative relationship between growth opportunities and debt maturity. The effect of growth opportunities on debt maturity is given by:

$$\frac{\delta \text{ debt - mat}}{\delta \text{ growth}} = \gamma_1 + \gamma_2 \text{ leverage}, \quad (3)$$

with γ₁ and γ₂ are the coefficients on growth opportunities and cross-growth opportunities with 1 indebtedness.

The sign of γ₂ depends on the effect of debt mitigation on the negative relationship between debt maturity and growth opportunities. If indebtedness goes down, then the underinvestment problems decrease, hence companies will have less incentive to reduce their debt maturity. γ₂ is expected to be negative.

Results (Table 4) The different specifications show that the constant is negative and significant at the 1% level. The Hansen test is greater than 10% so there is no problem with heteroscedasticity. Likewise, sargan test is greater than 10% so the instruments are valid. The results of the sargan and Hansen show the validity of instruments and the resolution of the heteroscedasticity problem. The constant, in the different specifications is negative and significant.

The sign of the different variables of the institutional quality is the same but the significant sign disappears with the presence of the combined effect of growth opportunities and leverage.

The cross effect is insignificant and positive at the same time. Indeed, the effect of debt overcomes the effect of growth opportunities are positive and significant at the 1% level and the effect of Leverage combined with growth opportunities is more important than the effect of leverage alone and the negative impact of growth opportunities on debt maturity decreases. There is a threshold, showing that the more economically strong the country, the greater the maturity of the debt.

3.4 The non Linear relationship between the size of the company and the maturity of the debt

In order to analyse the existence of the non linear relationship between the size of the company and the maturity of the debt, our estimation model is as follows:

$$Debt - mat_t = debt - mat_{t-1} + \alpha + \beta_1(X_t + size_t) + \beta_2 * size_t^2 + \Theta Z_t + \varepsilon_t \quad (4)$$

With:

Debt - mat_t and debt - mat_{t-1}: The debt to maturities t and t-1 respectively

X_t: the variables specific to the firm as well as the control variables without taking into account the variable size of the firm

Size_t: the size of the firm.

Z_t: the variables of the quality of institutions.

ε_t: The error term at the date t.

The effect of the size of the company on the maturity of the debt is given by:

$$\delta Debt - mat_t / \delta size = \beta_1 + 2\beta_2 size \quad (5)$$

If β₁ + 2β₂ size = 0 then size = -β₁ / 2β₂

The estimation results (Table 5) show that the maturity of the delayed debt is significant at the 1% level. Likewise, the Hansen and Sargan test are significant at 10% level, so the dynamic model is well specified. All the models show negative and significant constants at the 1% level. All the variables specific to the firm as well as the macroeconomic variables show the same signs recorded previously.

Indeed, the size of the company has a significant and positive effect on the maturity of the debt. The larger the business, the more it can not use long term debt. On the other hand, the effect of the size² variable is negative and significant for the different specifications showing that there is a non linear relationship between size and the maturity of the debt. In other words, there is a certain value at which the relationship between company size and debt maturity becomes negative.

4 Conclusion

This paper tries to test the relationship between the quality of institutions and capital structure in the MENA region of 442 listed companies from ten countries for the period from 2000 to 2017. Results, of the direct effect, show that with an active and well-developed financial market, it is easier for companies to increase long-term capital and improve companies' access to long-term debt also improving the quality of institutions; strengthening institutional infrastructure can promote the development of finance. The mediating effect between leverage and growth opportunities is insignificant and positive at the

same time. Indeed, the effect of debt overcomes the effect of growth opportunities. By testing the indirect effect, results show that there is a non-linear relationship between the size and the maturity of the debt. In other words, there is a certain value at which the relationship between company size and debt maturity becomes negative. In fact, determining the impact of institutional quality on capital structure is very important for businesses as financial decisions are the most important ones to create corporate value. This paper can open new research direction by testing the COVID-19 pandemic impact on the relation between capital structure and institutional quality in the MENA region.

Conflict of interests:

The author declare that there is no conflict of interest regarding the publication of this paper.

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