

## How Relevant are Institutional Factors in Determining Capital Structure: Evidence from MENA Countries

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### Abstract

We examine the determinants of capital structure from institutional environment perspective controlling for firm-specifics factors for 546 listed companies in the MENA region over the period from 2003 to 2011. By employing a modified DPD-GMM model, results show that institutional environment influence the capital structure, more specifically, on the long-term leverage.

**Keywords:** Capital structure, company-specific factors, institutional variables.

**JEL classification:** G32

### I. Introduction

Since the seminal work of Modigliani and Miller (1958), henceforth M&M, which established the modern theory of capital structure, several theories have been proposed to analyze this theory and to explain the differences in debt ratios across firms. M&M suggest that the leverage of a firm is independent from its market value assuming a perfect market exists. Alternative theories have relaxed the assumptions of the modern theory. The *static trade off theory* suggesting that optimal capital structure can be reached when marginal present value of tax shield on additional debt is equal to the marginal present value of financial distress cost as a consequence of that additional debt (Modigliani and Miller, 1963; Stiglitz, 1972). The *pecking-order theory*, also referred to as the information asymmetry theory, suggests that firms prefer internal rather than external financing resources and debt rather than equity since there is no well defined optimal capital structure to achieve (Myers, 1984; Myers and Majulif, 1984). The *agency cost theory* introduced by Myers as an extended version of the pecking order theory claims that optimal capital structure is determined by agency costs, therefore, external financing benefits shareholders and any losses fall on the bondholders side. As a result, managers should invest even in high risky projects funded first internally, then issuance of debt securities, and finally issuance of equity should other resources are not satisfactory (Jensen and Meckling, 1976; Stultz, 1990). More recently, the *dynamic tradeoff theory* is introduced suggesting that optimal capital structure adjusts since it is a function of exogenous and endogenous factors changing over time (Fischer et al., 1989; Leland and Toft, 1996; Parrino et al., 2002; Hennessy and Whited, 2005; Strebulaev, 2007; Berk et al., 2007).

Corporate financing choices are functions of a combination of firm-specific as well as institutional-specific factors. Although most of the capital structure literature focusing on the firm-specific factors, there is a growing literature considering how institutional environment affect financing choices by focusing on tax policies, legal system, regulatory effectiveness, government pervasiveness, financial system development, and corruption problem (Demirguc-Kunt and Maksimovic, 1998, 1999, and 2001; Giannetti, 2003, Deesomsak et al., 2004; Jong et al., 2008; Alves and Ferreira, 2011; Li and Ferreira, 2010; Fan et al., 2011; Oztekin and Flannery, 2011).

This paper focuses on MENA publicly listed companies and examines how cross-country variations in institutional variables affect firms' capital structure, but controlling for cross-company variations in company-specific factors. We argue that capital structure is a function of institutional variables as well as company-specific variables. Therefore, it is expected that where the financial system is well established, regulatory highly effective, the confidence in and abide by the rules of society is high, high control level of corruption, and property right well protected leads to higher level of leverage, especially on the long-term debt in comparison to the short-term. This is as a consequence of expected positive relation with financial development, regulatory effectiveness, rules of law, and property right but negative relation with level of corruption.

This study, therefore, build on this recent empirical literature by contributing in the following ways using a dynamic panel data set spans 11 countries and 9 years located in the MENA region economically ranging between emerging and developing markets. *First*, we consider a larger number of important institutional factors some of which not previously explored. The effect of such variables will be on short-term, long-term, and total debt ratios for more insight and thorough investigation should differences exist. *Second*, providing comparable evidence on leverage institutional determinants outside the developed markets, where most of the literature focused. *Third*, studying the interaction among firm-level variables, economic variables, institutional variables, and overall effect on a firm's choice of capital structure. *Fourth*, to the best of our knowledge, this is the first empirical study done on the MENA region where institutional environment playing a vital role in shaping the region economic development. *Fifth*, firms chosen are all in the MENA region, but working in diversified institutional environment and level of advancement, such as capital markets, banking system, legal traditions, and even cultural aspects linked with corruption control and rule of law in practice. Therefore, in such diversity, an opportunity arises in exploring its effect on corporate financial decisions. The study motivated by advancing our knowledge of business environment and how firms make financing decisions in the surrounding environment. The study, therefore, contributes to the understanding of how institutional factors lead firms to seek one or another source of fund in a region shaped with institutional environment diversity. Further, identifying the institutional determinants of capital structure for the listed companies in the MENA is important because of the significant role played by the region in the world economy development containing the GCC countries, the source of liquidity. The region has less developed corporate equity and bond markets in term of efficiency, transparency, and high level of agency cost in the absence of fulfilling the international corporate governance standards are just examples among other reasons justifying the significant need of our study. In a developing or emerging markets, leverage is a crucial factor for generating sustainable growth and economy development, an issue highlight the importance of our study and its motive.

Our results show that overall debt ratio around 41% with more weight given to the short-term leverage counting around 77% of this ratio. Such result give an indication that the institutional factors considered are not that strong and well established since the reliance most on the short-term loans. This is confirmed when the average is calculated for institutional factors (e.g. regulatory effectiveness, rule of law are just above average, where control of corruption and property rights protection just at average). Further, all institutional variables have positive

and significant correlation with long-term leverage with the exception of rule of law not being significant. But, looking at the short-term leverage it can be seen that all institutional variables have the positive and significant correlation except for the rule of law and the control of corruption where they are negatively correlated.

By applying the DAD-GMM model, results show that all institutional factors show significant influence on both short and long-term leverage. The difference is in the direction of the influence as in the case of the short-term leverage it is found that all variables have positive influence, but negative direction of influence by the control of corruption variable. On the long-term leverage, however, all variable have positive influence with the exception of control of corruption and property right protection having negative influence.

The paper is organized as follows. Section II discusses institutional environment in the MENA region focusing on how it is associated with financial choices. Section III introduces the literature revised. Section IV describes the data collected and methodology applied. Section V presents the empirical results of the study, and Section VI draws some conclusions and future research.

## **II. Institutional Factors Diversity in MENA Countries**

Institutions play an important role in supporting financial markets and transactions by protecting property rights, enforcing contracts, and facilitating collective action to provide physical and organizational infrastructure (Dixit, 2009). They create order, reduce uncertainty in the exchange of goods and capital, and help to determine transaction and production costs; thus, institutions determine the feasibility and profitability of engaging in economic activity (North, 1991). Among the positive effects of good institutions is the promotion of a country's integration into the world economy (Rodrik, 2008). As other studies have shown, strong property rights protection, high level of regulatory effectiveness, strong rule of law, and strong control of corruption encourages capital flows and provides incentives for investment and capital exchange. For example, property rights protection among our sample significantly diversified.

Mina (2011) reports that Tunisia's average performance ranks first on the law and order and bureaucracy quality, second on investment profile and government stability, but fifth on corruption. Compared to Tunisia, Egypt performance lies on the other extreme; it performed worst with respect to corruption, investment profile, and government stability shared with Jordan the same rank, and fifth on law and order and bureaucracy quality. Fan et al. (2006) argued that when the law provides the satisfactory credit-holders legal protection, they become more willing in supporting a firm investments and expansions by lending companies their savings (debt). But in countries with weak protection and better protection environment to shareholders rights, it is expected that companies will rely more on internal sources of fund (equity) as it is empirically examined. However, our sample shows that countries like Bahrain has the lowest rate of debt among all countries in the sample with only about 16% total leverage ratio. Where countries like Oman, Turkey, and Egypt have the highest level of total leverage, respectively, ranging from 53% to 47% (see Table 2). Overall, more shareholders protection develop the reliance on equity source of fund, while more creditors protection develop an environment with more reliance on leverage.

Some MENA countries, namely Egypt, Tunisia, and Jordan have recently liberalized more than others within the region investment regulation, removed ownership restrictions as well as trade and capital flow barriers. Record market capitalization growth rates in Egypt and Jordan can be noted over the period 2005-2007 prior to the financial crisis due to massive privatization schemes introduced in those countries (Neaime, 2012). The availability of adequate and well organized institutions can reduce investment transaction costs, turning projects more profitable. Since foreign investment flows to MENA countries may involve large sunk costs, they become very sensitive to current instability and the lack of security in several MENA countries, as was more recently the case during the social unrest episodes experienced in Tunisia, Egypt, Bahrain, and Jordan to less extent.

Some MENA countries are now faced with tighter international capital markets and a drying up of external financing, as the European sovereign debt crisis is still unfolding coupled with social internal unrests further curtailed international investors' interest in these countries. Should these declining trends continue, some MENA countries mainly Egypt, Tunis, and Jordan - due the neighborhood effects spilling over as a result of the Syrian crisis - may be deprived from their main growth engine, which may also translate into more pressure on the respective banking systems and financial markets. These declining trends have jeopardized not only the recent integration efforts of MENA countries through a widening of the income gap between them and the developed economies, but such gap has been widened between non-oil producing MENA countries such as Jordan and Tunisia compared to oil producing countries in the region such as Saudi Arabia, Qatar, Kuwait, and UAE.

Many socio-cultural elements, such as ethnicity, language, and political systems, may lead to variations among countries sharing the same geography and make each culture unique. This argument holds true for the MENA region (World Desk Reference, 2004; Bureau of Near Eastern Affairs, 2011). Exploring the banking system as an example, the sector has undergone a profound transformation through a privatization process and the entry of foreign institutions, but some of the banking systems in the MENA countries are still in the early stages of financial development and have a weak legal and supervisory environment (Anzoategui et al., 2010; Cigogna, 2009). In conclusion, MENA countries are different in terms of institutional factors disagreeing with any arguments shows the opposite.

### **III. Literature Review**

Most of the literature on capital structure has focused on firm-level characteristics, although capital structure choices are also likely to be determined by a firm's institutional environment. A firm is more likely to decide on the choice of fund either raising equity or debt depending on whether the country has an efficient capital market or a developed banking system. In the absence of the capital market efficiency, investors be more carouse in investing their saving in which they request higher rate of return, consequently, increasing the cost of equity for the firm. In such scenario, funding a firm projects could be more beneficial through debt instruments instead of raising equity, or on the worst scenario limit their investment decisions based on the internal fund available. This is just an example of how could institutional factors and a country infrastructure affects the suitable choice of fund. Further, it is expected that in an environment characterized by high level of regulatory effectiveness, rule of law in place

such as high quality of contract enforcement exists, control of corruption, and property right highly protected, this will all lead to more reliance of debt choice in order to leverage the company market value toward maximizing the shareholders wealth. This argument might justify why institutional factors driving the empirical research on capital structure nowadays, namely; legal environment, capital market development, banking system development, creditors rights protections, control of corruption, and other variables (Rajan and Zingales, 1995; Booth et al., 2001; Antoniou et al., 2002; Deesomsak et al., 2004; Qian et al., 2009; Li and Ferreira, 2010; Fan, et al., 2011; Oztekin and Flannery, 2011).

The emphasis on the banking system development in leading economies like Germany and Japan or the capital market efficiency in the USA and UK provide evidences on the importance of these institutions in driving any economy sustainable growth and development by facilitating all economy sectors needs for growth. On the other hand, legal structure and secure environment is not less important, where shareholders as well as credit-holders rights are well protected, the quality of enforcement and the standards of accountability are well functioning. However, as empirical capital structure research covering all theories is quite large, our literature review focusing on the empirical work employing similar model in examining the institutional determinants of capital structure.

Rajan and Zingales (1995) could be considered as the first study highlighting the importance of country-specific factors in shaping firm's capital structure. The study investigates the effect of capital markets size, the bankruptcy law, and control of firms. Their findings show that these variables did not interact simultaneously with firm-specific determinants of capital structure among G-7 countries. Demircuc-Kunt and Maksimovic (1996) analyze the impact of capital market development on source of fund choices. Their results show that long-term and short-term debt negatively correlated with the size of capital market. Analyzing a sample of unlisted companies, Giannetti (2003) investigates the impact of company-specific factors, legal rules, and financial development. Findings show that firms in countries with higher creditor rights standards investing more in intangible assets since they need less collateral for their borrowings as a consequence of creditor rights protection.

Deesomsak et al. (2004) investigate the determinants of capital structure of firms operating in the Asian Pacific region covering four countries with different legal, financial, and institutional environments. The results suggest that the capital structure decision of firms is influenced by the environment in which they operate, as well as firm-specific factors.

Fan et al. (2006) examine the capital structure and debt maturity choices in a cross-section of firms in 39 developed and developing countries. They find stronger relationship between profitability and leverage in countries with weaker shareholder protection. In countries with better legal protection, firms tend to hold less total debt, but more long-term debt as a proportion of total debt. Li and Ferreira (2010) examine the institutional environment influence on the extent to which firms rely on informal sources of financial capital by analyzing 2869 firms in 26 transition economies in Central and Eastern Europe. Their study shows that ineffective regulatory system, underdeveloped financial system, and government corruption are strong determinants of firm's reliance of informal channels for financial capital. Fan et al. (2011) examine the impact of corruption, taxes, inflation, legal, and political

institutions on capital structure and debt maturity choices, suggesting that public policies and institutional environment have more influence on firm's capital structure compared to industry affiliation. Fan et al. (2011) examine how the institutional environment influences capital structure and debt maturity choices of firms in 39 developed and developing countries. They find that firms in more corrupt countries and those with weaker laws tend to use more debt, especially short-term debt. Further, explicit bankruptcy codes and deposit insurance are associated with higher leverage and more long-term debt. In addition, more debt is used in countries where there is a greater tax gain from leverage.

Another recent stream of empirical studies on capital structure focuses on the speed of adjustment toward targeted leverage. In this regard, Qian et al. (2009) show that Chinese listed companies adjust their capital structure in a very slow rate. Further, size, tangibility, state shareholdings found to be positively associated with firm's leverage. Profitability, non-debt tax shields, growth, and volatility, on the other hand, found to be negatively associated with leverage. Clark et al. (2009) find evidence in support of the dynamic tradeoff theory for large sample of 26,395 firms from 40 developing and developed countries. Their findings show that legal, institutional, and other country-level factors explain 16% of the variation in adjustment speed toward the targeted capital structure and 33% for developing countries. Further, strong creditor and shareholders protection rights are both associated with faster adjustment speed in developing countries, but no significant influence in developed nations. Oztekin and Flannery (2011) examine whether institutional differences help explain the variance in estimated adjustment speeds. The study finds that legal and financial tradition significantly correlated with the adjustment speeds, therefore, better institutions lower the transaction cost associated with adjusting a firm's leverage.

Our objective is to investigate the determinants of firm's capital structure in the MENA region characterized by diversified level of development in various institutional environment aspects, more specifically financial and legal systems, using the two-step differenced DPD-GMM model adjusted to correct the standard errors of the two-step GMM estimates for downward biased (Arrellano and Bond, 1991; Deesomsak et al., 2004; Windmeijer, 2005; Li and Ferreira, 2010; Fan et al., 2011).

#### **IV. Data and Methodology**

##### **IV. 1. Sample and analytical procedures**

We used several databases for data collection during the period 2003-2011, namely; *Fitch-IBCA World scope* to collect the data on leverage measures and firm-level variables, *IMF's International Financial Statistics* to collect the data on economic variables. Further, various databases were used to collect the data on institutional variables, namely; *Financial Structure Database* and *Governance Indicators Database* run by the World Bank to collect the data on financial development, regulatory effectiveness, rule of law, and corruption. In addition, the *Heritage Foundation Database* was used to collect the data on property rights. Our final sample is composed of 546 firms in 11 countries in the MENA region. Countries include UAE (19), Bahrain (18), Kuwait (42), Oman (74), Qatar (17), Saudi Arabia (55), Egypt (104), Jordan (91), Morocco (38), Tunis (33), and Turkey (55).

## **IV. 2. Measures**

### **IV. 2.A. Dependent variable**

A firm leverage is the dependent variable measured in three ways, namely; total debt ratio, long-term debt ratio, and short-term debt ratio. The first measure is the ratio of the sum of current liabilities and long-term debt to total assets. The second measure is the ratio of long-term debt to total asset. The third measure is the ratio of total current liabilities to total assets.

### **IV. 2.B. Independent variables.**

#### **2.B.i. Institutional variables**

Each institutional environment variable is generated from a factor analysis based on multiple questions. A higher value of the factor indicates more developed financial system, greater regulatory effectiveness, greater efficiency of the legal system, strong control of corruption, and strong property right protection, on financial development (FD), regulatory effectiveness (RE), rule of law (RL), corruption (CORR), and property rights (PR), respectively.

The factor for "Financial system development" is a principal component of finance activity, size and efficiency where finance activity is the logarithm of the total value traded ratio times the private credit ratio, financial size is the logarithm of the market capitalization ratio times the private credit ratio, and financial efficiency is the logarithm of the total value traded ratio divided by overhead costs suggested by Demirguc-Kunt and Levine (1999) and Levine (2002). The factor for "regulatory effectiveness" reflects perceptions of the ability of the government to formulate and implement sound regulations regarding the acquisition of property, licensing of new businesses, hiring of workers, importing factors of production, exporting output or capital, contracting with suppliers for needed inputs, payment of taxes, government licenses and fees, and so forth. The index ranges from -2.5 (weak effectiveness) to 2.5 (strong effectiveness). The factor for "rule of law" 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 law) to 2.5 (strong law). The factor for "corruption" 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 index ranges from -2.5 (weak control of corruption) to 2.5 (strong control of corruption). The factor for "property rights" reflects the degree to which a country's laws protect private property rights and the degree to which its government enforces those laws. The index ranges from 0 (weak property rights) to 100 (strong property rights).

#### **2.B.ii. Firm-level variables**

Firm-level variables include a firm size (Size), tangibility (TANG), profitability (PROF), non-tax shield (TS), distance from bankruptcy (Z-Score), liquidity (LIQ), growth opportunity (GROWTH). The variables were estimated by using the natural logarithm of total sales, ratio of net fixed assets to total assets, ratio of operating income to total assets, ratio on depreciation to ax expense,  $z\text{-score} = 3.3 (\text{EBIT}/\text{total assets}) + 1.0 (\text{sales}/\text{total assets}) + 1.4 (\text{retained earnings}/\text{total assets}) + 1.2 (\text{working capital}/\text{total assets})$ , ratio of current assets to total assets, sales growth rate, respectively.

### 2.B.iii. Economic variables

Economic variables include the GDP growth (GDPG) and inflation (INF) estimated by growth rate of real GDP and rate of increase in consumer price index (CPI), respectively.

### III. 2.C. Control variables

We included several control variables in the regression models to partial out potential alternative explanations for the proposed relationships. We control for year fixed effects and industry effect. The industry effects measuring it as a dummy variable contrasting service (1) and manufacturing firms (0).

#### Refer Table I

### IV. 4 Model Employed

Arellano and Bover (1995) and Blundell and Bond (1998) present an estimation technique, which is applicable for estimating a dynamic model from panel data by the generalized method of moments (GMM). More specifically, their technique improves the efficiency of the results when the number of time-series observations is small. Further, the GMM estimator optimally exploits all linear moment restrictions that follow from assumption of no serial correlation in the errors.

However, Arellano and Bond (1998) two-step differenced DPD-GMM model with modifications suggested by Windmeijer (2005) to correct the standard errors of the two-step GMM estimates for downward biased has been employed in this study in examining the capital structure institutional determinants. Further, Wald is a test statistics indicating goodness of fit of the regression was applied along with other tests, namely; Sargan test which is a test statistics for over-identifying restrictions, and, finally AR(2) which is a test statistics for second order autocorrelations.

To test the study hypothesis on the determinants of capital structure, seven models were developed (*i.e.* See Table 5, 6, and 7) in which individual firm's leverage ratios are modeled as a function of *institutional factors*, namely; financial development (FD), regulatory effectiveness (RE), rule of law (RL), corruption (CORR), property rights (PR); *company-specific factors*, namely; firm size (Size), tangibility (TANG), profitability (PROF), non-tax shield (TS), distance from bankruptcy (Z-Score), liquidity (LIQ), growth opportunity (GROWTH); *economic factors*, namely; GDP growth (GDPG) and inflation (INF). The models employed include control variables, namely; year fixed effects and industry effect.

### V. Results and Discussion

As Table (2) shows, overall debt ratio around 41% with more weight given to the short-term leverage counting around 77% of this ratio. However, the deviation around the mean on the short-term debt among the MENA counts around 60% of the total deviation leaving 40% to the long-term debt level suggesting that such short-term source of fund is significantly vary among these countries.

#### Refer Table II

To give more insight on the sample descriptive, Figure (1) confirms that all MENA countries included has almost the same level of total debt, but short-term debt shows more significant level compared to the long-term represented by Bahrain as the extreme value among other



countries. That being said, Qatar is the only country which has almost equal weight of both kind of debt representing the other side of the extreme.

**Refer Figure 1**

The above result give an indication that the institutional factors considered are not that strong and well established since the reliance most on the short-term loans. Table (3) shows, when the average is calculated for institutional factors (e.g. regulatory effectiveness and rule of law are just above average, where control of corruption and property rights protection just at average).

**Refer Table III**

Further, most of the variables considered show limited variation around the mean except for the growth opportunity variable having 128% standard deviation followed by the tangibility variable with 25%. On the correlation side among variables considered, correlation among independent variables were significant suggesting that *autocorrelations* might be present, consequently, models applied conduct the AR(2) to overcome such statistical problem. After solving the autocorrelation among independent variables, results in Table (4) show that all institutional variables have positive and significant correlation with long-term leverage with the exception of rule of law not being significant.

**Refer Table IV**

That being said, however, on the short-term leverage it can be seen that all institutional variables have the positive and significant correlation except for the rule of law and the control of corruption where they are negatively correlated. By applying the DAD-GMM model, results show that all institutional factors show significant influence on both short and long-term leverage.

**Refer Table V**

However, on the long-term leverage, all variable have positive influence with the exception of control of corruption and property right protection having negative influence.

**Refer Table VI**

On the short-term leverage, the difference is in the direction of the influence as in the case of the short-term leverage it is found that all variables have positive influence, but negative direction of influence by the control of corruption variable on the long run.

**Refer Table VII**

**VI. Conclusion**

By applying the DAD-GMM model, results show that all institutional factors show significant influence on both short and long-term leverage. The difference is in the direction of the influence as in the case of the short-term leverage it is found that all variables have positive influence, but negative direction of influence by the control of corruption variable. On the long-term leverage, however, all variable have positive influence with the exception of control of corruption and property right protection having negative influence.

In more details, all variables included found to be highly significant in determining the level of leverage among MENA countries. Size, tangibility, tax shield, growth opportunity, GDP growth and leverage were found significantly positively correlated with leverage. On the other hand, profitability, z-core, and liquidity were found to be significantly negatively correlated with leverage. In countries with better legal protection, firms tend to hold less total debt, but more long-term debt as a proportion of total debt. Moreover, firms in more corrupt

countries and those with weaker laws tend to use more debt, especially short-term debt. In addition, more debt is used in countries where there is a greater tax gain from leverage. Such findings support the findings of previous empirical studies.

This study, contributes to the understanding of how institutional factors lead firms to seek one or another source of fund in a region shaped with institutional environment diversity. Further, identifying the institutional determinants of capital structure for the listed companies in the MENA is important because of the significant role played by the region in the world economy development containing the GCC countries, the source of liquidity. The region has less developed corporate equity and bond markets in term of efficiency, transparency, and high level of agency cost in the absence of fulfilling the international corporate governance standards are just examples among other reasons justifying the significant need of our study. In a developing or emerging markets, leverage is a crucial factor for generating sustainable growth and economy development, an issue highlight the importance of our study and its motive. However, the study suggests that the extent of transparency and corporate governance development might be another area of research to focus on in future research.

### References

- Alves, P., and Ferreira, Miguel A., 2011, Capital structure and law around the world, *Journal of Multinational Financial Management*.
- Antoniou, A., Guney, Y., Paudyal, K., 2002, Determinants of Corporate Capital Structure: Evidence from European Countries, *Working Paper*, University of Durham.
- Anzoategui, D., Martinez-Peria, M.S., Rocha, R., 2010, Bank competition in the Middle East and Northern Africa region. Policy Research, *Working Paper*, World Bank.
- Arellano, M. and Bond, S., 1988, A dynamic panel data estimation using DPD: a guide for users, *Working Paper*, Institute of Fiscal Studies Series.
- Arellano, M., and Bond, S., 1991, Some tests of specification for panel data: Monte Carlo evidence with an application for employment equations, *Review of Economic Studies*, 58(2), pp. 277–297.
- Arellano, M., and O. Bover., 1995, Another Look at Instrumental Variable Estimation of Error-Components Models, *Journal of Econometrics* 68, pp. 29–51.
- Berk, Jonathan, Richard Stanton, and Josef, Zechner, 2007, Human Capital, Bankruptcy and Capital Structure, *Journal of Finance forthcoming*.
- Blundell, R., and S. Bond, 1998, Initial Conditions and Moment Restrictions in Dynamic Panel Data Models, *Journal of Econometrics*, pp. 87, 115–43.
- Booth, L., V. Aivazian, A. Demirguc-Kunt, and V. Maksimovic, 2001, Capital Structures in Developing Countries, *Journal of Finance* pp. 56, 87-130.
- Clark, Brain, Bill Francis and Hasan Iftekar, Do firms adjust towards target capital structures? Some international evidence, 2009, *Working Paper*, Lally School of Management and Technology of Rensselaer Polytechnic Institute in Troy.
- Deesomsak et al, 2004, The determinants of capital structure: evidence from the Asia Pacific region, *Journal of Multinational Financial Management*.
- Deesomsak, R., Paudyal, K., Pescetto, G., 2004, The determinants of capital structure: evidence from the Asia Pacific Region, *Journal of Multinational Financial Management*, pp. 14, 387–405.

- Demirguc-Kunt, A. and V. Maksimovic, 1996, Stock Market Development and Firm Financing Choices, *World Bank Economic Review*, pp. 10, 341-369.
- Demirguc-Kunt, A. and V. Maksimovic, 1999, Institutions, Financial Markets and Firm Debt Maturity, *Journal of Financial Economics*, pp. 54, 295-336.
- Dixit, A., 2009, Governance institutions and economic activity, *American Economic Review*, pp. 5–24.
- Fan, J., Titman, S., Twite, G., 2006, An international comparison of capital structure and debt maturity choices, *Working Paper*, www.ssrn.com.
- Fan, J., Titman, S., Twite, G., 2011, An International Comparison of Capital Structure and Debt Maturity Choices, *Journal of Financial and quantitative Analysis*, forthcoming.
- Fischer, E., Heinkel, R., Zechner, J., 1989, Dynamic capital structure choice: theory and tests, *Journal of Finance*, pp. 44, 19–40.
- Giannetti, M., 2003, Do better institutions mitigate agency problems? Evidence from corporate finance choices, *Journal of Financial and Quantitative Analysis*, pp. 38, 185–212.
- Hennessy, C.A., Whited, T.M., 2005, Debt dynamics, *Journal of Finance*, pp. 60, 1129–1165.
- Jensen, M., and Meckling, W., 1976, Theory of the firm: Managerial behavior, agency costs, and ownership structure, *Journal of Financial Economics*, pp. 3, 305–360.
- Jong, A., Kabir, R. and Nguyen, T., 2008, Capital structure around the world: the roles of firm-and country-specific determinants, *Journal of Banking and Finance*, Vol. 32, No. 9, pp. 1954-69.
- Leland, H., and K. Toft, 1996, Optimal Capital Structure, Endogenous Bankruptcy, and the Term Structure of Credit Spreads, *Journal of Finance*, pp. 51(3), 987–1019.
- Li, Dan, and Ferreira, Manuel, P., 2010, Institutional environment and firms' sources of financial capital in Central and Eastern Europe, *Journal of Business Research*.
- Mina, W. M., 2011, Institutional reforms debate and FDI flows to MENA region: Does one “best” fit all?, *Working Paper*, No. 2011/50.
- Modigliani, F., and Miller, M. H., 1958, The cost of capital, corporation finance and the theory of investment, *American Economic Review*, pp. 48, 261–297.
- Modigliani, F., and Miller, M. H., 1963, Corporate income taxes and the cost of capital: A correction, *American Economic Review*, pp. 53, 433–443.
- Myers, S. C., and Majluf, N., 1984, Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics*, pp. 13, 187–221.
- Myers, S., 1984, The capital structure puzzle, *Journal of Finance*, pp. 39, 575–592.
- Neaime, Simon, 2012, The global financial crisis, financial linkages and correlations in returns and volatilities in emerging MENA stock markets, *Emerging Markets Review*.
- Oztek, Ozde, and Flannery, Mark J., 2011, Institutional determinants of capital structure adjustment speeds, *Journal of Finance and Economics*.
- Parrino, Ju, N., R., Poteshman, A., Weisbach, M., 2002, Horses and rabbits? Optimal dynamic capital structure from shareholder and manager perspectives. *Working paper*, No. 9327.
- Rajan, R.G. and L. Zingales, 1995, What Do We Know about Capital Structure? Some Evidence from International Data, *Journal of Finance*, pp. 50, 1421-1460.
- Rodrik, D., 2008, “Second-best institutions”, *American Economic Review: Papers & Proceedings*, pp. 98(2), 100–104.

Stiglitz, J.E., 1972, Some aspects of the pure theory of corporate finance: Bankruptcies and take-overs, *Journal of Economics and Management Science*, pp. 3(2), 458–482.

Stultz, R.M., 1990, Managerial Discretion and Optimal Financing Policies, *Journal of Financial Economics*, Vol. 29, pp. 3–27.

Strebulaev, I., 2007, Do tests of capital structure theory mean what they say, *Journal of Finance*, pp. 62, 1747–1788.

Qian, Yanmin, Tian, Yao, Wirjanto, b, Tony S., 2009, Do Chinese publicly listed companies adjust their capital structure toward a target level?, *China Economic Review*.

Windmeijer, F., 2005, A finite sample correction for the variance of linear efficient two-step GMM estimators, *Journal of Econometrics*, pp. 128, 26–51.

**Table I:** Description of the variables and sources

Variable	Description	Source
<i>Leverage measure</i>		
Total debt Ratio (TDR)	Ratio of long-term debt to total firm total assets	Fitch-IBCA Worldscope
Long-term debt Ratio (LDR)	Ratio of long-term debt firm total assets	Fitch-IBCA Worldscope
Short-term debt Ratio (SDR)	Ratio of sum debt in current liabilities and Accounts Payables) to firm total assets	Fitch-IBCA Worldscope
<i>Firm-level variables</i>		
Size (SIZE)	Natural log of total assets	Fitch-IBCA Worldscope
Tangibility (TANG)	Ratio of net fixed assets to total assets	Fitch-IBCA Worldscope
Profitability (PROF)	Ratio of operating income to total assets	Fitch-IBCA Worldscope
Tax shield (TS)	Non-debt tax shield is measured by the ratio of depreciation to tax expense	Fitch-IBCA Worldscope
Distance from bankruptcy (Z-Score)	Measured by Z-Score= 3.3 (EBIT/total assets) + 1.0 (sales/total assets) + 1.4 (retained earnings/total assets) + 1.2 (working capital/total assets)	Fitch-IBCA Worldscope, authors' calculations
Liquidity (LIQ)	Ratio of current assets to total assets	Fitch-IBCA Worldscope
Growth opportunity (GROWTH)	Sales growth rate	Fitch-IBCA Worldscope
<i>Economic variables</i>		
GDP growth (GDPG)	Growth rate of real of GDP	IMF's International Financial Statistics
Inflation (INF)	Rate of increase in CPI	IMF's International Financial Statistics
<i>Institutional variables</i>		
Financial development (FD)	Financial system development is a principal component of finance activity, size and efficiency where finance activity is the logarithm of the total value traded ratio times the private credit ratio, financial size is the logarithm of the market capitalization ratio times the private credit ratio, and financial efficiency is the logarithm of the total value traded ratio divided by overhead costs. Suggested by Demircug-Kunt and Levine (1999) and Levine (2002).	Financial structure database (World Bank), authors' calculations
Regulatory effectiveness (RE)	Index reflects perceptions of the ability of the government to formulate and implement sound regulations regarding the acquisition of property, licensing of new businesses, hiring of workers, importing factors of production, exporting output or capital, contracting with suppliers for needed inputs, payment of taxes, government licenses and fees, and so forth. The index ranges from -2.5 (weak effectiveness) to 2.5 (strong effectiveness).	Governance indicators database (World Bank)
Rule of Law (RL)	Index 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 law) to 2.5 (strong law).	Governance indicators database (World Bank)
Corruption (CORR)	Index 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 index ranges from -2.5 (weak control of corruption) to 2.5 (strong control of corruption).	Governance indicators database (World Bank)
Property rights (PR)	Index reflects the degree to which a country's laws protect private property rights and the degree to which its government enforces those laws. The index ranges from 0 (weak property rights) to 100 (strong property rights).	The Heritage Foundation

Notes: This table details the definitions of variables used to estimate in our regression analysis.

**Table II:** The summary statistics of leverage

	No. of firms	Observations	Total debt Ratio (TDR)				Long-term debt Ratio (LDR)				Short-term debt Ratio (STD)			
			Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max	Mean	Std. Dev.	Min	Max
UAE	19	171	37.575	22.009	1.128	81.842	9.207	11.458	0.000	51.362	28.671	18.155	1.128	81.422
Bahrain	18	162	15.640	14.237	0.034	65.513	1.684	4.837	0.000	31.210	14.097	11.458	0.034	45.262
Egypt	104	936	47.125	27.931	0.907	292.172	9.823	16.336	0.000	191.422	38.977	22.877	0.000	230.782
Jordan	91	819	32.900	24.316	0.203	179.474	7.241	10.836	0.000	93.077	27.425	21.380	0.203	177.817
Kuwait	42	378	42.218	20.876	0.312	88.961	11.058	12.677	0.000	57.555	31.633	18.007	0.312	80.667
Morocco	38	342	45.607	23.102	0.469	122.116	9.802	13.540	0.000	62.156	37.393	18.776	0.469	90.574
Oman	74	666	52.770	35.023	3.382	274.753	15.742	22.358	0.000	207.272	37.576	24.909	0.821	180.314
Qatar	17	153	33.050	24.042	4.945	90.376	14.833	17.745	0.000	68.421	18.402	14.193	3.155	86.226
Saudi Arabia	55	495	31.866	20.128	0.215	84.777	7.675	12.005	0.000	60.718	24.191	15.427	0.215	76.556
Tunisia	33	297	38.722	23.934	0.164	82.599	10.750	11.438	0.000	41.586	29.346	17.717	0.000	62.102
Turkey	55	495	47.306	23.622	0.121	100.014	8.739	11.446	0.000	62.623	38.040	21.297	0.000	96.805
Full sample	546	4914	41.351	27.136	0.034	292.172	9.881	15.041	0.000	207.272	32.424	21.737	0.000	230.782

**Table III:** The summary statistics of explanatory variables

Variable	Mean	Std. Dev.	Min	Max
Size	5.005	0.810	2.842	7.928
Tangibility	34.186	25.080	10.851	91.671
Profitability	7.075	11.216	-77.180	80.160
Tax shield	2.032	12.773	-0.320	11.320
Distance from bankruptcy	1.158	1.387	-9.858	52.169
Liquidity	2.648	6.053	0.000	90.040
Growth opportunity	2.027	128.438	-100.000	815.000
GDP growth	5.229	3.859	-5.360	26.750
Inflation	6.218	5.270	0.990	15.300
Financial development	0.353	0.319	-0.982	0.565
Regulatory effectiveness	0.177	0.347	-0.619	0.829
Rule of Law	0.253	0.274	-0.694	0.932
Corruption	0.071	0.451	-0.942	1.681
Property rights	48.841	6.688	30.000	70.000

*Notes:* See Table 1 for detailed definition of each variable

**Table VI: The sample correlation matrix of debt ratio and its determinants (2003–2011).**

	TDR	LDR	SDR	SIZE	TANG	PROF	TS	Z-Score	LIQ	GROWTH	GDPG	INF	FD	RE	PL	CORR	PR
TDR	1																
LDR	0.5687*	1															
	(0.000)																
SDR	0.8560*	0.1648*	1														
	(0.000)	(0.000)															
SIZE	0.1343*	0.2099*	0.0738*	1													
	(0.000)	(0.000)	(0.000)														
TANG	0.0305	0.2553*	-0.0983*	0.0018	1												
	0.0857	(0.000)	(0.000)	(0.9201)													
PROF	-0.3189*	-0.2148*	-0.2335*	0.2039*	-0.0335	1											
	(0.000)	(0.000)	(0.000)	(0.000)	(0.0592)												
TS	0.1256*	0.1717*	0.0424*	-0.1384*	0.1713*	-0.4750*	1										
	(0.000)	(0.000)	(0.017)	(0.000)	(0.000)	(0.000)											
Z-Score	-0.2466*	-0.3208*	-0.0858*	0.0814*	-0.2014*	0.7352*	-0.4164*	1									
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)										
LIQ	-0.6004*	-0.2962*	-0.6007*	-0.0514*	-0.2785*	0.3152*	-0.2025*	0.3555*	1								
	(0.000)	(0.000)	(0.000)	0.0038	(0.000)	(0.000)	(0.000)	(0.000)									
GROWTH	0.0904*	0.0949*	0.0484*	0.1114*	0.0459*	0.2186*	-0.0688*	0.1376*	-0.0039	1							
	(0.000)	(0.000)	(0.0064)	(0.000)	(0.0098)	(0.000)	(0.0001)	(0.000)	(0.8250)								
GDPG	0.0106	0.0098	0.0079	-0.0029	-0.0172	0.0734*	-0.0336	0.0281	0.017	0.2815*	1						
	(0.5495)	(0.5813)	(0.6570)	(0.8711)	(0.3332)	(0.000)	(0.0587)	(0.1138)	(0.3397)	(0.000)							
INF	0.0591*	-0.0072	0.0918*	0.1590*	-0.0801*	-0.0018	-0.0292	0.0478*	0.0184	0.1078*	0.2998*	1					
	(0.0009)	(0.6843)	(0.000)	(0.000)	(0.000)	(0.9207)	(0.1007)	(0.0072)	(0.2995)	(0.000)	(0.000)						
FD	0.1520*	0.1167*	0.1070*	0.1778*	-0.0442*	0.0182	-0.0896*	-0.0034	0.0502*	0.0474*	0.2605*	0.0618*	1				
	(0.000)	(0.000)	(0.000)	(0.000)	(0.0128)	(0.3065)	(0.000)	(0.8500)	(0.0047)	(0.0076)	(0.000)	(0.0005)					
RE	0.2412*	0.4714*	0.3546*	-0.1662*	-0.0115	-0.1092*	0.3067*	-0.0706*	0.0262	0.0430*	-0.0033	0.1059*	0.2129*	1			
	(0.0262)	(0.0077)	(0.0021)	(0.000)	(0.5164)	(0.000)	(0.000)	(0.0001)	(0.1412)	(0.0156)	(0.8533)	(0.000)	(0.000)				
PL	-0.0609*	0.0336	-0.1076*	-0.2199*	-0.0209	-0.1067*	0.3257*	-0.1550*	0.0147	0.0542*	0.0306	0.2154*	0.1896*	0.4999*	1		
	(0.0006)	(0.0589)	(0.000)	(0.000)	(0.2403)	(0.000)	(0.000)	(0.000)	(0.4076)	(0.0023)	(0.0849)	(0.000)	(0.000)	(0.000)			
CORR	-0.3339	0.3585*	-0.2842*	-0.1249*	-0.0620*	-0.1143*	0.3363*	-0.1333*	0.0227	0.0349*	0.0088	-0.1521*	-0.1458*	-0.3482*	-0.4604*	1	
	(0.0563)	(0.001)	(0.000)	(0.000)	(0.0005)	(0.000)	(0.000)	(0.000)	(0.2022)	(0.0498)	(0.6202)	(0.000)	(0.000)	(0.000)	(0.000)		
PR	0.2991*	0.2410*	0.1117*	-0.1508*	-0.0522*	-0.1270*	0.2398*	-0.0970*	0.0364*	0.0014	-0.0068	-0.1550*	0.2446*	0.4925*	0.5711*	-0.4513*	1
	(0.000)	(0.0211)	(0.000)	(0.000)	(0.0033)	(0.000)	(0.000)	(0.000)	(0.0405)	(0.9361)	(0.7000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	

Notes: See Table 1 for detailed definition of each variable. P-values are in parentheses. The "\*" denotes significance at the 5% level.



**Table V: Total debt Ratio**

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Debt <sub>t-1</sub>	0.536*** (61.230)	0.524*** (49.600)	0.519*** (46.740)	0.530*** (48.260)	0.520*** (47.720)	0.524*** (47.940)	0.522*** (48.610)
Size	6.713*** (18.800)	7.617*** (16.080)	7.192*** (13.910)	6.606*** (8.240)	7.685*** (14.040)	8.057*** (15.870)	7.151*** (14.510)
Tangibility	0.107*** (13.580)	0.107*** (10.060)	0.107*** (9.880)	0.108*** (10.080)	0.114*** (9.920)	0.106*** (9.720)	0.109*** (9.800)
Profitability	-0.161*** (-10.440)	-0.172*** (-10.450)	-0.170*** (-10.010)	-0.180*** (-10.670)	-0.168*** (-9.660)	-0.178*** (-10.730)	-0.172*** (-10.070)
Tax shield	-0.003*** (-24.510)	-0.003*** (-21.830)	-0.003*** (-21.320)	-0.003*** (-21.940)	-0.003*** (-22.040)	-0.003*** (-22.600)	-0.003*** (-21.920)
Distance from bankruptcy	-4.235*** (-18.250)	-4.129*** (-15.620)	-4.138*** (-15.230)	-4.111*** (-15.560)	-4.240*** (-15.620)	-4.262*** (-15.860)	-4.067*** (-15.490)
Liquidity	-0.061*** (-3.730)	-0.074*** (-3.530)	-0.064*** (-2.980)	-0.071*** (-3.390)	-0.066*** (-3.140)	-0.063*** (-2.990)	-0.066*** (-3.060)
Growth opportunity	-0.002*** (-4.910)	-0.002*** (-4.650)	-0.002*** (-4.500)	-0.002*** (-4.510)	-0.002*** (-4.760)	-0.002*** (-4.730)	-0.002*** (-4.530)
GDP growth	0.189*** (30.540)	0.131*** (9.980)	0.115*** (8.670)	0.116*** (7.290)	0.137*** (10.230)	0.132*** (9.830)	0.152*** (10.990)
Inflation	0.106*** (5.140)	0.133*** (5.420)	0.122*** (4.770)	0.151*** (5.820)	0.134*** (5.380)	0.145*** (5.830)	0.129*** (5.090)
Financial development		1.329*** (2.750)	1.394*** (2.868)	1.156** (2.360)	1.393*** (2.850)	1.240** (2.550)	1.329** (2.550)
Regulatory effectiveness		3.346** (1.910)	1.620*** (8.011)	1.563* (1.760)	2.858** (2.560)	4.291** (2.390)	3.414** (1.930)
Rule of Law		5.260*** (3.180)	4.580*** (-6.630)	5.764*** (3.340)	4.285*** (3.140)	4.112** (2.260)	5.776*** (3.470)
Corruption		-3.855*** (-3.360)	-6.630*** (-5.330)	-4.097*** (-3.420)	-3.597*** (-3.130)	-3.098*** (-2.680)	-4.797*** (-3.850)
Property rights		0.032 (0.760)	0.038 (0.910)	0.025 (0.580)	0.033 (0.780)	0.019 (0.450)	0.084 (0.380)
Financial development *Size			-1.713** (-2.840)				
Regulatory effectiveness*Size				2.506* (1.380)			
Rule of Law*Size					1.179** (1.970)		
Corruption*Size						-1.572 (-1.210)	
Property rights*Size							-0.155** (-2.370)
Constant	-14.37*** (-7.390)	-19.85*** (-6.450)	-18.02*** (-5.560)	-14.816*** (-3.380)	-15.212*** (-5.950)	-15.017*** (-6.590)	-15.662 (-4.290)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wald test	4.7e+8***	6.5e+8***	7.0e+8***	6.8e+8***	6.8e+8***	6.9e+8***	6.9e+8***
AR(2)	0.653	0.636	0.594	0.6419	0.6340	0.665	0.6362
Sargan test	46.518	42.044	39.852	38.723	39.520	39.419	41.848
Number of firms	546	546	546	546	546	546	546
Number of observations	4914	4914	4914	4914	4914	4914	4914

Notes: The table shows the dynamic panel-data regression results of total book-debt ratio. See Table 2 for detailed definition of each variable. The table reports the estimates from the two-step differenced DPD-GMM estimator advocated by Arellano and Bond (1998) with modification suggested by Windmeijer (2005) to correct the standard errors of the two-step GMM estimates for downward biased. Wald is a test statistics indicating goodness of fit of the regression, Sargan is a test statistics for overidentifying restrictions, AR(2) is a test statistics for second order autocorrelations. *t*-statistics are in parentheses. The \*, \*\*, and \*\*\* denote statistical significance at the 10, 5, and 1% level, respectively.

**Table VI: Long-term debt Ratio**

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Debt <sub>1</sub>	0.432*** (73.690)	0.443*** (59.040)	0.439*** (57.140)	0.443*** (58.830)	0.445*** (58.260)	0.444*** (58.190)	0.442*** (58.300)
Size	3.062*** (14.760)	2.007*** (7.610)	1.533*** (4.870)	2.245*** (4.800)	2.953*** (8.230)	2.559*** (8.570)	2.698*** (7.280)
Tangibility	0.148*** (15.030)	0.131*** (11.830)	0.133*** (12.090)	0.131*** (11.840)	0.134*** (11.600)	0.129*** (11.380)	0.128*** (10.990)
Profitability	-0.126*** (-10.970)	-0.134*** (-8.410)	-0.136*** (-8.550)	-0.135*** (-8.430)	-0.138*** (-8.050)	-0.137*** (-8.140)	-0.137*** (-8.410)
Tax shield	-0.003*** (-55.930)	-0.003*** (-56.030)	-0.003*** (-55.990)	-0.003*** (-56.030)	-0.003*** (-55.350)	-0.003*** (-56.560)	-0.003*** (-55.290)
Distance from bankruptcy	-3.830*** (-24.930)	-3.794*** (-15.930)	-3.731*** (-15.910)	-3.757*** (-15.250)	-3.897*** (-14.450)	-4.006*** (-15.400)	-3.781*** (-15.580)
Liquidity	0.083** (2.170)	0.082** (1.930)	0.086** (2.040)	0.077* (1.760)	0.091** (2.020)	0.113*** (2.520)	0.081** (1.850)
Growth opportunity	-0.001* (-1.700)	-0.000 (-0.450)	-0.000 (-0.290)	-0.000 (-0.430)	0.000 (0.000)	0.000 (-0.470)	0.000 (-0.580)
GDP growth	0.184*** (18.000)	0.199*** (9.310)	0.196*** (9.200)	0.199*** (9.320)	0.202*** (9.330)	0.195*** (8.830)	0.189*** (8.930)
Inflation	-0.098*** (-5.450)	-0.091*** (-4.430)	-0.097*** (-4.580)	-0.095*** (-4.400)	-0.089*** (-4.200)	-0.081*** (-3.840)	-0.090*** (-4.400)
Financial development		0.763** (2.340)	0.788** (2.260)	0.815** (2.410)	0.656** (1.960)	0.656** (1.820)	0.899** (2.540)
Regulatory effectiveness		2.231** (2.000)	1.967** (1.920)	1.530** (1.930)	1.850** (1.580)	1.255* (1.070)	1.320** (1.910)
Rule of Law		0.900 (1.080)	0.542 (0.690)	1.004 (1.190)	1.085** (2.240)	1.022** (2.460)	0.993** (2.120)
Corruption		-1.542** (-2.370)	-1.434** (-2.180)	-1.377** (-1.930)	-1.233** (-2.000)	-1.270** (-2.150)	-1.297*** (-2.810)
Property rights		0.290*** (10.240)	0.299*** (9.720)	0.287*** (10.060)	0.272*** (9.520)	0.305*** (10.580)	0.391*** (-9.030)
Financial development *Size			-1.276** (-2.000)				
Regulatory effectiveness*Size				-0.780 (-0.620)			
Rule of Law*Size					-3.130*** (-2.720)		
Corruption*Size						-2.477*** (-2.610)	
Property rights*Size							0.054 (1.020)
Constant	-11.451*** (-12.000)	-8.362*** (-4.260)	-11.238*** (-5.170)	-6.976** (-2.320)	-6.797** (-2.440)	-6.871** (-2.310)	-8.690** (-2.580)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wald test	35193.4***	43688.6***	42076.4***	43683.2***	43390.8***	43092.8***	42798.2***
AR(2)	1.163	1.125	1.120	1.133	1.196	1.174	1.131
Sargan test	195.315	190.803	188.093	190.453	192.682	190.133	190.653
Number of firms	546	546	546	546	546	546	546
Number of observations	4914	4914	4914	4914	4914	4914	4914

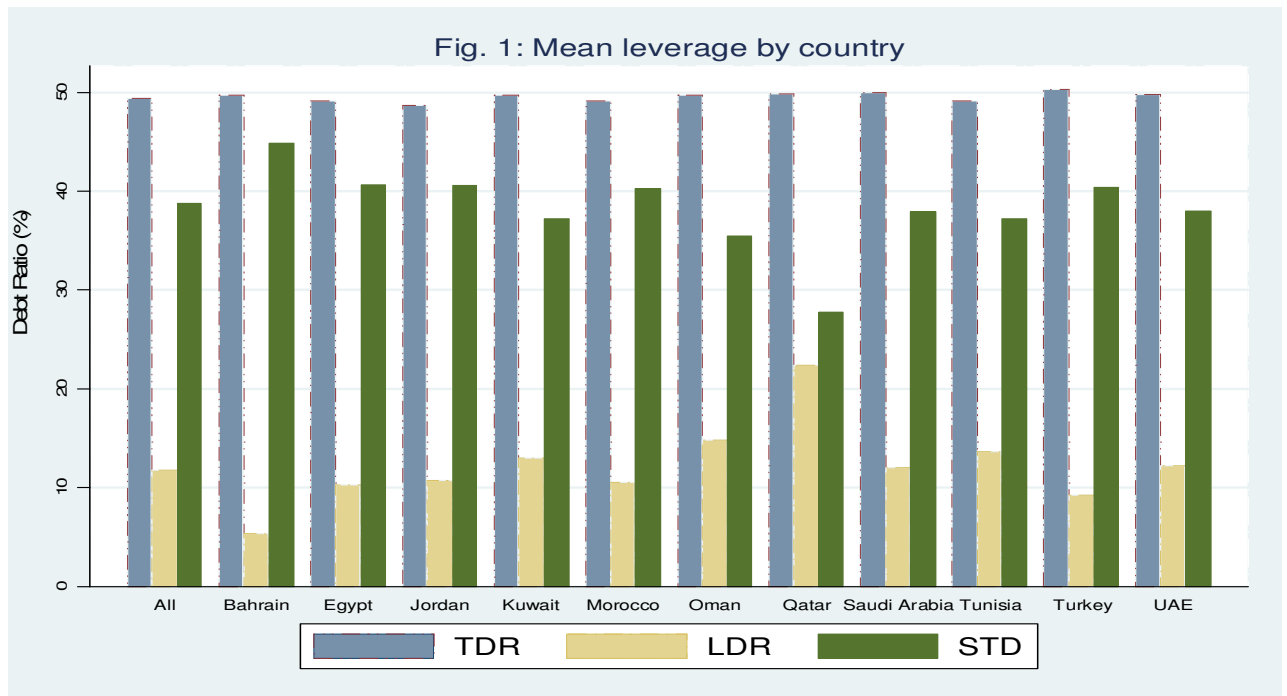
Notes: The table shows the dynamic panel-data regression results of short term book-debt ratio. See Table 2 for detailed definition of each variable. The table reports the estimates from the two-step differenced DPD-GMM estimator advocated by Arellano and Bond (1998) with modification suggested by Windmeijer (2005) to correct the standard errors of the two-step GMM estimates for downward biased. Wald is a test statistics indicating goodness of fit of the regression, Sargan is a test statistics for overidentifying restrictions, AR(2) is a test statistics for second order autocorrelations. *t*-statistics are in parentheses. The \*, \*\*, and \*\*\* denote statistical significance at the 10, 5, and 1% level, respectively.

**Table VII: Short term Book-debt Ratio**

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Debt <sub>t</sub>	0.424*** (25.950)	0.419*** (24.600)	0.417*** (23.890)	0.413*** (23.800)	0.407*** (23.080)	0.415*** (23.950)	0.418*** (24.180)
Size	3.073*** (8.630)	4.671*** (9.960)	4.258*** (8.590)	4.012*** (5.190)	2.746*** (4.930)	4.289*** (8.420)	4.503*** (6.260)
Tangibility	0.000 (0.020)	0.003 (0.240)	0.004 (0.290)	0.007 (0.510)	0.001 (0.080)	0.003 (0.200)	0.001 (0.110)
Profitability	-0.043*** (-2.820)	-0.078*** (-4.680)	-0.072*** (-4.200)	-0.073*** (-4.190)	-0.054*** (-2.890)	-0.075*** (-4.470)	-0.080*** (-4.690)
Tax shield	0.000 (-1.120)	0.000 (-1.330)	0.000 (-1.620)	0.000 (-1.620)	0.000 (-1.180)	0.000 (-1.580)	0.000 (-1.420)
Distance from bankruptcy	-1.532*** (-8.540)	-1.113*** (-6.170)	-1.153*** (-6.160)	-1.145*** (-6.280)	-1.221*** (-6.290)	-1.130*** (-6.200)	-1.109*** (-6.060)
Liquidity	-0.326*** (-15.390)	-0.353*** (-14.900)	-0.348*** (-14.410)	-0.357*** (-13.840)	-0.355*** (-14.660)	-0.351*** (-14.530)	-0.351*** (-14.340)
Growth opportunity	-0.003*** (-4.910)	-0.002*** (-4.110)	-0.002*** (-4.040)	-0.002*** (-4.100)	-0.003*** (-4.390)	-0.002*** (-4.170)	-0.002*** (-4.270)
GDP growth	-0.008 (-0.920)	-0.006 (-0.500)	-0.015 (-1.090)	-0.010 (-0.580)	-0.025 (-1.890)	-0.007 (-0.530)	0.004 (0.270)
Inflation	0.146*** (5.400)	0.108*** (3.920)	0.107*** (3.840)	0.097*** (3.320)	0.125*** (4.600)	0.108*** (3.890)	0.106*** (3.830)
Financial development		0.575 (1.380)	0.865* (1.790)	0.682 (1.520)	0.987** (2.240)	0.824** (1.870)	0.597 (1.410)
Regulatory effectiveness		2.144** (2.280)	1.976** (2.000)	1.731** (2.220)	1.763 (1.180)	2.690** (1.810)	2.392** (2.290)
Rule of Law		9.514*** (4.720)	10.675*** (5.160)	10.855*** (5.380)	9.742*** (3.800)	10.572*** (5.070)	9.749*** (4.740)
Corruption		-9.283*** (-6.270)	-10.674*** (-6.910)	-10.804*** (-7.220)	-9.763*** (-6.560)	-10.127*** (-3.090)	-9.540*** (-6.270)
Property rights		0.115*** (3.200)	0.117*** (3.250)	0.121*** (3.410)	0.113*** (3.210)	0.120*** (3.360)	0.121*** (3.070)
Financial development *Size			-1.375 (-1.620)				
Regulatory effectiveness*Size							
Rule of Law*Size				-3.076** (-1.970)	-7.954*** (-4.240)		
Corruption*Size						2.372* (1.790)	
Property rights*Size							-0.038 (-0.670)
Constant	-7.949*** (-2.800)	-9.280*** (-2.920)	-7.253** (-2.180)	-6.504** (-1.930)	-6.966** (-2.270)	-7.611** (-2.260)	-7.127** (-2.250)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Wald test	4.1e+7***	4.4e+7***	4.4e+7***	5.5e+7***	4.7e+7***	4.6e+7***	5.4e+7***
AR(2)	1.048	1.065	1.028	1.054	1.058	1.065	1.068
Sargan test	142.428	129.270	128.024	127.868	123.811	128.155	129.477
Number of firms	546	546	546	546	546	546	546
Number of observations	4914	4914	4914	4914	4914	4914	4914

Notes: The table shows the dynamic panel-data regression results of short term book-debt ratio. See Table 2 for detailed definition of each variable. The table reports the estimates from the two-step differenced DPD-GMM estimator advocated by Arellano and Bond (1998) with modification suggested by Windmeijer (2005) to correct the standard errors of the two-step GMM estimates for downward biased. Wald is a test statistics indicating goodness of fit of the regression, Sargan is a test statistics for overidentifying restrictions, AR(2) is a test statistics for second order autocorrelations. *t*-statistics are in parentheses. The \*, \*\*, and \*\*\* denote statistical significance at the 10, 5, and 1% level, respectively.

**Figure 1: Mean leverage by country**



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