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A Model To Examine The Influence of Risks On Capital Structure

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ABSTRACT

This study examines the influence of risks on capital structure decision across different countries and economic sectors from 2005 to 2015 in Egypt, Turkey, Brazil and Argentina.

Classification of selected variables in a combined setup as core risk factors in capital structure decision; was driven by increased application of internal credit ratings by banks for both existing and potential clients to estimate probability of default over specific time horizon. Leverage level for corporations is an outcome of borrower – bank relationship based on aggregated valuation procedure whereby internal credit rating represents the basis for loan approval, pricing, monitoring and loan loss provisioning. Internal credit ratings is based on a mix of both financial / quantitative factors and non-financial / qualitative factors. This study focused on key financial (firm-specific) factors and in a broader sense on macroeconomic variables with validated quantification measures; whereby their combined use rather than their single use, allow for more accurate prediction for risk of default and hence capital structure decision. The book leverage sensitivity to explanatory variables (profitability, firm size, tangibility, volatility, GDP growth, inflation and stock market development) was examined using different estimation methods. Profitability was the only variable consistently highly significant with negative coefficient obtained in our regressions for four countries and economic sectors studied. Inconsistency of results for other variables prevailed. Estimation methods used are: Ordinary Least Squares (OLS), Fixed Effect (FE) and System Generalized Method of Moments (System GMM).

Findings reveal that Egyptian firms on average are not highly leveraged due to supply constraints on bank lending and demand constraints on consumer borrowing. The empirical evidence seems reasonably consistent with some versions of capital structure theory and other studies.

Key words: Capital structure, firm-specific factors, country-specific factors, Ordinary Least Squares (OLS), Fixed Effect (FE), Generalized Method of Moments (System GMM).

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Chapter 1

INTRODUCTION

In pursuit of maximizing firm value, financial managers are charged with two main responsibilities: investment decisions & capital structure choices (Watson and Head 2010). In finance one of the most debatable topics is capital structure (Mostarac 2013). Capital structure decisions are critical for the financial soundness of the firm. Financial distress, liquidation and bankruptcy are the ultimate drawbacks that could materialize if wrong judgment occurred during financing decision of the firm's activity. Operating in a highly uncertain world makes it extremely difficult for any firm to achieve optimal capital structure (Al-Shubiri 2011). "Despite the fact that many researchers have devoted tremendous effort in understanding firms' financing policies & hence realizing optimal capital structure; this is still a cloudy area & highly debatable with no specific guidelines in attaining best mixture of debt and equity" (Al-Shubiri 2011). Most of the academics and practitioners agree that firms work towards achieving a "target" capital structure, which could differ from one company to another and within an industry (Iqbal 2013).

Capital structure theory being the most controversial area of the financial management dates back to more than 50 years with Modigliani and Miller's (M&M) theory (1958). Since Modigliani and Miller's theory, there have been number of theories attempting to explain the mix of debt and equity used by companies to finance their business activities, like the trade-off theory, agency theory, signaling theory, pecking order theory and market timing theory. "They all differ in their relative emphasis on the key factors affecting the capital structure choice" (Mostarac 2013). Hence, corporate capital structure remains a puzzle (Myers, 1984).

Studying capital structure decision in transition market like Egypt, along with conducting cross-country analysis with other countries that are one step ahead in terms of economic development; is of great importance to managers, owners, lenders and policy-makers. Capital structure is dynamic and depends on condition of the economy. Researcher uses the most recent available data for listed firms of countries under study; in an attempt to analyze the relationship between leverage and its explanatory risk factors / explanatory variables (both internal and external).

Modigliani and Miller (1958) classic theory was the drive for many other theories and debates on capital structure decisions. Irrelevance of capital structure in determining firm value and its future performance under the assumption of perfect and efficient capital market was proved in MM's first proposition. Given undebatable existence of corporate tax and market imperfection, MM's relaxed second proposition was introduced in 1963; whereby impact of taxation was accounted for. In other words, inevitable presence of corporate tax signifies the fact that capital structure decision is relevant. Subsequently, trade-off theory by Modigliani and Miller was introduced in 1966 emphasizing on taxes. Firms trade-off between the benefit of tax deductibility of interest referred to as debt tax shields and costs of financial distress. This involves balancing between marginal benefit of debt generated from tax deductions and marginal cost of borrowing. This entails that borrowing limit is reached at a point when marginal cost of borrowing exceeds marginal benefits of tax deduction; this in turn implies that highly leveraged firm has lower flexibility in financing / capital structure choice to avoid financial distress. Since Modigliani and Miller, several other theories emerged to explain the mix between debt and equity used by corporations to finance their business activities. These theories as will be presented below are driven by three core

economic problems / incentives namely; taxes, information and agency costs (Myers, 2001).

Jensen and Meckling (1976) presented “agency theory” which arose from the fact that realized benefit of tax shield from borrowing is not free of costs & specifically bankruptcy and agency costs resulting from debt financing. Focusing on agency costs, Jensen and Meckling associates this possible cost to primarily, conflict of relationships between managers and shareholders & secondarily, those conflicts between debt holders and shareholders. Primarily form of conflict arises from the fact that managers will act in their own economic self-interest. Aligning shareholders and managers’ objectives can never be fully realized; even upon implementing diversified devices such as share ownership for managers, improving compensation scheme,...etc. This is attributable to the fact that managers (agents) have first-hand access to information and strive to maximize their own gains using company resources; while minimizing effort directed to the best interests of their principals / shareholders. Secondarily, form of conflict between debt holders and shareholders arise when there is risk of default. “If debt is totally free of default risk debtholders have no interest in the income, value or risk of the firm (Myers, 2001). This form of conflict would materialize when shareholders / owners utilize borrowed funds from debt holders in riskier projects. This is referred to by Jensen and Meckling (1976) as “risk-shifting”; whereby higher risk increases the “upside” for stockholders and “downside” is absorbed by debt holders.

Ross (1977) “signaling theory” was built on information asymmetry originally developed by Jensen and Meckling (1976). Managers striving to maximize their own gains is the key driver for signaling theory that affects firm’s financing decision process. “Signal” is referred to as the piece of private information delivered by managers / insiders to the public / outsiders. Delivered information

doesn't necessarily include full picture of information accessible to managers / insiders. Hence, resulting in having the public / outsiders accessing limited information (whether positive or negative), which would hinder their ability in grasping equal benefits / gains like managers / insiders.

Myers and Majluf (1984) and Myers (1984) "pecking order theory" was also built on costs of adverse selection that results from information asymmetry between better-informed managers and less-informed investors. Such costs occur only in case of equity financing / issuing securities and are lower in case of debt. Target debt ratio under this theory does not exist and emphasis in capital choices depend on their costs. Capital choices / sources of funds are: retained earnings, debt and equity. Focusing on costs of adverse selection, equity has the highest and most serious adverse selection, followed by debt and finally retained earnings being the safest that avoids this problem (Frank and Goyal, 2009). As such, when the requirement of external financing arises, the firm will work down the pecking order, from the safest namely retained earnings, then firm would prefer debt to equity. Hence, pecking order theory explains why debt presents bulk of external financing; along with illustrating why borrowing is less for more profitable firms. Given non-existence of optimal debt level under pecking order theory, key driver behind less borrowing for more profitable firms is attributed to higher accessibility for internal financing and not due to having a low target debt ratio. This implies rejection of pecking order theory advocates to the target capital structure proposed earlier by Modigliani and Miller (1966).

Baker and Wurgler (2002) "market timing theory" emphasizes significance to time the market, whereby equity market timing affects capital structure. Main findings of this theory is that low leverage firms are those that issued equity when their market valuations were high, as measured by market-to-book ratio &

when market conditions are unfavorable with low market value, firms will refrain from issuing equity and instead will repurchase equity at low prices. Approach of market timing theory is more sophisticated than previously presented theories. It places no emphasis on neither optimal capital structure nor costs of adverse selection that results from information asymmetry; as sequentially proposed by trade-off theory and the pecking order theory.

1.1 Motivation

The previous section presented an overview on the cumulative development of capital structure theories, confirming importance of studying capital structure decisions. In addition, complex nature of the issue being studied in terms of expected dynamic and interactive relationships between different risk factors / variables; further validates significance of this study. Background on capital structure decisions are mostly based on developed economies with homogeneous institutional structures (Booth et al., 2001). International studies comparing differences in the capital structure between countries reinforced that conventional theories work well in similar economies with developed legal environment and high level of economic development (Jong, 2008). A remarkable number of studies were conducted on developed economies, as well as a considerable number of studies though with less intensity were conducted on developing countries. Findings prevail two-sided argument, with similarities in effect of firm-specific factors on capital structure decision on one hand, irrespective of level of economic development, and variation on the other hand based on country-specific factors reflecting differences in institutional factors. Examples of remarkable studies on international capital structure were those conducted by Rajan and Zingales (1995), Demirguc-kunt and Maksimovic (1996), Graham and Harvey (2001), Booth et al. (2001), Bancel and Mittoo (2004) and Deesomsak et al. (2004). Cross-country studies allow comparison

between countries of different institutional factors and hence allowing examination of how different risk factors (both internal and external) can inhibit or promote accessibility to financing sources (internal or external); which is deemed necessary for economic advancement.

Global competitiveness report (2014-2015) highlighted that in most countries under study (140 countries) access to finance was the most problematic factor in doing business between 2014 and 2015 which certainly has negative implications on economic growth potential. Global competitiveness report includes statistical data from internationally recognized agencies, notably the International Monetary Fund (IMF), the United Nations Educational, Scientific and Cultural Organization, and the World Health Organization. It also includes data from World's Economic Forum's annual Executive Opinion Survey to capture concepts that require a more qualitative assessment or for which comprehensive and internationally comparable statistical data are not available.

For transition economies like Egypt with vast challenges for economic development, cross-country comparison with countries that are one-step ahead in economic development would help draw lessons from more developed institutions and examine their applicability. This is particularly important given that Egypt witnessed different stages of economic development. The 2005-2011 period witnessed a growth period followed with stagnation during the Arab Spring period and its aftermath (2011-2015). Lately the country has witnessed an awakening which was an outcome for several reforms namely; reduction of energy subsidies, tax reform, strengthened business environment, as well as greater political stability after years of turmoil. To ensure sustainability of advancement in Egyptian economy, it is important to study how capital structure decisions vary with the change in economic conditions. Drawing lessons from higher ranked countries like ones selected in this study; along with

examining applicability to Egyptian companies aims at achieving the capital structure that would minimize cost of capital and hence, maximize firm value depending on its level of development.

This study utilizes the most recent available data (11 years starting 2005 till 2015) compiled by Thomson Reuters Data Stream that provides financial information on small, large, public, private, manufacturing as well as non-manufacturing listed non-financial firms in Egypt and other 3 selected countries for cross-country analysis; namely Turkey, Brazil & Argentina. Having a comprehensive dataset in terms of firms' types and industries is more representative of the universe of Egyptian non-financial firms and same applies for other three countries under comparison. Comparison to be done both on an aggregate country level and on a more specific economic sector level; using Thomson Reuters classification criteria. Risk factors / variables used in this study represent the key capital structure determinants which are commonly used in other empirical analysis.

During period under study Egypt faced revolution in 2011, as such its significance in affecting studied relationships between independent variables (both internal & external) and leverage is accounted for as a dummy variable. Variations in economic conditions is inevitable for any country. This does not preclude the need for the core country of this study (Egypt) to learn from the experience of other countries with slightly higher economic development.

Recession created by Egyptian revolution, is traditionally defined as a decline in real gross domestic product for two or more successive quarters of a year (Cook and Tang 2008), a slowdown in economic activities is recognized. It generates some variations in the value and dynamic future cash flows that can easily lead to major financial problems. As volatility of earnings increases, so the debt tax advantages are diminished, if even exists. The downturn in profitability is also