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STATEMENT OF THE PROBLEM

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HYPOTHESES

RESEARCH METHODOLOGY

RESULTS & DISCUSSION

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RECOMMENDATIONS/SUGGESTIONS

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CONTRIBUTIONS TO BOOKS

- Sharma T., Kwatra, G. (2008) Effectiveness of Social Advertising: A Study of Selected Campaigns, Corporate Social Responsibility, Edited by David Crowther & Nicholas Capaldi, Ashgate Research Companion to Corporate Social Responsibility, Chapter 15, pp 287-303.

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- Schemenner, R.W., Huber, J.C. and Cook, R.L. (1987), "Geographic Differences and the Location of New Manufacturing Facilities," Journal of Urban Economics, Vol. 21, No. 1, pp. 83-104.

CONFERENCE PAPERS

- Garg, Sambhav (2011): "Business Ethics" Paper presented at the Annual International Conference for the All India Management Association, New Delhi, India, 19–22 June.

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- Garg, Bhavet (2011): Towards a New Natural Gas Policy, Political Weekly, Viewed on January 01, 2012 http://epw.in/user/viewabstract.jsp

FIRM'S DEBT MATURITY STRUCTURE IN PETRODOLLAR COUNTRIES: THE CASE OF KSA LISTED COMPANIES

DR. BOUABIDI MOHAMED
ASST. PROFESSOR
COLLEGE OF BUSINESS & ECONOMIC
QASSIM UNIVERSITY
QASSIM

DR. OSAMAH HUSSIEN RAWASHDEH
ASST. PROFESSOR
COLLEGE OF BUSINESS & ECONOMIC
QASSIM UNIVERSITY
QASSIM

ABSTRACT

We examine in this paper debt maturity determinants in a different context, petroleum country. We test the validity of different internal and external factors susceptible to have an influence on debt maturity choices. Inversely to previous studies, we find that even if Saudi economy is relatively corrupted and underdeveloped, low-profitable and low-quality Saudi listed companies can obtain long-term banking debts.

KEYWORDS
agency, corruption, debt, information asymmetry, matching, maturity.

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INTRODUCTION

In the context of perfect market, debt maturity policy, as for other financial policies, does not matter and has no impact on firm value [Modigliani and Miller (1958), Modigliani and Sutch (1967), Stieglitz (1974)]. However, real world is complicated and can't be simply described by perfect market hypotheses. In this context financial managers develop some basic rules, golden rules, including the matching rule or principle. It consists to match assets' maturity to liabilities' maturity. This concordance aims to stem financial disequilibrium and protect firms from three main risks: the default risk, interest rate risk, and liquidity risk [Morris (1976)]. Despite these virtues, real facts show that firms with long-term projects often borrow on a short-term basis [Berger et al.. (2005)]. Research on this topic showed that the matching policy is not always efficient and under certain environmental conditions or intrinsic factors, firms should abandon this rule and adopt alternative financing choices, i.e. revolving short-term debt policy. For instance, theory predicts that a firm whose principal asset is the present value of its growth opportunities, i.e. intangible asset, doesn't optimally borrow against that asset [Myers (1977)]; Hart and Moore (1994) show that debt's maturity is inversely related to assets' specificity. Information asymmetry [Barclay et al.. (1995), Goswami et al.. (1995)], agency problems (Myers (1977), Barnea et al.. (1980), Jonhson (2003)], taxes [Boyce et al.. (1979), Brick et al.. (1985)], and signaling [Flannery (1986), Diamond (1991)] affect equally maturity choices and may constrain the matching principle efficiency. Further studies presume that some Meta factors have an indirect influence on debt maturity choices. La Porta et al.. (1998) find that firms in civil law countries use more short-term debts, and firms in common law countries use more equity and long-term debt. Fan et al.. (2012) find that firms in more corrupted countries are more levered and use more short-term debt; common law countries have lower leverage, so higher equity, and more long-term debt. Demirguc-Kunt et al.. (1999) show that firms in developed countries have more long-term debt, and La Porta et al. (1998) find firms in poor developing countries tend to have more short-term debts. These latter studies show that firms in developing countries, despite their pressing need for long-term financing, can't smoothly get it. Can high petroleum revenues counterbalance these negative effects of underdevelopment anomalies and make firms in petroleum economies more comfortable and able to obtain necessary long-term financing? Or, in different terms: do high petroleum revenues have a positive effect on debt maturity structure and are they capable to offset negative incidences of corruption, underdevelopment and institutional deficiencies? This is what we try to discuss in this study.

LITERATURE REVIEW

Internal factors

Matching principle: Hart et al.. (1994) show that debt's maturity is generally related to the nature of assets: long-term debts are used to finance fixed assets, and current liabilities are used for financing current assets. This is what we mean by matching principle or hedging policy.

This matching between debt's and asset's maturities is a form of payment programming, or scheduling, in the way that makes them consistent with depreciation of assets value [Myers (1977)]. It protects the firm from three main risks: the default risk, interest rate risk, and liquidity risk (Morris (1976)...). If debt's maturity is shorter than assets' maturity, the firm faces two types of risk: a bankruptcy risk when the firm does not get enough profits to repay debt's annuities; and a liquidity risk when the firm can't roll over its debt. Conversely, if the debt's maturity is longer than the assets' maturity, it is possible that the firm does not retain sufficient cash-flow to payback the outstanding debt after the total depreciation of assets financed by it. In line with this latter idea, Hart et al.. (1994) presume that slower asset depreciation means longer debt maturity. As for interest rate risk, Morris (1976) predicts that the hedging policy neutralizes interest rate risk and protects the firm from interest rate fluctuations.

Nevertheless, under certain environmental conditions or asset specific factors, the firm adopts a revolving short-term debt policy instead of the hedging policy. For instance, theory predicts that firms whose principal asset is the present value of its growth opportunities, i.e intangible asset, do not optimally borrow against that asset (Myers, 1977). In contrast asset's specificity is controversial. If we interpret specificity as assets that the firm finds it hard to replace, Hart et al. (1994) show that as the degree of specificity rises, the debt becomes longer term, that is to say that hedging policy is first-best. However, if we mean by specific assets those having low liquidation value, as the degree of specificity rises debt becomes shorter term [Hart et al. (1994)]. Besides internal factors, under inflation, economic expansion and other external factors, as we will see later, revolving credit policy takes over hedging policy and becomes more efficient despite the positive effect of hedging policy on the over mentioned forms of risk [Morris (1976), Modigliani (1993), Myers, Brealey and Schaefer (1977), Mitchel (1987)].

As we have seen in the last phrases, assets' maturity is not the unique determinant of debt's maturity and the hedging policy is not usually optimal. In addition of the over mentioned factors, alternative external and internal factors, taxes, liquidation cost, transaction costs, agency cost …, may affect debt's maturity choice. Nevertheless, we must emphasize firstly that in the context of perfect market, debt maturity policy, as for other financial policies, does not matter and has no impact on firm value [Modigliani and Miller (1958), Modigliani and Sutch (1967), Stieglitz (1974)].

Leverage: Brennan et al. (1978) find a positive relationship between optimal levered-firm value and time to maturity of debt, and a negative relationship between optimal leverage ratio and time to maturity of debt, which means that leverage and maturity are substitutes. However, they get these results because they consider the incremental effects of a single debt issue, and, in reality as they say, short-term debt may be rolled over, and, in the absence of transaction costs, it will be optimal to issue and redeem debt continuously. In this way bankruptcy may be avoided while the tax savings are still enjoyed. Barclay et al. (2003), based on Smith (1986), show that this negative relationship may be avoided under regulatory oversight. Smith (1986) predicts that regulatory oversight limits managers' discretion over corporate investment decisions and thus controls aspects of the underinvestment problem. Thus, for regulated firms, optimal leverage is expected to be higher and optimal debt maturity is expected to be longer.

Taxes: Boyce et al. (1979) find, under interest rate variation over time, no transaction costs, and risk neutrality, that debt maturity structure affects after-tax discount rates. Otherwise, tax savings depends on the debt maturity structure. Specially, long-term debts are optimal in the case of increasing interest rates.[1] This latter result is also confirmed by Brick et al. (1985) who show that if there exists a tax advantage to debt and nonstochastic interest rates[2], long-term debt will increase the present value of the tax benefits if the term structure of interest rates adjusted for risk is increasing. Conversely, a decreasing term structure, according to Brick and Ravid, calls for short-term debt. And all of them, Brick et al. (1985), and Boyce et al. (1979), prove that debt maturity policy is irrelevant when the term structure of interest rates is flat.[3] Such a result confirmed by Lewis (1990) who predicts that if taxes are the only financial market friction, debt maturity structure will have no impact on the firm value provided that there is no difference between tax rate on short-term debt interests and tax rate on long-term debt interests.

Besides these over mentioned factors, let's say classical factors, literature afferent to debt maturity structure advances a panoply of other internal factors derived essentially from one market friction, asymmetric information problem.

Asymmetric information: Barclay et al. (1995) find strong support for the hypothesis that firms with larger information asymmetries issue more short-term debt. Furthermore, Goswami, et al. (1995) develop a model based not on transaction costs, but on the asymmetric information probability distribution, and demonstrate that debt-maturity depends on the timing of asymmetric information concentration. They precisely find that if asymmetric information is concentrated around long-term cash-flows, firms use long-term debt contracts joined with dividend restriction provision; and when asymmetric information is concentrated around short-term cash-flows, firms prefer long-term debt contracts deprived of dividend restriction provision. Finally, if asymmetric information has a uniform distribution, firms adopt short-term debt financing strategy.

Agency costs: Barnea et al. (1980) suggest that in a situation of information asymmetry, we can reduce part of agency costs, other asymmetric information anomaly, via the adoption of short-term financing strategy, because firms can, under this strategy, take advantage from the continuous revelation of information and upgrade debt contract provisions.

Myers (1977) proposes, in order to control the underinvestment problem, a reflection of agency problem, the adoption of short-term financing strategy. He demonstrates that if the debt matures before the firm has the opportunity of exercise its real investment options, the firm's potential disincentive to invest is eliminated. Therefore, short-term debt can be more convenient for firms whose investment opportunity sets contain more growth options, such an idea advocated also by Bodie and Taggart (1978), Barnia et al..(1980), Barclay and Smith (1995), Jonhson (2003), and Barclay et al. (2003)[4]. However, if firms have few growth options, they should issue more long-term debts, instead of short-term debts, in order to control another source of agency conflicts, the managerial discretion [Stulz (1990) and Hart and Moore (1998)]. A proposition not well supported by Smith (1986) who argues that optimal leverage is expected to be higher and optimal debt maturity is expected to be longer because of regulatory oversight, not because of the few number of growth options.

Signaling: In the context of asymmetric information, outsiders cannot identify the real quality of firms, so cannot separate high quality ones from others. This ambiguity pushes them to attribute the same risk, and the same quality, to all firms, the mean quality, what is not fair: Low quality firms will be overvalued, and high quality firms will be undervalued. In order to reveal their true qualities and avoid the pooling valuation, hampered firms do not accept this unfairness and take some actions that cannot be imitated by beneficiaries and will be treated by the market as good signals that disclose the true quality of the issuer. The debt's maturity is one of many relevant financial signals advanced by the literature. One of the main contributions in this manner is Flannery's model (1986). He considers, in a risk neutral environment, two types of firms that are initially observationally equivalent, but holders of private information, insiders, know that one type is riskier than the other. Progressively, new information will be revealed to the market and creditors will know more about projects' type of risk. At the end of the first period, those firms choosing initially short-term financing and having riskier projects will be forced to roll it over at high interest rate and incur additional transaction costs. In his model, Flannery (1986) shows that, if there is no transaction costs, debt market will have a pooling equilibrium in short-term debt, and no one will issue long-term debt, despite the fact that assets have a long maturity.[5] However, if transaction costs are not zero, firms with favorable private information make a tradeoff between transaction costs and interest rate reduction, or value increase; and firms with unfavorable private information make a tradeoff between transaction costs and interest rate increase, or value reduction. When transaction costs incurred by the adoption of short-term debt financing policy are higher than the additional value resultant from the pooling valuation, low quality firms will have no interest in imitating high quality ones, and the debt market will have a separating equilibrium: high quality firms use short-term debt and low quality firms use long-term debt.[6] Nevertheless, other researches demonstrate that the separating equilibrium is viable even in the absence of transaction costs and the debt maturity can constitute a relevant signal. Kale and Noe (1990) demonstrate that the separating equilibrium is possible due to the value changes correlation, and Diamond (1991) shows that it is possible because of liquidation costs. Differently to Flannery's model, Diamond's model supposes that firms are not initially observationally equivalent and not all projects have positive net present values, but only insiders know the true qualities of their projects. No additional transaction costs are required at the end of the first period, but during the first period new information will be revealed and creditors learn more about projects' quality, and they may refuse to roll-over credits if they discover that the financed project is a negative net present value one. For that reason, firms make an arbitrage between the revenue due to future favorable news and the liquidation cost. For firms having the highest credit rating, i.e. low risk, the assessed revenue due to future favorable news encompasses the cost of liquidation risk, so they choose short-term financing.[7] Those with favorable intermediate risk rating may choose long-term debt at a higher rate to reduce their greater liquidity risk of being unable to roll over short-term debt after one period. Finally, very low rated firms must use short-term debt uniquely, they cannot get long-term debt.

Transparency: Whether the viability of short-term debt strategy is due to the existence of transaction costs, positive correlation between cash flows, or liquidation risk, the main cause of the abandonment of the matching principle and the adoption of a short-term financing strategy remains the asymmetric

[1] However, by taking into account call and put provisions, they argue that conditional bonds, callable or puttable, are mutually advantageous, i.e. for lenders and borrowers, and take over non-callable long-term bonds.

[2] The same result is proved by Brick et al. (1991) even if interest rates are stochastic.

[3] This result is not sustained by Brick and Ravid (1991) who show that there is a wide range of cases for which long-term would maximize the amount of leverage for constant level of default risk including flat term structure, and even sometimes decreasing term structure. Nevertheless, these results are related to the valuation approach, the return to maturity, and when they use another approach instead of it, the local expectations hypothesis, these results become ambiguous.

[4] For Bodie and Taggart (1978) even in the presence of this agency problem, the firm can choice long-term financing in order to avoid transaction costs or credit rationing.

[5] Such a result supported by Kane, Marcus and McDonald (1985) who predict that optimal debt maturity is zero when there are no transaction costs.

[6] Even if flotation costs are not sufficiently high, high quality firms can shorting debt's maturity in order to accumulate flotation costs and force low quality firms to adopt a different credit policy.

[7] Negative relationship between debt's maturity and quality (profitability) demonstrated by Flannery's and Diamond's model is consistent with Titman and Wessels (1988) and Fama and French (2002) findings supporting the existence a negative relationship between leverage and profitability, which support the substitutability between leverage and maturity noted by Brennan and Schwartz (1978).

information problem. Transparency is the obverse of asymmetric information and has opposed effect. With an increasing transparency, Berger et al. (2005) show that average maturity for low-risk firms would increase relative to the case of asymmetric information because firms that are revealed to have negative NPV projects would be denied credit and so would have no effect on the observed relationship between maturity and risk rating. Moreover, as transparency improves, creditors can identify easily riskier projects, and low risk firms need not bear the transaction costs of rolling over short-term debt. In addition to the positive effect of transparency improvement on debt-maturity, Sharpe (1991) shows that long-term debt may shift loan repayments to states in which incentive constraints are non-binding, and avoid credit rationing or prematurely liquidation the firm can face under short-term financing strategy.

Firm size: Stohs et al. (1996) find that long term debt is issued by larger, less-risky firms in relatively low-growth industries. Titman et al. (1988) and Demirguc-Kunt et al. (1999) find that large firms have more long-term debt as a proportion of total assets and debt compared to smaller firms, notably in countries with effective legal systems. Internal guaranties, the proportion of net-fixed-assets, as well as implicit and explicit external guaranties, deposit insurance and government subsidies, are positively related to the use of long-term debts [Demirguc-Kunt et al. (1999)].

Internal factors[8] are not the unique determinants of debt maturity choice. External exogenous factors may have, equally, an influence on the debt maturity decisions and make part of its determinants.

External factors

Effective law: Incentive problems, i.e. conflicts of interest between corporate insiders and external investors, are important factors that shape corporate policy and productivity [Fan et al. (2012)], including debt maturity policy, as we have seen earlier. Among the techniques proposed to alleviate these problems and increase financial policy efficiency, we find reinforcement provisions constraining managerial discretion, i.e restraining dividends, indebtedness, … However, as marked by La Porta et al. (1998), the extent to which contracts can be used to mitigate these problems depends on the legal system, which consists of both the content of the laws and the quality of its enforcement. Less risky financial instruments, i.e. those restraining managerial discretion and less complicated, are likely to dominate in countries characterized by weak contents and low quality of enforcement, and vice versa. Considering that short-term debts are safer than long-term debts [Myers and Majluf (1984)], the former are likely to dominate in high corrupted economies and the latter are expected to dominate in low corrupted economies. La Porta et al. (1998) find that legal systems based on common law offer better protection to outside investors than civil law. So, firms in civil law countries use more short-term debts, and firms in common law countries use more equity and long-term debts. Fan et al. (2012) find that firms in more corrupted countries are more levered and use more short-term debt; common law countries have lower leverage, so higher equity, and more long-term debt; and countries with explicit bankruptcy code have higher leverage and more long-term debt. Demirguc-Kunt et al. (1999) find that firms have longer debt maturities in countries where the legal system has more integrity, but the legal system in itself does not matter.

Development level: La Porta et al. (1998) find that the quality of law enforcement, unlike the legal rights themselves, improves sharply with the level of income, which mean that firms in poor developing countries tend to have more short-term debts. Inline with this result, Demirguc-Kunt et al. (1999) show that firms in developed countries have more long-term debt, and a greater proportion of their total debt is held as long-term debt, whatever the firm size, despite that firms in developing countries have higher proportions of net fixed assets to total assets.

Financial system structure: In countries with active stock markets, larger pension funds and insurance sectors firms will have more long-term financing [La Porta et al. (1998), Demirguc-Kunt et al. (1999)]. Firms in countries with larger, developed, banking sectors tend to use more short-term debt, since this form of financing enables intermediaries to use their comparative advantage in monitoring [La Porta et al. (1998), Demirguc-Kunt et al. (1999)]. Nevertheless, the existence of deposit insurance [La Porta et al. (1998)] and banks' economies of scale and ability to monitor covenants [Demirguc-Kunt et al. (1999)], permit banks to offer longer-maturity debts. Exceptionally, Demirguc-Kunt et al. (1999) find that small firms in countries with a large banking sector have less short-term debt and their debt is of longer maturity.

Economic cycle: Modigliani (1993) presumes that short-term debts are more convenient than long-term debts in case of high inflation. Nominal interest rate, i.e. the cost of debt, as we know, includes inflation rate. So, high inflation means categorically high nominal cost of debt, and since long-term financing deprives the firm from the possibility of interest rate adjustment even when inflation rate decreases significantly, short-term financing takes over.[9] A presumption supported implicitly by Morris (1976) who shows that short-term debts take over long-term debts in case of economic expansion, and we know that inflation rate increases in expansion phases. Empirical findings are also inline with this approach. For instance, Mitchel (1987) finds that the increase of nominal interest rate uncertainty is the main cause of the decrease of the debt maturity during 1960-1980; and Demirguc-Kunt et al. (1999) find that inflation is negatively related to the use of long-term debt. Nevertheless, there is renewed interest in the possible role of short-term debt in recent financial crises, what can reduce its advantage and constrain its use, but till now it is not clear if short-term debt is a cause or just a symptom of these recent financial crises [Diamond and Rajan (2001a, 2001b), and Efraim et al. (2013)].

Alternatives to short-term debt

As we have seen, short-term debt financing is proposed to resolve several problems resultant from market frictions. However, we should state that this multifunctional use of short-term debt doesn't mean that it is a panacea. It has, in counterpart of its advantages, many drawbacks. Kare (1996) emphasizes that short-term debt decision forms a dilemma because short-term debt reduces agency costs, but increases, in the same time, transaction costs. Alike, it can be treated as a positive signal [Flannery (1986)], but it increases liquidation risk [Diamond (1991)]. In order to go around this obstacle, reduce agency problems without supporting additional transaction costs, Barnea et al.. (1980), Boyce and Kalotay (1979), and Kare (1996) propose the conversion provision, the call option, the sinking fund provision … as alternatives to short-term debt. As for signaling use, Robbins et al. (1986) show that short-term financing and long-term debt with call option can be used as good signal that cannot be imitated by low quality firms. And under liquidation risk hypothesis, Diamond (1993) and Berglof et al. (1994) find that a mix of short-term and long-term debt is sometimes preferred to a maturity structure limited to one or other of the two forms. Finally, at the macroeconomic level, i.e. external factors, La Porta et al. (1998) findings support the hypothesis that countries develop substitute mechanisms for poor investor protection. Some of these mechanisms are statutory, such as mandatory dividends or legal reserve requirements; some others make part of governance techniques, such as ownership concentration, good accounting standards, and shareholder protection measures.

OUTLINE OF THE EMPIRICAL TESTS

The Sample

Our study focuses on the debt maturity structure of Saudi companies. Since theoretical literature pretends that possibly influencing factors are internal and external, we start by a brief description of Saudi macro-indicators subsequently followed by the sample description.

[8] In fact, certain factors are not purely internal but just partially, like taxes and information asymmetry, We consider them internal since they are at least a priori under control, owners can choice the form a firm,i.e. S or C; or partially control via signals of information publication.

[9] Unless the firm chooses variable interest rates.

TABLE NO. 1: SAUDI ARABIA GENERAL ECONOMIC INDICATORS

References: assembled from different sources: column 1,4,5, IMF country report N°.13/229, 2013; column 2, World development indicators, the World Bank website; column 3, Regional Economic Outlook: middle east and central Asia, IMF, 2013, and the World Bank indicators; columns 6, 7, Transparency international, CPI-Brochures 2009-2012; and columns 8, 9, Heritage foundation, Index executive summary 2009-2012.

Year		***2009***	***2010***	***2011***	2012
Nominal GDP (billions of U.S. dollars)		***429***	***527***	***670***	***711***
GDP growth (annual %)		1.8	7.4	8.6	5.1
GNI per capita (current US$)		18350	19360	21210	24524
Consumer price index		4.1	3.8	3.7	2.9
Fiscal Balance (Percent of GDP an deficit -)		- 5.4	3.6	11.2	12.4
Corruption perceptions index (CPI)	Rank	63	50	57	66
	Score (best = 10 or 100)	4.3	4.7	4.4	44
Heritage foundation/Wall Street Journal Index of Economic Freedom	Rank	59	65	54	74
	Overall score (best = 100)	64.3	64.1	66.2	62.5

Saudi Arabia is an OPEC founder member[10]. It is the first OPEC oil producer in 2013 and the second world producer, after Russia[11]; it has the second largest OPEC proven crude oil reserves, after Venezuela; an it is classified by the World Bank among the high income country group.[12]

TABLE NO. 2: SAMPLE COMPANIES (NON-FINANCIAL LISTED COMPANIES)

References: Saudi stock market website.

Sector	Number	Percentage
Banks and financial services	11	***6.7***
Petrochemical industries	14	8.5
Cement	13	7.9
Retail	13	7.9
Energy and utilities	2	1.2
Agriculture and food industries	16	9.8
Telecommunication & Information Technology	5	3.0
Insurance	35	21.3
Multi-Investment	7	4.3
Industrial Investment	14	8.5
Building & Construction	16	9.8
Real Estate Development	8	4.9
Transport	4	2.4
Media and Publishing	3	1.8
Hotel & Tourism	3	1.8
All listed companies	164	100
Sample companies (non-financial companies)	**118**	**72**
Firms recently introduced (after 2012) or with insufficient or unclear data	15	
Net number	**103**	

Table number two resumes the sample firms. It includes all Saudi listed companies classified by economic sectors. However, this overall population of Saudi listed companies includes a number of financial companies, i.e. banks and insurance companies, which have special nature, and will be excluded from the sample, and take into account non-financial firms uniquely, which are 118 companies and represent 72% of the total number. We exclude from this last number recently listed companies and those with insufficient or unclear data (15), and we get a net number equal to 103.

We extract the necessary information from available annual reports for the over mentioned listed companies, reports for 2010-2012. This restricted number of years forms the main constraint for this study and limits enormously the number of econometric techniques that can be used, as well as the number of hypothesis that can be tested.

Dependant variable

In order to define debt's maturity, we must firstly fix the threshold date beyond it debt will be classified long term; and secondly, choose the appropriate debt's maturity proxy. Referring, for instance, to Antonios et al. (2006), there is no universal definition of short-term or long-term debt. Following accounting conventions, some studies, for example Scherr et al. (2001), consider a debt as long-term if it is payable after a year, while others define it as long-term if it is payable after three [Barclay (2003), Barclay and Smith (1995), Datta et al. (2005)] or five years [Schiantarelli et al. (1997), Datta et al. (2005)]. In this study, we follow the same approach and we adopt SOCPA's[13] definition of current and non-current liabilities: current liabilities include all liabilities payable within one year from the financial position date. Likewise short and long term definition, there is equally no consensus on a standardized debt maturity proxy. The empirical literature contains several proxies. Barclay (2003), Antonios et al. (2006), and Deesomak et al. (2009) define debt maturity as the proportion of long-term debt to total debt, where long-term includes debt of more than one-year maturity. For Guedes and Opler (1996) and Berger et al. (2005), maturity is the time in years until full repayment of the loan is scheduled, with one included to avoid taking the log of a value close to 0. Stohs and Mauer (1996, 2001) use weighted average maturity of liabilities. Hamson (1990) presumes that duration is the best measure of debt's maturity, but it is difficult to calculate, because it needs the maturity date, the interest rate, and the refunding method. In this study we assess that the proportion of long-term debt (with interest) to total debt (with interest), adopted by Barclay (2003), Antonios et al. (2006), and Deesomak et al. (2009), is a relevant proxy, (DEBMATBLN). It has two attractive features: it is uncomplicated and measures efficiently the variable we want to test. Nevertheless, as noted by Berger et al. (2005), this proxy, based on debt maturity structure, does not distinguish between newly issued 1-year debt and old long-term debt with 1 year remaining; as it does not reflect susceptible effects of some unstable environmental factors. For example, we cannot test the effect of high inflation rate or economic cycle on debt maturity decision because the latter may precede the high inflation period or the expansion phase. However, it can be used to assess the effect of stable factors, as development level, and corruption. In order to circumvent this problem, Berger et al. (2005) use new issued debt instead of debt maturity structure, but in Saudi context this data is not available, and we cannot use it. Note that long-term banking debt include, in our study, classic long-term banking debt, proportion of long-term debt expiring in the current

[10] General information, Organization of the Petroleum Exporting Countries (OPEC), 2012.
[11] OPEC Annual statistical bulletin, Organization of the Petroleum Exporting Countries (OPEC), 2013.
[12] World development report 2014 : risk and opportunity, managing risk for development, The World Bank, 2013.
[13] Standard of public disclosure, Saudi Organization for Certified Public Accountants (SOCPA).

accounting year, Islamic forms of long-term banking financing equivalent to some extent to classic banking debts, long-term 'Murabaha', and industrial long-term debts supported by the government.

Explicative variables

Asset maturity structure: The matching principle suggests that firms match their debt's maturity to their assets' maturity. For Guedes and Opler (1996), asset's maturity is measured as gross property, plant, and equipment (PPE)/ depreciation. This measure is in a number of years, not a fraction, and fits well with debt maturity proxy they used, the term to maturity of the debt. Stohs and Mauer (1996), and Johnson (2003) represent the debt maturity structure by the (book) value-weighted average of the maturities of current assets and net property, plant and equipment, a measure coherent with Stohs and Mauer (1996) debt maturity structure proxy, the (book) value-weighted average of short and long term debt[14]. Petersen and Rajan (1997) measure asset maturity structure by the ratio of current assets to total assets, which is consistent with their paper's topic, trade credit. In our study, since debt maturity structure is measured as long-term debt to total debt, we guess that the compliment of Petersen and Rajan (1997) asset maturity proxy (ASSETMAT) is the most convenient: asset maturity structure is approached by long-term tangible assets to total assets. This latter is used also to measure asset tangibility [Barclay et al. (2003)]. High proportion of long-term tangible assets is not associated only with longer-debt maturity, but with higher leverage too, because fixed assets provides better collateral.

Tax shield: Theoretically, tax-debt maturity relationship is controversial: under certain hypotheses tax regime has an effect and under others it does not matter; which means that this issue is to some extent an empirical issue. Unfortunately, Saudi Arabia has an exceptional tax regime and cannot be a favorable context to test this relationship. Saudi citizens and corporations pay a very small constant 'Zakat' rate, 2.5 percent, mandated by Islamic law rather than traditional income or corporate taxes. Overall tax revenue equals less than 6 percent of total domestic income.[15] Part of this small percentage is due to taxes on foreign companies working in Saudi Arabia, which are subjugated to 20 percent tax rate.

Risk measure: The main proxy used to measure firm's risk is bond ratings. Barclay et al. (1995) classify bonds into three levels of risk: high bond ratings as low risk, low bond ratings as intermediate risk, and unrated as high risk. Stohs et al. (1996) use two risk measures. The first uses the bond rate and the square of the bond rate to test the general notion that debt maturity increases as bond ratings deteriorate at a decreasing rate. The second uses two dummy variables, one equals one if the firm has a rating of ccc or is unrated; and the other equals one if the firm has AA or higher and zero otherwise. The authors expect negative relations between debt's maturity and the two dummy variables: low risk firms and high risk firms borrow short-term. Berger et al. (2005) use four levels of ratings, instead of three, ranked from the safest to the riskiest in addition to a combination of bond rating and bank scoring used as an indicator of information asymmetry. However, even if it is the most important risk proxy, bond rating is not the unique risk measure proposed by the empirical literature. Scherr et al. (2001) use an accounting version of bond rating, the Z-score consistent with small businesses characteristics. In the same context, that of small businesses, Guedes et al. (1996), and Ortiz-Molina et al. (2008) define another accounting risk rating proxy, the prior delinquency; Johnson (2003) uses the firm size and earning volatility. In the current study, we haven't the necessary data to use bond rating as risk proxy, and we will use the alternative accounting measure, the Z-score. Based on this score, we will use two alternative measures. One quantitative (ZSCORE) and measures the linear relationship between risk and maturity; and the second has the form of two dummy variables (LOWRISK and HIGHRISK), conform to the second measure of Stohs et al. (1996).

Growth opportunities: Myers (1977) presumes that short-term financing strategy is an effective tool to overcome the underinvestment problem, and predicts that firms with greater growth opportunities face greater underinvestment. This presumption is advocated and confirmed empirically by Bodie et al. (1978), Barnia et al..(1980), Barclay et al. (1995), Jonhson (2003), and Barclay et al. (2003). In terms of growth opportunities measurement, Tim et al. (2008) evaluate the performance of four proposed opportunity growth proxies: the market-to-book assets ratio, the market-to-book equity ratio, earning price ratio, and (capital expenditures on net plant, property, and equipment). The authors show, on a relative scale, that the market-to-book assets ratio has the highest information content with respect to investment opportunities. In addition to these proxies, empirical literature contains other proxies consistent with small and nonpublic firms for which market-to-book is nonfunctional. Magri (2010) uses the growth rate of sales between t en t+1 at industry level. Guedes et al. (1996) adopt, in addition to market-to-book ratio, the R&D to sales ratio. In this study, we will use the more efficient proxy (GROWTHOP) defined as follows: the ratio of market value of total assets (book value of total assets minus book value of total equity plus market value of total equity) to book value of total assets.

Information asymmetry: Information asymmetry is the most influencing market friction. It is the main cause of the different forms of agency problem, and the raison d'être of signaling decisions. More information asymmetry is stronger, more the firm is exposed to complicated agency conflicts and costs, and more it needs efficient signals and agency problem resolution tools. However, despite these serious implications, it is difficult to assign an accurate proxy. Authors use generally as a proxy, a measure of one cause or more of this market anomaly or management instruments used to overcome it. As an example of the latter, Berger et al. (2005) use the small business credit scoring (SBCS) in conjunction with another lending technology: financial statement lending, asset-based lending, relationship lending, or another lending technology. The use of SBCS as a complement to other technologies improves accuracy in evaluating creditworthiness and reduces the information asymmetry's degree. As to proxies by information asymmetry causes, smaller, younger and family firms are likely to be opaque. So we can use the firm size, the firm age, the capital structure ownership as information asymmetry proxies. Empirically, firm size seems to have the most support, Titman et al. (1988), Stohs et al. (1996), Demirguc-Kunt et al. (1999), and Magri (2009) find a negative relation between firm size and short-term debt. Firm age, however, hasn't a similar strong empirical support. Scherr et al. (2001) find that older firms issue less short-term debt, while Ortiz-Molina et al. (2008) find that older firms issue more short-term debt. Regarding ownership concentration, Deesomak et al. (2009) find that it has a negative and significant relationship with debt maturity. Datta et al. (2005) find a significant and robust inverse relation between managerial stock ownership and corporate debt maturity. High growth opportunities, high R&D expenses, and the ex post change in stock returns, can be also used as information asymmetry indicators. In the current study we use two proxies: firm-size and firm-age. Firm-size can be measured by total assets, sales of employees' number. We opt for the natural logarithm of total sales (FIRMSIZS); and the natural logarithm of total assets (FIRMSIZA). Concerning the firm-age, we choose age (ASINFAGE) and a different proxy: the stock market introduction period (ASINFLIP). Listed firms have reporting obligations and must publish periodically all relevant information afferent to the firm management, performance, and financial situation. For this raison, we believe that it is more performant than firm's age, and we guess that more this period is long, more the asymmetric information degree is low, and more the proportion of long-term debt financing is high too.

Leverage: Brennan et al. (1978), and Fan et al. (2012), find a negative relationship between optimal leverage ratio and time to maturity of debt, which means that leverage and maturity are substitutes under bankruptcy costs and corruption. Barclay et al. (2003) expect a positive relationship between optimal leverage and optimal debt maturity, because of regulatory oversight. Leverage is measured as the proportion of total debt to market value of the firm, (LEVERAGM).

Macro-factors: Saudi courts do not always enforce contracts efficiently. The judicial system is slow, non-transparent, and vulnerable to interference from the ruling elite. Government decision-making lacks transparency, and corruption remains a concern.[16] The corruption perceptions index confirms these judgments noted in the economic freedom report, which means that the Saudi's law is ineffective, suffers from fatal drawbacks, and doesn't protect sufficiently investors' rights (owners and creditors). Concerning economic development level, Saudi Arabia dominates the Organization of the Petroleum Exporting Countries. Oil revenues account for about 90 percent of export earnings and about 80 percent of government revenues.[17] 5-year compound annual growth is 3.5%, inflation rate is around 5%, and the World Bank classifies Saudi Arabia among the high income country group. However, this moderate sustainable economic growth and other positive indicators do not mean that it is a developed economy. Saudi economy is very concentrated, based on Oil production; unindustrialized; health care, primary education and labor market efficiency are weak, and, so, can't be considered a developed economy.[18,19]Finally, Saudi Stock market 'Tadawel' is

[14] However, Johnson (2003) uses the proportion of total debt maturing in three years or less.

[15] 2013 Index of economic freedom, The heritage foundation, p383-384.

[16] 2013 Index of economic freedom, The heritage foundation, p383-384.

[17] 2013 Index of economic freedom, The heritage foundation, p383-384.

[18] Indeed , The global competitiveness index 2013-2014 ranks 20th (out of 148 countries), but some economic development pillars remain weak and constrain seriously the economic development, health(53rd), primary education (48th)and labor market efficiency (70th). The global competitiveness report 2013-2014, World Economic Forum, 2013.

relatively recent and its efficiency level doesn't reach even the weak-form of efficiency.[20] All these macro-indicators, corruption, ineffective law, inflation, and economic development level, advocate for the use of short-term debt; and an empirical different results means probably that the dominance of long-term debts is attributed to easy ineffective indebtedness due to colossal petrodollars.

Control variables: In addition to the over mentioned variables, some others may have an influence on the debt maturity structure, and we will take them into account in this empirical study. These variables are profitability (FROFITAB), capital concentration, and firm's operating cycle (OPERCYCL). The last one can be considered, to some extent, a quantitative measure of the activity sector. High profitable firms have a high capacity of debt refunding and they are more placed to take advantage of short-term financing functions. Capital concentration may be a reaction to the structural corruption and law weaknesses, as it may be a source of agency conflicts and short-term financing stimulator. Concerning operating cycle, firms with short operating cycle, service and commercial companies, seems to have low net working capital, less fixed assets and, so, do not need much long-term debt.

TABLE NO. 3: VARIABLES, PROXIES, HYPOTHESES, AND PREDICTED SIGNS

Variables	Proxies	Hypotheses	Predicted signs
Asset's maturity	Long-term tangible assets to total assets	Matching hypothesis Asset's specificity (tangibility)	+ +
Leverage	proportion of total debt to market value of the firm	Substitution hypothesis	-
Firm size	Natural logarithm of total sales; Natural logarithm of total assets.	Small are less transparent	+
Information asymmetry	Listing period Firm size	New listed firms are less transparent	-
Growth opportunities	Market value of total assets to book value of total assets	Underinvestment hypothesis	+
Risk	Z-score Dummy	Flannery's model Diamond's model	+ Non linear
Profitability	Economic income to total assets	High profitable firms prefer short-term debt financing	-
Capital concentration	Proportion of capital owned by big stockholders (stockholders owning at least 5% of capital).	Agency cost (wealth transfer), corruption	-
Operating cycle	Net sales to net fixed assets	Short-operating cycle need less long-term debt	-
Macro-factors	Contextual factors that we try to measure their impact indirectly because we don't make a transnational study.		

EMPIRICAL RESULTS

General descriptive results

Table four shows that in 2012, one quarter of studied firms are unlevered; one third are long-term unlevered; and more one 50% are short-term unlevered. These proportions are over 2009-2012 average values, which means that some of them, at least, are not outright rationed. They were short-term and/or long-term financed. Table four shows equally that un-indebtedness does not engender financial disequilibrium. Only 18 companies have a negative working capital, and even in this small number only seven are unlevered. In accordance with these results, table four shows that the proportion of firms without short-term debt is largely higher than the proportion of firms not long-term debt financed. And since long-term debt is riskier and harder to obtain than short-term, we can conclude preliminarily that short-term debt financing is not used primarily as signaling technique or conflict resolution tool, nor it is a simple result of credit bank rationing. This limited recourse to short-term banking debt may be explained by the bottom of the table four: while long-term banking debt forms on average more than 55% of banking debt, noncurrent liabilities hardly exceed one third. Commercial credits and other current liabilities form an alternative, and significant, short-term financing tool.

TABLE NO. 4: GENERAL STATISTICS

2009-2012				2012			
Unlevered	Long T. unlevered	Short T. unlevered		Unlevered	Long T. unlevered	Short T. unlevered	
15 (14.56%)	19(18.44%)	42(40.77%)		25 (24.27%)	29(28.155%)	59(57.28%)	
Working capital (2012)							
Firms with positive WC		Firms having negative WC		18			
85		Unlevered	Short T. unlevered		Long T. unlevered		
		7	10		7		
Long-term banking debt / total banking debt				Noncurrent liabilities / total liabilities			
Mean	Q1	Median	Q3	Mean	Q1	Median	Q3
0.553	0	0.666	0.989	0.37	0.129	0.308	0.577
PROFITAB (2012): Average profitability (6.65%)							
Q1		1.73%	**Q3**			12.36%	
Under Q1 Unlevered firms		8	Over Q3 Unlevered firms			9	
Under Q1 Without short-term debt		16	Over Q3 Without short-term debt			17	
Under Q1 Without long-term debt		8	Over Q3 Without long-term debt			11	

In a context of information asymmetry, both Flannery (1986) and Diamond (1991) predict that high quality firms use more short-term debt. If we consider, for the moment, economic profitability as quality indicator, results in table four don't support these predictions. The number of unlevered low profitable firms (eight) is roughly equal to the number of unlevered high profitable firms (nine); and the number of low profitable firms short-term debt free (16) is roughly equal to high profitable firms without short-term banking debt (17).

As mentioned in the table three, we proxy information asymmetry by the listing period instead of firm age. Unfortunately we do not find all the IPO dates, the Saudi stock market 'Tadawal' publishes for a number of firms creation and IPO dates, and only creation date for others. In light of historical stock quotations and financial reports, we arrive to separate recently listed companies, listed in the five last years from others; and we use in lieu of a continuous variable a dummy variable equal to zero if the firm is recently listed, and one otherwise. Table five shows that neither firm age nor listing period gives at first glance exceptional results. The only important difference between young and old unlevered firms is relative to short-term financing. The average age (more than 22 years) and

[19] Consistent with this judgment, the rank of Saudi Arabia in the Human Development Index is 57, which is moderate rank despite the fact that GNI is one of HDI determinants. See the human development report 2013, United Nations development program (UNDP), 2013. In addition, the International Monetary Fund classifies Saudi Arabia among emerging market and developing economies (EMDEs). See Table 4.6. Economy groups, the World Economic Outlook April 2003: hopes realities, risks, IMF, 2013, p139.

[20] The unit-root test that we make, but doesn't appear here, chows that Saudi stock market "Tadawel" doesn't satisfy even the conditions of the weak-form efficiency.

statistic results confirm our initial judgment, firm age can't be an efficient information asymmetry proxy. As for listing period, the unique important difference is in short-term debt financing. Proportions of unlevered and long-term unlevered recently listed firms and earlier listed firms are approximately equal.

TABLE NO. 5: STATISTICS RELATIVE TO FIRM'S AGE AND LISTING PERIOD

Age (2012) : Mean = 22.59			
Q1 (age=12)	Number of firms	**Q3 (age=32)**	Number of firms
Youngest unlevered firms	6	Oldest unlevered firms	5
Youngest without short-term debt	16	Oldest without short-term debt	12
Youngest without long-term debt	6	Oldest without long-term debt	6
Listing period (up to 2012)			
Less than 5 years	20	More than 5 years	83
Unlevered recently listed firms(RLF)	4 (20%)	Unlevered firms	21(20%)
R.L.F. without short-term debt	10 (50%)	Firms without short-term debt	49 (59%)
R.L.F.st without long-term debt	6 (30%)	Firms without long-term debt	23 (28%)

Capital concentration can be interpreted as a sign of structural corruption or defected legal system.

TABLE NO. 6: CAPITAL STRUCTURE STATISTICS

Capital concentration statistics			
Mean	Median	Max	Min
0.363	0.35	0.95	0
Politicians big stockholders			
Firms number	Unlevered	Long-term unlevered	Short-term unlevered
18	9	10	11

We measured concentration level by the sum of proportions detained by big stockholders, those having at least 5% of capital. On average more than one third of listed companies are controlled by a very little number of owners. Moreover, for 12 companies among the total number the stock market does not publish their main stockholders, and if we drop them instead of considering them perfectly dispersed, we get a mean value equal to 0.416 and minimum value equal to 5% instead of 0.363 and zero successively. Whether we take into account these 12 firms or we exclude them, capital concentration level is important. This high concentration level may be a reaction to a structural corrupted system, as it can be a result of the nature of Saudi firms, the majority are family or public. In addition to this high concentration level, some companies are partially owned by politicians, 18 firms. We guess that these special owners cause cronyism and facilitate short and long-term bank financing, but statistic results refute this intuition: 50% of these firms are unlevered, and more than 50% are long-term unlevered. Datta et al. (2005) find a significant and robust inverse relation between managerial stock ownership and corporate debt maturity. In our study, we cannot verify this relationship.

Short-maturity combined with high concentration can be interpreted as a strong sign of high corrupted or weak legal system: firms use various techniques to tackle corruption and legal defects. However, short-term financing does not have the same support and as we have seen, the number of short-term unlevered firms is larger than the number of long-term unlevered firms. Capital concentration and short-term debt are not complements, but they are not substitutions too. Preliminarily regression results confirm these descriptive statistics and do not support the relationship between debt maturity and capital and stockholders structure, neither positive nor negative. For that reason we drop these two control variables from the final regression model.

Multivariate analysis results

Checking of specification problems: Correlation matrix, table eight, shows that there is a suspicion of collinearity between some variables. For instance, LEVERAGM is highly correlated with LOWRISK (-0.836) and HIGHRISK (0.863), tow complement measures of firm quality; and it has a moderate correlation with FIRMSIZA (0.53). Further investigation of collinearity problem needs the use of a more explicit statistic measure, the VIF (Variance Inflation Factor).[21] Values larger than 10 for each variable, and/or a mean of all values considerably larger than 1, give evidence of collinearity. No value of the first rubric of table nine is larger than 10, the highest is 7.74. The mean value is 3.44. Is it considerably larger than 1 or not? It is not clear, but if we drop the variable corresponding to the highest value, LEVERAGM, we get a reduced mean, 2.84; and if we drop with it HIGHRISK and LOWRISK, alternative risk measure to ZSCORE, we get a significantly reduced mean, 1.94, and low individual values (max= 2.8). Moreover, the eventual correlation between independent variables causes the heteroskedasticity problem. The White heteroskedasticity test presented in table 10 shows that we cannot reject the null hypothesis, errors homoskedasticity, corroborating therefore the previous test.

According to White, the former test is more than a reduced heteroskedasticity test. It is a specification test. The null hypothesis means in fact that: errors are homoskedastic, errors are independent to explicative variables; and dependent-independent variables are linearly related.

Concerning the normality hypothesis, apart FIRMSIZA, all other variables are normally distributed, Table seven. It is, in the same time, relatively correlated with leverage proxy, LEVERAGM, and low risk proxy, LOWRISK. Besides, we have a second measure of firm size that does not suffer from these drawbacks, FIRMSIZS, the natural log of sales, and we opt for it. However, this individual normality does not mean necessarily that the residual distribution of the overall model regression is normal. In fact, the violation of the normality distribution arises because of: distributions of dependant and independent variables are also non-normal; violation of linearity assumption; and the existence of small number of very large errors. But before looking for the main cause, let us verify first of all if the residual distribution is really non-normal. The middle rubric of table 10 shows that we accept the normality hypothesis, but for an alpha little bit more than 5%.

We close, finally, this list of specification tests by the Ramsey's RESET test. The RESET is a general test of omitted variables; incorrect functional form; and correlation between independent variables and error term. The last rubric of table 10 reject hypothesis one, mis-specification hypothesis. No one of basic hypotheses is violated; we can go ahead and start results analysis.

RESULTS ANALYSIS

ASSETMAT is used to test the relevance of the matching principle. Its coefficient is statistically significant. Its sign is conformed to the predicted one. Long-term debts are fitted to long-term tangible assets. The golden rule of healthy financial management is applied by sample firms' managers. This variable tests in the same time the relationship between asset's tangibility and debt's maturity, and results show that more tangible long-term assets are attached to more long-term debts. Tangible assets forms in fact a sort of guaranties and creditors accept to consent more long-term debts to firms with high tangible assets.

[21] Avalable in STATA.

TABLE NO. 11: REGRESSION RESULTE

Initial régression				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.063202	0.201549	0.313582	0.7545
ASSETMAT	0.365733	0.189045	1.934636	0.0560
FIRMSIZS	0.063860	0.018426	3.465726	0.0008
GROWTHOP	0.000787	0.017732	0.044405	0.9647
OPERCYCL	-0.062275	0.022299	-2.792784	0.0063
PROFITAB	0.131559	0.343160	0.383374	0.7023
ZSCORE	-0.007942	0.002819	-2.817726	0.0059
Replacing ZSCORE by LOWRISK, HIGHRISK				
LOWRISK	-0.078991	0.136285	-0.579599	0.5636
HIGHRISK	0.094094	0.132949	0.707743	0.4808
Introducing LEVERAGM and dropping LOWRISK and HIGHRISK				
LEVERAGM	0.471711	0.221463	2.129974	0.0358
Statisctic values for the initial model				
R-square	0.406062	F-statistic		10.93882
Adjusted R-squared	0.368940	Prob(F-statistic)		0.000000
S.E. of regression	0.342595			

Principal information asymmetry indicators, firm age and listing period, as noted in descriptive statistics analysis paragraph, are not accurate, insignificant and dropped from the final regression. Indeed, even earlier empirical results are controversial. Scherr et al. (2001) find that older firms issue less short-term debt, while Ortiz-Molina et al. (2008) find that older firms issue more short term debt. FIRMSIZS may be considered an alternative indicator of information asymmetry and its regression results serve to test its hypothesis. Previous studies confirm the positive relationship between firm size and debt's maturity, i.e. Stohs et al. (1996), Scherr et al. (2001), Ortiz-Molina et al. (2008). FIRMSIZS has a significant and positive coefficient. Large firms use relatively more long term debts. Larger are generally, more transparent, less risky, mature. In this sense, they are less rationed, fairly valued and they don't need the use of short-term debt as quality signal. Results confirm so the information asymmetry hypothesis: more ambiguous companies use more short-term debts. Nevertheless, this interpretation should be considered with vigilance, because the considered firms are all listed and forced to communicate periodically their financial statement and other valuable financial information.

OPERCYCL is to some extent an activity indicator. Firms with low OPERCYCL values are generally industrial firms. They need high level of fixed assets, i.e. equipments, plants … and their operating cycles are longer. In counterpart, commercial and service activities have short or very short operating cycle, and they need a limited level of fixed assets: they don't need a lot of equipments, and they have no need to plants. Their sales relatively to their fixed assets could be high. This is what we find in this regression. OPERCYCL has a significant and negative coefficient. Short-operating-cycle firms recourse less to long-term debt, and their debt maturity on average are shorter than long-operating-cycle firms. Industrial firms use more long-term debts. It may due to industrial favored long-term debt granted to certain firms. It supports, in addition, indirectly the matching hypothesis.

LEVERAGM, firm leverage proxy, has a significant and positive sign coefficient. The debt maturity-debt size relationship is validated. Referring to Brennan et al. (1978), Fan et al. (2012) leverage and time to maturity of debt are substitutes. The two are influenced by corruption level and bankruptcy costs, or used in order to reduce agency costs or to divulgate their true qualities. Inversely, Barclay et al. (2003) expect a positive relationship between optimal leverage and optimal debt maturity, but under special condition, the regulatory oversight. Our results don't support the substitutability thesis: More leveraged firms use more long term debts. General descriptive statistics support the fact that Saudi listed companies don't use short-term maturity in order to control certain agency problems. Moreover, as mentioned earlier, the Index of economic freedom reported that Saudi courts do not always enforce contracts efficiently; the judicial system is slow, non-transparent, and vulnerable to interference from the ruling elite; government decision-making lacks transparency, and corruption remains a concern. These economic features mean clearly that even if our results are consistent with Barclay's et al. expectations, their causes are not the same. The conjunction between leverage and long maturities can't be attributed to the regulatory oversight. From our viewpoint, this result forms the main special fact of petroleum countries. Massive oil production and exportation produce an excess liquidity and a flexible monetary policy: banks confer credits not because of projects' feasibility and firms' quality, but because of indirect government guaranty and low interest rates.

ZSCORE, firm-quality measurement, has a statistically significant coefficient and negative sign. It means that debt maturity and firm quality are linearly and inversely related: low quality firms use more long-term debts. Alternative measures of firm's quality, LOWRISK and HIGHRISK, have insignificant coefficients; and their signs are controversial: high-quality firms recourse to short-term debt financing, and low-quality firms choose long-term debt financing. These findings refute the non-linearity relationship defended by Diamond (1991), and corroborate regression results of the first quality's measure, ZSCORE. High-quality firms, having the highest score, use more short-term financing, and low-quality firms use more long-term debt financing. The linearity between maturity and quality is not strange to the financial literature. Flannery's model (1986) defends, under some conditions, this relationship form with exactly the same sign. As we know, the risk measure, z-score, is the composition of four ratios, one of them is PROFITAB, which has no significant coefficient and a positive sign, see table 11. The firm's quality- debt's maturity relationship is sketched by other variables composing the proxy. So, high quality firms' choice for short-term debt financing can't be explained by their high refunding capacities. Do they use it as a quality's signal? Statistic results, as we mentioned earlier, support Flannery's model, and partially Diamond's model. However, when we look deeply and impartially, these results may be misleading. ZSCORE is, in the same time, positively related to OPERCYCL. This means that High quality firms have the shortest operating cycles, essentially commercial and service firms. In this way, these firms use more short-term debts not to overcome information asymmetry and signal their true qualities to the market, but simply because short-term debts are perfectly convenient to their short-term needs. In other terms, these firms do not use revolving credits to finance long-term uses. Following this analysis, results validate matching hypothesis in lieu of signaling hypothesis. Note that our results are consistent with those of Berger et al. (2005) but explanation attempts are different. For them, the most likely explanation may be the use of bank loans rather than publicly issued debt. It may be the best explanation for their study, small non-listed firms, but it is very likely to be the main cause in our case, listed companies able to use bank and public debts.

GROWTHOP measures the relationship between debt's maturity and the level of growth opportunities. A negative relationship indicates that short-maturity debt may be used to resolve agency problem related to growth opportunities [Myers (1977)]. Ex-studies prove this negative relationship, i.e. Barclay et al. (1995). Current regression results don't validate this relationship, its coefficient is insignificant and it has a positive sign, opposite to the predicted sign.

Finally, referring to descriptive statistics and regression results, essentially assets' maturity, leverage and risk proxies coefficients, we can conclude that high petroleum revenues, and the resulted indulgent monetary policy and favorite industrial credits, counterbalance negative effects of corruption and underdevelopment. Contrary to La Porta et al. (1998), Demirguc-Kunt et al. (1999) and Fan et la (2012) who find a negative relationship between debt's maturity and corruption or underdevelopment, our results do not support these findings and show that high-risk firms can be in the same time highly leveraged and get long-term debts.

CONCLUSION

Financial literature relative to debt maturity structure advances different debt maturity determinants allocated into intrinsic and environmental. We started this study by a brief and concise review of the main theoretical contributions. Matching principle formed the cornerstone of debt maturity literature. It consists to relate assets' maturity to debt's maturity, and it is empirically supported. Saudi managers respect this managerial golden rule in order to avoid financial

disequilibrium. However, some internal and external factors, such as asset specificity, agency problem, information asymmetry, inflation, corruption, legal system, taxes, constrain normally the use of this rule, limit its efficiency, and push the firm to adopt other maturity choices. But excess liquidity in rich petroleum countries may counterbalance all these environmental frictions and encourage firms to keep this classic maturity choice even in the presence of the over-mentioned problems.

Several statistic sights confirm the exceptional maturity choice of petroleum country firms, or at least Saudi listed firms. Complementary between leverage and debt maturity, the absence of relationship between growth opportunities and debt maturity, the high proportion of short-term unlevered firms compared to long-term unlevered firms, show firstly that Saudi listed companies don't use short-term maturity in order to eradicate agency problems or as financial signal. They indicate, in addition, that there is no significant credit-rationing, since even high risk firms can get long-term debts. High petroleum revenues, producing high liquidity and an implicit public guaranty, encourage banks to be more flexible, as they encourage the government to grant special favorite industrial credits, included in our statistics.

Whether these financial choices are really rational and make part of financial strategy conceived in light of internal and external analysis, i.e. SWAT analysis, conscious of the different debt's maturity determinants, or just a result of naïve choices made by non qualified managers, we need much more data to check for this. This is in fact one of many limits of this study. Future study may focus on this issue and other topics treated in recent studies, such as debt maturity for private firms [(Magri (2009)], incentive packages of CEOs [Brockman et al. (2010)], traded credit default swap (CDS) [Saretto et al. (2013)] and other covenant protection [Billet et al. (2007)].

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APPENDIX

TABLE NO. 7: COMMON STATISTICS

	LEVERAGM	GROWTHOP	PROFITAB	ASSETMAT	FIRMSIZS	FIRMSIZA	ASINFLIP	OPERCYCL	DEBTMATBLN	WORKCAP	ZSCORE	LOWRISK	HIGHRISK	ASINFAGE
Mean	0.226	2.567	0.066	0.610	6.579	7.783	0.805	1.418	0.553	2.796	9.578	0.64	0.262	22.59
Median	0.134	1.854	0.056	0.655	6.826	7.677	1.000	0.704	0.666	1.620	4.606	1.000	0.000	22.00
Maximum	0.993	20.208	0.352	0.979	12.15	12.73	1.000	12.96	1.000	22.40	97.13	1.000	1.000	58.00
Minimum	0.003	0.459	-0.59	0.091	0.000	3.971	0.000	0.000	0.000	0.065	-2.689	0.000	0.000	2.000
Std. Dev.	0.227	2.403	0.11	0.235	2.234	1.683	0.397	2.045	0.431	3.877	15.97	0.482	0.441	13.70
Skewness	1.167	4.509	-1.6	-0.39	-0.73	0.464	-1.546	3.022	-0.229	3.637	3.634	-0.586	1.081	0.637
Kurtosis	3.573	30.44	13.97	1.994	4.492	3.453	3.39	14.13	1.285	16.58	17.78	1.344	2.170	3.004
Jarque-Bera	24.80	3581	560.4	6.998	18.87	4.582	41.70	689	13.52	1018	1164	17.67	23.04	6.965
Probability	0.000	0.000	0.000	0.030	0.000	0.101	0.000	0.000	0.001	0.000	0.000	0.000	0.000	0.030
Sum	23.23	264.4	6.884	62.9	677.7	801.7	83.00	146.1	56.97	288	986.5	66	27.00	2327
Sum Sq. Dev.	5.258	589	1.255	5.64	509.2	289	16.11	426.8	18.97	1533	26019	23.70	19.92	19154
Observations	103	103	103	103	103	103	103	103	103	103	103	103	103	103

TABLE NO. 8: CORRELATION MATRIX

	LEVERAGM	GROWTHOP	PROFITAB	ASSETMAT	FIRMSIZS	FIRMSIZA	ASINFLIP	OPERCYCL	DEBTMATBLN	WORKCAP	ZSCORE	LOWRISK	HIGHRISK	ASINFAGE
LEVERAGM	1.000	-0.43	-0.33	-0.11	0.488	0.530	-0.11	-0.03	0.380	-0.33	-0.45	-0.83	0.863	-0.17
GROWTHOP	-0.43	1.000	0.105	-0.09	-0.26	-0.49	0.083	0.140	-0.31	0.098	0.581	0.398	-0.33	0.106
PROFITAB	-0.33	0.105	1.000	-0.07	0.314	0.079	0.005	0.225	0.023	0.101	0.118	0.320	-0.33	0.031
ASSETMAT	-0.11	-0.09	-0.07	1.000	-0.18	0.120	0.254	-0.63	0.333	-0.29	-0.041	0.050	-0.06	-0.02
FIRMSIZS	0.488	-0.26	0.314	-0.18	1.000	0.733	-0.07	0.216	0.352	-0.28	-0.38	-0.44	0.334	0.010
FIRMSIZA	0.537	-0.49	0.079	0.120	0.733	1.000	0.059	-0.20	0.500	-0.15	-0.42	-0.53	0.377	-0.21
ASINFLIP	-0.11	0.083	0.005	0.254	-0.07	0.059	1.000	-0.26	0.079	0.034	0.141	0.144	-0.04	0.077
OPERCYCL	-0.03	0.140	0.225	-0.63	0.217	-0.20	-0.26	1.000	-0.33	0.056	-0.011	0.141	-0.08	0.097
DEBTMATBLN	0.38	-0.31	0.023	0.333	0.352	0.500	0.079	-0.33	1.000	-0.24	-0.42	-0.35	0.297	-0.10
WORKCAP	-0.33	0.098	0.101	-0.29	-0.28	-0.15	0.034	0.057	-0.24	1.000	0.570	0.253	-0.24	-0.13
ZSCORE	-0.46	0.581	0.118	-0.04	-0.38	-0.42	0.141	-0.01	-0.42	0.570	1.000	0.390	-0.32	0.108
LOWRISK	-0.83	0.398	0.320	0.050	-0.44	-0.535	0.144	0.141	-0.35	0.253	0.390	1.000	-0.79	0.243
HIGHRISK	0.863	-0.33	-0.33	-0.06	0.334	0.377	-0.04	-0.08	0.297	-0.240	-0.32	-0.79	1.000	-0.06
ASINFAGE	-0.17	0.106	0.031	-0.020	0.010	-0.216	0.077	0.097	-0.10	-0.130	0.108	0.243	-0.06	1.000

TABLE NO. 9: VIF TESTS

Initial			Adjusted (after dropping LEVERAGM)			Adjusted (after dropping LEVERARM and alternative measures to zscore (highrisk and lowrisk)		
Variable	***VIF***	***1/VIF***	***Variable***	***VIF***	***1/VIF***	***Variable***	***VIF***	***1/VIF***
leveragm	7.74	0.129	firmsiza	5.54	0.180	zscore	2.80	0.356827
firmsiza	5.73	0.174	firmsizs	5.15	0.194	workcap	2.17	0.460599
highrisk	5.28	0.189	lowrisk	4.47	0.223	assetmat	2.16	0.462140
firmsizs	5.27	0.189	zscore	3.11	0.321	opercycl	1.97	0.508862
lowrisk	4.62	0.216	highrisk	3.02	0.330	growthop	1.91	0.523623
zscore	3.14	0.318	workcap	2.60	0.384	firmsizs	1.87	0.535921
workcap	2.84	0.352	assetmat	2.55	0.392	caconctr	1.31	0.761853
assetmat	2.72	0.367	opercycl	2.34	0.426	profitab	1.30	0.771685
opercycl	2.34	0.426	growthop	2.17	0.460			
growthop	2.26	0.443	profitab	1.74	0.575			
profitab	1.87	0.535	caconctr	1.64	0.610			
caconctr	1.68	0.593	asinfage	1.33	0.752			
asinfage	1.39	0.719	asinflip	1.28	0.778			
asinflip	1.29	0.775						
Mean	**3.44**		**Mean**	**2.84**			**Mean**	**1.94**

TABLE NO. 10: SPECIFICATION TESTS

White Heteroskedasticity Test:			
F-statistic	1.491009	Probability	0.113881
Obs*R-squared	24.9402	Probability	0.126571
Test Equation:			
Dependent Variable: RESID^2		Method: Least Squares	
Date: 05/02/14 Time: 14:55		Sample: 1 103	
Included observations: 103			
Jarque-Bera normality test			
Series	Residuals	Minimum	-0.740066
Sample	1 103	Std. Dev	0.332366
Observations	103	Skewness	-0.397503
Mean	-1.24e-17	Kurtosis	2.249869
Median	0.080693	**Jarque-Bera**	**5.127384**
Maximum	0.632537	**Probability**	**0.077020**
Ramsey RESET test			
F-statistic	1.334762	Probability	0.237248
Log likelihood ratio	11.92423	Probability	0.154617
Mean	-1.24e-17	Kurtosis	2.249869
Test Equation:			
Dependent Variable:	DEBTMATBLN	Method:	Least Squares
Sample:	1 103	Included observations:	103

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