# Firm, Industry and Country Level Determinants of Capital Structure: Evidence from Jordan

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**ABSTRACT**

This paper investigates the effect of firm and country factors on firms' leverage within the context of the Pecking Order and Trade Off theories. We use the fixed effects model over 15 years on firms listed in the Amman Stock Exchange in Jordan to determine the factors that influence short-term, long-term, and total liabilities. Results reveal that Jordanian firms prefer short to long- term debt. Size, growth, and risk affect firm trading- off between debt benefits and costs. Bank concentration and financial freedom have effect on firm's leverage. Corruption, inflation, and financial market development created opportunity to firms to increase and benefit from leverage. The internal nature of firms seems to reduce agency problems and refinancing risk which provides better access to external debt. This is the first study that explains the financial behavior of firms within macroeconomic variables through extended period, and distinguishes between industrial and services sectors.

**Keywords:** Trade-off Theory, Pecking Order Theory, Capital Structure, Panel Data Analysis, Country Specific Factors
**JEL Classifications:** M410, M480

## 1. INTRODUCTION

Since the irrelevance theory of Modigliani and Miller (1958) literature has examined its reliability. Other theories have evolved such as the trade-off, and the Pecking-Order, in explaining the relevance of capital structure from its perspective.

The trade-off theory (TOT) examines the trading between benefits of the tax-shield (TS) and cost of financial distress. A corporation will reach its optimal capital structure when benefit of TS is extended to offset the cost of financial distress (Modigliani and Miller, 1963). The pecking order theory first suggested by Donaldson in 1961 stated that companies prioritize their sources of financing (from internal financing to equity) according to the cost of financing, preferring to raise equity as a means of financing only as a last resort. This theory was later modified by Myers and Maljuf in 1984 suggesting that as a first choice firms will use internal funds first, and when this source is depleted, debt is issued to a point were debt is no longer sensible, only then will firms issue equity. Firms tend to rely on this strategy mainly because of the effect asymmetric information has on capital structure choice, with internal financing having

the lowest effect and equity the highest. Other researcher consequently suggested that the conflict which arises between shareholders and managers as a result of asymmetric information can be reduced namely by increasing debt and by decreasing the free cash flow (Jensen, 1986; Frank and Goyal, 2009). Furthermore, according to Baker and Wurgler (2002) examining market timing and its effect on capital structure suggested that a firm's capital structure is determined by the accumulation of past financing decisions. Specifically, a firm would issue new stock when the share is overvalued and repurchase the stock when the share is undervalued.

Researches[1] have examined the factors that affect the capital structure of companies and concluded that firm-specific factors as well as country-specific factors have this effect (De Jong et al., 2008; Gungoraydinogluc and Öztekin, 2011) like the economic, political, judicial and financial systems.

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1    Rajan and Zingales, 1995; Demirguc-Kunt and Maksimovic, 1999; Booth et al., 2001; Claessens et al., 2001; Song and Philippatos, 2004; Hall et al., 2004; Bancel and Mittoo, 2004; Brounen et al., 2006; Gungoraydinogluc & Öztekin, 2011; Kayo & Kimura, 2011.

This study aims at examining if the trade-off and pecking-order theories of capital structure are applicable on the non-financial firms listed in Jordan market. The study includes firm-specific factors such as firm size, asset tangibility, business risk, liquidity, current and past profitability, agency cost, non-debt TS (NDTS), TS and growth. Besides, the study incorporates a number of country-specific variables in the analysis, including inflation rate, economic growth, bank concentration, financial freedom, perceived level of corruption, and stock market development. There is still a gap in the literature of the capital structure of Jordan in terms of investigating the impact of macroeconomic variables, institutional environment, financial sector development, and some other firm specific variables (Memon et al. 2015). This study shall add to improve the understanding of capital structure choice in firms of developing countries. The findings of this study and those of other research papers will be relevant as evidence of the capital structure in Jordanian firms. Although there have been few studies attempted on Jordanian industrial companies[2], there are no studies, to our knowledge, that examine the Jordanian market for an extended period. This paper will therefore contribute to the existing body of knowledge about the economy of Jordan, by testing traditional theories of capital structure and their applicability on the sample firms in the years between 2003 and 2016.

Results find that Jordanian listed firms have their deviated their capital structures towards increasing short-term debt rather than long-term debt. This comes as a result of internal and external factors. Creditors seem to be reluctant to provide longer term debt to firms but only under certain levels of the firm specific factors like profitability, liquidity and size. Moreover, country- specific factors too seem to have their shades on the firm's ability to increase their external financing, with more emphasis to the role of certain factors like inflation and corruption.

The remainder of the paper is organized as follows. Section 2 presents the theoretical framework, section 3 describes the methodology and variables of the research. A discussion of the empirical result and the analysis is section 4, with detailed analysis of the industry effect discussed in section 5, and finally section 6 concludes and suggests implications to policy makers.

## 2. THEORETICAL FRAMEWORK AND LITERATURE

The proposition of Modigliani and Miller (1958) that suggests that the value of the firm is not affected by its capital structure has spur many researches afterwards about what determines the choice of firm's capital structure (De Jong et al., 2008; Jõeveer, 2013; Kayo and Kimura, 2011, Gaud et al., 2005; Fischer et al., 1989). Consequence, alternative theories emerged, like the TOT and the pecking-order theory (POT). The TOT concludes that a firm's choice of capital structure as it trades off between the benefits of debt (TS) and its costs (financial distress and bankruptcy costs) (Modigliani and Miller, 1963; Miller, 1977). Companies increase

more debt to use the costs associated to it as TSs, which will increase the value of the firm (Antoniou et al., 2008; Frank and Goyal, 2009). Some empirical studies find the relation between leverage and interest TS either relatively weak (Rajan and Zingales, 1995), while other study finds it significant positive/negative with short-term/long-term debt (Sheikh and Qureshi, 2014). Measuring the TS variable as tax payments divided by Pre-tax earnings[3] (Ahsan et al., 2016). This measure is further enhanced by the use of Altman's Z-score in representing the probability of bankruptcy (Dhaliwal et al., 2006; Gomariz and Ballesta, 2014). De Jong et al. (2008) classified the tax rate as being a firm-specific determinant of capital structure. However, according to Gungoraydinogluc and Öztekin (2011), they asserted that, in particular, institutional factors influence taxes and therefore drive most of the country heterogeneity in capital structure.

With regards to NDTS, it can be considered as a substitute for the tax benefits of credit financing because it includes depreciation and investment tax credit. The TOT predicts that large NDTS will derive the company to issue less debt (DeAngelo and Masulis, 1980; Ozkan, 2001). Nevertheless, NDTS indicates how much a company has of securable assets which leads to higher leverage ratio (Delcoure, 2007); indicating a positive relationship in transitional economies. Therefore, the measure employed for NDTS is annual depreciation divided by total assets.

The POT of Myers and Majluf (1984) was initially observed around the financing practices of large publicly traded firms in the notion that debt is by far the best source of external financing for many businesses. Companies would follow a predefined financial hierarchy to finance investments, starting with internal resources and then issuing debt and convertibles and finally issuing equity (Gaud et al., 2005). The theory argues that because asymmetric information, inherent in such practices, leads to agency conflict. As for the measure of agency cost (AC), this study follows previous studies suggestions of either using the expense ratio, measured as operating expenses divided by sales (used in this study), or the asset utilization measure[4]. Accordingly, we opt for a direct relationship between leverage and management-equity conflict. Qureshi et al. (2012) support this relationship by also finding a positive relationship, whereas Ahsan et al. (2016) find an inverse relationship between management-equity conflict and short-term leverage.

Agency conflict has a tendency to occur when bond-holders have expectation about the riskiness of projects firms invest in. Since equity-holders are essentially limited in term of their liability, they are virtually immune to highly risky project investments, which in many cases is not favorable from a bond-holder's perspective. Equity-holders would reap the benefits while bond-holder's bear the cost of failure (Jensen and Meckling, 1976). This volatility in earnings have been used to measure business risk (Delcoure, 2007; Al-Najjar and Taylor, 2008). The TOT notes that higher volatility indicates higher risk in a corporation, creditors will demand higher interest rates the riskier the projects, and firms

2    Omet and Nobanee, 2001; Al khasawneh, 2006; Zeitun and Tian, 2007; Kharawish, 2008; Al-Najjar, 2011; Al Shaher, 2012; Soumadi and Hayajneh, 2012; Yusuf et al, 2015.

3    Studies have also used the measure of tax payments divided by earnings to represent tax-shield variables.
4    Sales divided by total assets.

with limited liability tend to take on projects with higher risk. Therefore, a firm's optimal debt level should be negatively related to earnings volatility (Pandey, 2001; Titman and Wessels, 1988)[5]. Chen and Strange (2005) however, indicate a positive relationship between leverage and business risk. Considering the nature of firms in Jordan, this study predicts a positive relationship between leverage in all its maturities and firms' business risk. This study measures business risk (RISK) as the percentage change in net profit before tax divided by total assets.

Also the fact that equity-holders make more profit from risky projects revolves around the firm's potential for growth. Empirically, a good proxy to use as a measure of growth (GROW) is the percentage change in total assets, which this study adopts. Growing firms have more opportunities to invest in highly risky projects at the cost of debt-holders therefore a positive relationship between the firm's growth and the opportunity to invest in risky projects is expected, meaning also a direct relationship with leverage (Jensen and Meckling, 1976; Myers, 1977). This direct relationship between leverage and growth was found to be significant by Bayrakdaroğlu et al. (2013) in Turkey, positive but insignificant in China (Chen and Strange, 2005). On the other hand, it was negative relation for Pakistan (Qureshi et al., 2012) and for transitional economies (Delcoure, 2007). The agency theory predicts a negative relationship between growth opportunities and leverage. Growing firms keep leverage low so they will not give up profitable investments because of the wealth transfer from shareholders to creditors.

The types of assets that a firm possesses has also been examined as a contributing factor in the determination of the debt-to-equity ratio. Measuring tangibility of assets (collateral value) adopted in this study uses gross fixed assets at cost divided by total assets (TANG). Namely if a firm retains larger investments in land, equipment and other tangible assets, it will have less costs of financial distress than a firm that relies on intangible assets. So several researchers suggested that firms with more tangible assets should issue more debt (Titman and Wessels, 1988; Rajan and Zingales, 1995; Booth et al., 2001; Antoniou et al., 2008; Buferna et al., 2005; Khrawish and Kraiwesh, 2010). The POT predicts that tangible assets encourage a higher leverage because they are easy to collateralize, their value is less subject to information asymmetries and retain more value in liquidation (Myers and Majluf, 1984; Rajan and Zingales, 1995; Pandey, 2001; Fernández and Aplicada, 2005). The TOT too predicts a positive relationship between leverage and tangible assets, because tangible assets represent a guarantee of repayment for creditors (Harris and Raviv, 1990; Shah and Khan, 2007; Teker et al., 2009). This is relatively easier for firms in developed countries. In developing countries however, tangible assets provide poor collateral due to poor governance and an inefficient legal system (Ahsan et al., 2016). Based on this argument, it is expected that asset tangibility will be positively related to debt in a total sense and long-term debt in particular, but this relation is expected to be negative with short-term leverage.

Large firms are considered less risky by creditors because they have more stable cash flows from diversified tangible assets

portfolios. Empirical studies measure firm size (SIZE) as natural logarithm of total assets, as employed in this study. Consequently, positive relationship is expected between size and leverage. Previous studies reported such a positive relationship (Ozkan, 2001; Gaud et al., 2005; Daskalakis and Psillaki, 2008; Mazhar and Nasr, 2010; Kayo and Kimura, 2011; Katagiri, 2014); while others reported a negative relation (Rajan and Zingales, 1995).

According to the POT, more profitability and liquidity provides the company with high supply of internal financing, and though decreases the need for debt. This in turn creates a negative relation between leverage and liquidity (Myers and Majluf, 1984) and between leverage and current as well as past profitability (Fama and French, 2002). Recent studies measure profitability in term of return on assets (Bokpin, 2009; Bayrakdaroğlu et al., 2013; Ganguli, 2013); return on equity (Al-Najjar and Taylor, 2008; Bokpin, 2009); or even as profit/income divided by sales (Mazur, 2007; Sheikh and Qureshi, 2014). Following the work of Ahsan et al. (2016), this study measures current profitability (CPROF) as net profit before tax divided by sales and past profitability (PPROF) as retained earnings divided by total assets. As for liquidity (LIQ), the traditional measure of current assets divided by current liabilities is used. The TOT predicts an opposite relation. Profitability should increase a company's debt to benefit from the TS. Many results support the pecking-order hypothesis (Rajan and Zingales, 1995; Ozkan, 2001; Gaud et al., 2005; Omet, 2006; Supanvanij, 2006; Mitton, 2008; Shah and Khan, 2007; De Jong et al., 2008). In this case is also expected to follow the POT to find negative relationships with all measures of leverage against profitability. The relation between liquidity and short-term debt favors a negative relationship while in the long-term a positive relationship.

Furthermore, many studies[6] examined the determinants of capital structure choice in light of internal and external 'country-specific' factors including the economic, political, judicial and financial system (Demiguc-Kunt and Maksimovic, 1999; Claessens et al., 2002(1); Bancel and Mittoo, 2004; Daskalakis and Psillaki, 2008). Others included the government and central bank decisions that help stabilize an economy, spur growth, and increase investment (Kayo and Kimura, 2011; and Karadagli, 2012). Moreover, studies found that, despite institutional and cultural differences among countries, the relationship between external determinants and capital structure seen in developed countries could also be observed in emerging ones. There were robust and significant findings showing that macroeconomic factors, such as the economic growth rate, the inflation rate, financial market development and government policies, did indeed influence the capital structure in developed as well as emerging countries (Booth et al., 2001).

Real gross domestic product (GDP) increase leverage because a higher GDP spurs investment opportunities in a country (Beck

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5   Qureshi et al. (2012); and Delcoure (2007) for transitional economies.

6   To name a few: Rajan and Zingales, 1995; Demirgü̈c-Kunt and Maksimovic, 1999; Booth et al., 2001; Graham and Harvey, 2001; Bancel and Mittoo, 2004; Song and Philippatos, 2004, Brounen et al., 2006; De Jong et al., 2008; Gungoraydinogluc and Öztekin, 2011; Kayo and Kimura, 2011.

et al., 2008; De Jong et al., 2008; Chipeta and Mbululu, 2013; Muthama et al., 2013; and Tomschik, 2015). A plausible proxy for this study to measure economic growth in the case of Jordan is the annual growth rate GDP (GDPG). Accordingly, growth firms are more likely to need external financing and in light of the TOT, profitable firms can borrow on lower interest rates. Moreover, the POT stipulated that firms prefer retained earnings as a first choice, therefore, a negative or inverse relation between profitability and leverage and in turn between economic growth and leverage is expected. Bokpin (2009) and Kayo and Kimura (2011) for instance found such a negative relationship, whereas a positive relationship is shown by De Jong et al. (2008) favoring the TOT. This study hypothesize that Real GDP growth rate is negatively related to leverage. Previous studies have found mixed results about the effect of inflation on capital structure. Frank and Goyal (2009) and Jõeveer (2013) for instance find that high inflation rates increase volatility of a firm's cost/price structure and in turn revenues as a result of increasing prices; and that in turn increases debt as companies find it easier to repay the obligations of new debt. This favors the TOT because of the direct relation between leverage and interest TS. On the other hand, an increase in inflation (especially unanticipated inflation) may have a negative effect on economic demand and that increases the volatility of firm revenue and consequently increases business risk, the probability of insolvency. As a result, firms tend to decrease their leverage in periods of uncertain inflation (Beck et al., 2008; Muthama et al., 2013). For the purpose of this study, inflation (INF) will be measured as the annual inflation rate (consumer prices) and expects a negative relationship between inflation and leverage.

Pioneering empirical work was first performed by Demirguc-Kunt and Maksimovic (1999) in which they analyzed the effects of stock market development on firms' financing choices. De Jong et al. (2008), Sett and Sarkhel (2010) and Kayo and Kimura (2011) found that stock market development increases a firm preference to issue equity rather than debt. This preference is justified by the market timing theory as the decision to finance through debt or equity is dependent on whether the stock market is undervalued or overvalued. Because stock markets provide means of diversifying risk, mitigate conflicts of interest among different creditors, and improve information flow and corporate governance, equity and debt financing are, in general, not perfect substitutes for each other. This is especially true in countries with developing stock markets (Demirguc-Kunt and Maksimovic, 1999). As a result of the different attributes of debt and equity, the development of markets that facilitate the issuance and trade of equity should be reflected in the financing decisions of individual firms. Accordingly, due to the conflicts of interest that may arise between different stakeholders in the firm equity financing, stock markets may play a key role in the management of such conflicts (Padachi and Seetanah, 2007).

It is assumed that if the stock market is undervalued a company would be more willing to issue equity in comparison to debt, as the value of equity would be relatively lower (Tomschik, 2015). Taking all the countries in the sample together, Demirguc-Kunt and Maksimovic (1999) found that there was a statistically significant negative correlation between stock market development, as measured by market capitalization to GDP, and the ratios of both long-term and short-term debt to total equity of firms. Giannetti (2003) also examined how firms" characteristics, legal rules and financial development affect financing decisions for firms. Using data on companies in 26 European countries for the period 1993–1997, she showed that firms are more leveraged in countries where the stock market is less developed. Moreover, the author also reported that unlisted firms appear to be more indebted than listed companies even after controlling for firms' characteristics such as profitability, size and the ability to provide collateral. Agarwal and Mohtadi (2004) empirically explored the effects of financial market development on the financing choice of firms for a sample of 21 emerging markets from 1980 to 1997. They reported that stock market development was significantly and negatively associated with the firms' debt levels relative to their equity position. Furthermore, considering the ownership structure of Jordanian firms (Yusuf et al., 2015), there is a plausible reason why such a relationship should also to be negative (Wen et al., 2002). In particular, firms with a higher market value of equity and with higher representation of non-executive directors would be forced to seek lower financial leverage (Hasan et al., 2009). Therefore, for the purpose of this study, an indirect relation between stock market development and leverage, total and long-term is expected. According to Antoniou et al. (2008), De Jong et al. (2008), Delcoure (2007) and Kayo and Kimura (2011) stock market development (SMD$_{it}$) can be measured by looking at the ratio of stock market capitalization to GDP and is used as a proxy for this study.

There are two different theories which explain the impact of banking sector concentration on firm leverage. Market power theory (Carbó-Valverde et al., 2009), the first of the two, states that the increase of industry concentration is related to a reduction of competition and to greater inefficiencies in markets without information asymmetries. This means that if the financial market (credit) becomes inefficient, firms will tend to ration the credits, in other words demand for leverage declines, which will impede growth. In addition, as Black and Strahan (2002) have shown, fewer enterprises are established in a concentrated banking market. This was suggested by Jõeveer (2013) who claimed that higher bank concentration would increase the cost of debt as it decreases competition. However, the results of that study revealed a positive relationship between bank concentration and leverage. The second theory, the relationship lending (or information-based) theory, that higher concentration in the banking market translates into a reduction of information asymmetries and hence into a reduction of credit rationing (Stiglitz and Weiss, 1981; Hake, 2012). Jappelli and Pagano (2002) go on to suggest that higher bank concentration could make banks more efficient because the standards of information sharing improve in parallel with concentration. Abadi et al. (2016) also find a positive and significant relationship between banking concentration and firm leverage. This result follows the information-based theory which suggests that as bank concentration increases, there are less obstacles holding back firm financing through leverage. Brown et al. (2011) perform analysis based survey for 24 transition countries and find that the more developed the information sharing standards between the banks are, the more the costs of investment financing decline, and the fewer obstacles there are to

investment financing. In a cross-industry and cross-country study (including both developed and developing countries), Cetorelli and Gambera (2001) generally confirm the positive effect of banking sector competition on corporate credit growth but also find that fast-growing industries tend to benefit more from a concentrated bank sector because of enhanced relationship lending. The study measures bank concentration (BC) as the bank capital to assets ratio, and expect that bank concentration would decrease leverage.

According to the agency cost theory, Jensen and Meckling (1976) claimed that it deals with the problems that can emerge because of a separation of control and ownership, and can be used to examine levels of corruption. Essentially there are three main agency problem which may arise, namely those between executives and shareholders; between majority and minority shareholders; and between bondholders and shareholders. This first assumes asymmetric information in which agents and principals have varying amounts of information and different targets with respect to the assets and the company's on-going day-to-day operations. The second type lead to abuses of power and free riding problems which lead an increase in agency costs, while the third type of agency conflict stipulates the specific situations in which creditors and owners pursue different goals in order to maximize their own value (Tomschik, 2015). Studies have indicated to a relationship between debt levels and those of corruption. Hanousek and Shamshur (2011) find a negative although insignificant relationship for their sample of listed companies. Jõeveer (2013) also find a negative correlation but significant. Accordingly, it is expected that lower levels of asymmetric information will occur with the decline in levels of corruption as depicted by both the pecking-order and agency theories, and will lead to an increased use of internal funds rather than the external financing. Fan and Twite (2012) concluded that in countries with more corruption, debt levels as a total would increase, while in the long-term will decrease. This is a plausible outcome as shareholders may grant the use of additional debt since this would limit the funds available to executives that allow them to pursue personal agendas and, moreover, ties them to a repayment obligation (Kayo and Kimura, 2011). Therefore, we use the 'Corruption Perception Index' to measure the corruption level for this study, it is expected that debt levels will be negatively correlated with levels of corruption (CL).

Apart for the industry-specific influences, researchers[7] highlighted the significant effect of the different stages of the business cycle in explaining the errors made in many capital structure studies, with macroeconomic variables largely being ignored (O'Cook and Tang, 2010). The banking system of any country plays a crucial factor when it comes to capital structure choice. In particular, the dynamic TOT is concerned with the adjustment speed of the capital structure. Delcoure (2007) suggests that increasing the financial system independence and decreasing the constraints on the banking system in a country gives more space for banks towards competition and decreases the cost of debt. In addition, Hackbarth et al. (2006) and O'Cook and Tang (2010) stated that the size and speed of the adjustment depends on the economic conditions, where more often but smaller adjustments were

observed in booms compared to recessions. Therefore, companies will adjust their capital structures more quickly under favorable macroeconomic conditions, which would indicate a positive relationship. Antoniou et al. (2008) found this relationship to be true for France which adjusted relatively more quickly than Japan. Also capital structure relative adjustment speed was examined within the distinction between companies that are 'financially constrained' and companies that are 'unconstrained' (O'Cook and Tang, 2010). The studies of Levy and Hennessey (2007) and Hanousek and Shamshur (2011) concluded that financially constrained companies are more focused on firm-specific variables, while financial unconstrained companies are more responsive to macroeconomic variables. Given these arguments, this study predicts a positive relationship between financial freedom and debt levels, especially those of long-term nature; and a possible negative relation to short-term debt. Specifically, when conditions are favorable, i.e., without additional control and limitations, banks, are more able to decrease their cost of debt and consequently, companies should have greater incentives to borrow more. The "Financial Freedom Index" is used to measure the independence of the financial sector from the government control.

This study considers variables characterizing the macro-economic, legal and financial development of a country. And expect the effect of country specific variables to manifest on firm leverage through three major macro-economic categorizations. First, corruption level (CL), bank concentration (BC), and financial freedom (FF) tend to strengthen the role of the bond market in the economy; thus, their effect will indicate the role of "bond market structure" on firm leverage. Second, stock market development (SMD) will represent the importance of the "stock market structure" on leverage. And third, we take into account the role of general economic conditions represented by GDP growth rate (GDPG) and inflation (INF).

## 3. DATA AND METHODOLOGY

### 3.1. Nature of the data and sampling

The sample for the study consisted of 1239 observations obtained from the Amman Stock Exchange (ASE). These observations pertain to all non-financial companies publicly- listed on the exchange covering all sectors according to the ASE's classification. The choice to take publicly traded companies is justified by the fact that those companies are obliged to publish additional information, such as annual reports, at regular intervals (Schmukler and Vesperoni, 2001). Financial institutions as well as utilities are deliberately excluded from this study as it is assumed that these companies have specific regulations as regards to their capital structure (Chipeta and Mbululu, 2013; Cho et al., 2014).

Furthermore, we divide the sample into two subsamples representing the services sectors and the industrial sectors in the market. Finally, the suitable determination of the sample is important. Booth et al. (2001) stated that there were some insignificant results in their study since the sample size was relatively small, leading to excessively high standard errors. Therefore, the study period for which the observations were obtained ranged from the year 2003 until 2016.

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7    Akhtar (2012) and Hackbarth et al. (2006).

**Table 1: Measurement of dependent and independent variables**

| Dependent variables | Measurement |
|---|---|
| TL | TL divided by total assets |
| Long-term liabilities (LTL) | Long-term liabilities divided by total assets |
| Short-term liabilities (STL) | Short-term liabilities divided by total assets |
| Independent variables[9] | |
| Tax shield (TS) | Tax payments divided by gross profit |
| Company risk (RISK) | % change in (net profit before tax/total assets) |
| Non-debt tax shields (NDTS) | Depreciation divided by total assets |
| Current profitability (CPROF) | Earnings before tax divided by total assets |
| Past profitability (PPROF) | Retained earnings divided by total assets |
| Liquidity (LIQ) | Current assets divided by current liabilities |
| Tangibility (TANG) | Tangible fixed assets divided by total assets |
| Company size (SIZE) | Ln (total assets) |
| Growth (GROW) | % change in total assets |
| Agency cost (AC) | Operating expenses divided by total sales |
| GDP growth (GDPG)[10] | Annual percentage growth rate of GDP at market prices based on constant local currency |
| Inflation (INF)[11] | Annual inflation rate (consumer price index) |
| Bank concentration (BC)[12] | The bank capital to assets ratio (%) |
| Financial freedom (FF)[13] | The financial freedom index |
| Stock market development (SMD)[14] | Market capitalization of listed domestic companies (% of GDP) |
| Corruption level (CL)[15] | The corruption perceptions index |

## 3.2. Measurement of Variables

In accordance with each of the empirical hypotheses formulated in the previous section, an economic or financial aspect of the firm was taken into account when considering how to measure these attributes. Capital structure theory does not specify clearly this issue, which has taken some researchers like Titman and Wessels (1988), or Harris and Raviv (1991) to conclude that the choice of appropriate dependent and explanatory variables is potentially controversial. Nonetheless, previous empirical work can help us to define objectively the proxy variables needed to undertake this study.

The variables used in this study as an indicator of a firm's capital structure are the total liabilities ratio (TL), Long-Term Liabilities (LTL), and Short-Term Liabilities (STL). This paper will employ debt as a total even though few studies argued against the use of TL[8].

Data for the GDP growth, Inflation, Market capitalization, Bank concentration are collected from World Bank national accounts data, OECD National Accounts data files, International Monetary Fund, International Financial Statistics and data files, World Federation of Exchanges database, International Monetary Fund, Global Financial Stability Report. Corruption perception index is from the trading economics site. And the Financial freedom is from the indicator for financial openness at the heritage.org.

Following previous capital structure literature, the dependent and independent variables were measured as follows (Table 1).

This table presents firm and country-specific variables names, abbreviations, measurements, and notes on certain variables.

### 3.2.1. The model

The panel data analysis[16] used for this study is the one that fits best with the nature of the data as it is an unbalanced panel data set. A common method used by prior studies dealing with the determinants of capital structure is the fixed effects approach. It should be noticed that a popular alternative estimation method is the random effects model. Determining which one suites the data can be done through running the Hausman test developed by Hausman (1978). The results as documented in our tables reveal that the fixed effects model is the one that fit our data. The following fixed effect models will be employed in our study:

$$TL_{it}=\beta_0+\beta_1 TS_{it}+\beta_2 NDTS_{it}+\beta_3 AC_{it}+\beta_4 GROW_{it}+\beta_5 CPROF_{it}+\beta_6 PPROF_{it}+\beta_7 LIQ_{it}+\beta_8 TANG_{it}+\beta_9 SIZE_{it}+\beta_{10} RISK_{it}+\beta_{11} GDPG_{it}+\beta_{12} INF_{it}+\beta_{13} BC_{it}+\beta_{14} FF_{it}+\beta_{15} SMD_{it}+\beta_{16} CL_{it}+\varepsilon_{it} \quad (1)$$

$$LTL_{it}=\beta_0+\beta_1 TS_{it}+\beta_2 NDTS_{it}+\beta_3 AC_{it}+\beta_4 GROW_{it}+\beta_5 CPROF_{it}+\beta_6 PPROF_{it}+\beta_7 LIQ_{it}+\beta_8 TANG_{it}+\beta_9 SIZE_{it}+\beta_{10} RISK_{it}+\beta_{11} GDPG_{it}+\beta_{12} INF_{it}+\beta_{13} BC_{it}+\beta_{14} FF_{it}+\beta_{15} SMD_{it}+\beta_{16} CL_{it}+\varepsilon_{it} \quad (2)$$

$$STL_{it}=\beta_0+\beta_1 TS_{it}+\beta_2 NDTS_{it}+\beta_3 AC_{it}+\beta_4 GROW_{it}+\beta_5 CPROF_{it}+\beta_6 PPROF_{it}+\beta_7 LIQ_{it}+\beta_8 TANG_{it}+\beta_9 SIZE_{it}+\beta_{10} RISK_{it}+\beta_{11} GDPG_{it}+\beta_{12} INF_{it}+\beta_{13} BC_{it}+\beta_{14} FF_{it}+\beta_{15} SMD_{it}+\beta_{16} CL_{it}+\varepsilon_{it} \quad (3)$$

Where, $TL_{it}$, $LTL_{it}$, and $STL_{it}$ are the variables to be explained (TL, long-term liabilities and short-term liabilities); $TS_{it}$ is TS; $NDTS_{it}$ is the non-debt TS; $AC_{it}$ refers to company agency cost; $GROW_{it}$ is the growth opportunity variable; $CPROF_{it}$ is the current profitability variable; $PPROF_{it}$ is the past profitability variable; $LIQ_{it}$ is the variable of Liquidity $TANG_{it}$ is used to represent the assets structure in the regression; $SIZE_{it}$ is the variable of company size; $RISK_{it}$ refers to company level of business risk; $GDPG_{it}$ denotes the variable for GDP growth; $INF_{it}$ represents the inflation rate; $BC_{it}$ refers to the bank concentration; $FF_{it}$ denotes the financial freedom variable.; $SMD_{it}$ is the stock market development; $CL_{it}$ refers to the level of corruption. $_{it}$ refers to each company in the sample throughout each year of the period of the study.

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8     Van der Wijst and Thurik (1993), Chittenden et al. (1996), Barclay and Smith (1999) and Bevan and Danbolt (2000), claim that any analysis of leverage determinants based only on total liabilities may screen the important differences between long-term and short-term debt.

This study developed regression models in a panel data framework in order to measure the dependence of capital structure on the variables chosen for this study including firm-specific as well as macroeconomic factors. The panel data analysis helps to explore cross-sectional and time series data simultaneously. The most recent version of the STATA statistical program was used to run the fixed effect regressions on the models developed in equations 1 to 3. When using Fixed Effect, it is assumed that some aspects within the firm may impact or bias the predictor or outcome variables and that those time-invariant characteristics are unique to the firm and should not be correlated with other individual characteristics. Therefore, the Fixed Effect model is applied because of the need to control for such factors (Al-Najjar, 2011).

In addition, an F-test is also performed to determine the significance of the models employed. Furthermore, descriptive analysis and correlation matrices were derived to determine any significant inter-correlation between the variables of the study. This is hoped to aid in providing additional support to the results of the regression analysis in explaining the case of the Jordanian firms examined.

## 4. EMPIRICAL RESULTS AND ANALYSIS

This section is divided into two sub-sections, the first presents the results and discusses the descriptive data found while the second highlights and discusses regression results.

### 4.1. Descriptive Statistics
The descriptive statistics highlights some important indicators that can assist in shedding light on the results of the study. Table 2 presents descriptive statistics for the dependent and independent variables and Table 3 shows the correlation matrix. Results show

that short-term debt is the dominant type of financing used by Jordanian firms over the period of the study with a mean of 0.2727. This is confirmed by previous studies like Kharawish (2008) who states that Jordanian industrial companies rely up to 70% of their financing on equity while the rest depend on short-term debt. This result is also observed in both services and industrial sectors where the means of STL are 0.2495 and 0.2890 respectively. The greater use of short-term debt indicates that a firm's temporary commitments to creditors is preferred over the longer-term restrictions. Also, Buferna et al. (2005) found that Libyan firms were also extremely financed by short-term debt sources. Accordingly, the TS results are low for the whole sample and also for the two sub-samples which reflects the low use of debt and the low profitability of the Jordanian companies. On the other side, the low TS nature in the Jordanian firms is not substituted with benefiting from the non-debt TS (NDTS) as the mean is low (0.0325) for the whole sample with even lower mean for the industrial sectors (0.0312) relative to the service sectors (0.0341).

The high standard deviation of company risk (RISK) suggests that Jordanian firms face unpredictable business environment, which may decrease their opportunities to increase debt. Furthermore, several studies including Bevan and Danbolt (2002), Cassar and Holmes (2003), and Antoniou et al. (2008) have highlighted the positive relationship between profitability and debt financing. In the case of Jordan, Jordanian firms have relatively low profitability which may explain their reliance on external debt, especially that of short-term nature (Yusuf et al., 2015). For that, companies depend on their own sources, which is reflected in the high mean of liquidity (LIQ) of 2.867 for the whole sample and for both sub-samples. Growing firms tend to rely on their internal funds while large firms tend to have higher leverage ratios.

**Table 2: Summary descriptive statistics for 1239 observations for firms' specific variables and macroeconomic variables. And for the sub-samples of the industrial and service sectors**

| Variables[a] | Mean | Standard Deviation | Minimum | Maximum | Mean Service | Mean Industry |
|---|---|---|---|---|---|---|
| STL | 0.2727 | 0.2869 | 0.0001 | 5.756 | 0.2495 | 0.2890 |
| LTL | 0.0956 | 0.1579 | 0 | 1.837 | 0.1146 | 0.0822 |
| TL | 0.3684 | 0.3486 | 0.0001 | 5.756 | 0.3645 | 0.3712 |
| TS | 0.0318 | 0.0751 | −0.8035 | 0.7574 | 0.0424 | 0.0242 |
| NDTS | 0.0325 | 0.0300 | 0 | 0.4387 | 0.0341 | 0.0312 |
| AC | 0.8821 | 2.891 | 0 | 76.13 | 0.6009 | 1.081 |
| GROW | 0.1589 | 1.105 | −0.9107 | 24.97 | 0.2766 | 0.0755 |
| CPROF | 0.0256 | 0.2467 | −7.452 | 0.7118 | 0.0355 | 0.0187 |
| PPROF | −0.0762 | 0.4840 | −11.86 | 0.7258 | −0.0592 | −0.0881 |
| LIQ | 2.867 | 5.142 | 0.0013 | 66.84 | 2.952 | 2.806 |
| TANG | 0.4132 | 0.2870 | 0 | 4.733 | 0.4472 | 0.3891 |
| SIZE | 16.78 | 1.357 | 12.31 | 20.82 | 17.06 | 16.0592 |
| RISK | −0.1555 | 7.520 | −85.21 | 81.23 | −0.2734 | −0.0720 |
| GDPG | 5.430 | 2.498 | 2.336 | 8.562 | | |
| INF | 4.678 | 3.678 | −0.6781 | 14.92 | | |
| SMD | 79.50 | 73.25 | 0 | 238.6 | | |
| BC | 91.26 | 3.197 | 86.24 | 94.98 | | |
| FF | 66.52 | 2.129 | 64 | 70 | | |
| CL | 4.931 | 0.3775 | 4.5 | 5.7 | | |

[a]TLit, LTLi$_t$, and STL$_{it}$ are the variables to be explained (total liabilities, long-term liabilities and short-term liabilities); TS$_{it}$ is TS; NDTS$_{it}$ is the non-debt TS; AC$_{it}$ refers to company agency cost; GROW$_{it}$ is the growth opportunity variable; CPROF$_{it}$ is the current profitability variable; PPROF$^{it}$ is the past profitability variable; LIQit is the variable of Liquidity TANG$_{it}$ is used to represent the assets structure in the regression; SIZE$_{it}$ is the variable of company size; RISK$_{it}$ refers to company level of business risk; GDPG$_{it}$ denotes the variable for GDP growth; INF$_{it}$ represents the inflation rate; BC$^{it}$ refers to the bank concentration; FF$_{it}$ denotes the financial freedom variable.; SMD$_{it}$ is the stock market development; CL$_{it}$ refers to the level of corruption

High GDP growth throughout the period of the study may explain the low leverage ratio of the firms, while high inflation rates can be related to the low profitability means.

The following section of regression results may lend hand to support these results and provide more conclusive and concrete explanations to the determinants of capital structure in these firms.

## 4.2.Regression Analysis
### 4.2.1. Data regression results and discussion
This study examined Jordanian firms from the industrial sector in an attempt to empirically test the determinants of capital structure. It employed the use of control variables such as Asset Tangibility, Firm Size, Tax and Non-debt TSs, Current and Past Profitability, Liquidity, Firm Growth, and Business Risk; and also incorporated some macroeconomic factors to include the influence of growth in GDP, Inflation, Stock Market Development, Bank Concentration, Financial Freedom of firms and Corruption Levels. The result of the analysis for the three models employed are presented in Table 4 Generally, the results reveal that the determinants of capital structure for the Jordanian companies depends on the definition of leverage.

In regards to TS results, all do not show signs of significance but shows a positive relation to long-term/total leverage and a negative relation to short-term leverage. Some empirical studies find this relationship either relatively weak (Rajan and Zingales, 1995) or insignificant (Chen and Strange, 2005; Qureshi et al., 2012). Although not significant, the results reveal that Jordanian firms borrow more long-term debt and use the costs associated with it to their advantage as TSs. According to the static TOT, such benefits balance out over the long run (Kraus and Litzenberger, 1973; Fernández and Aplicada, 2005), unlike short-term debt in which costs outweigh the benefits as was evident in the negative relationship found between short-term debt and TS.

When it comes to Non-debt TS, the results show that a significant positive relation exists with long-term debt and a significant negative relation with short-term debt. Both are significant in this case and follow the same directional relationship as TSs. As non-debt TSs are considered a substitute for TSs because it includes depreciation and investment tax credit. The positive relationship

has been confirmed by Delcoure (2007) who suggest that such firms have more sociable or securable assets. Mitton (2008) also indicate to such as relationship. The negative relationship indicated by the results lends support to its TS counterpart, that Jordanian firms borrow less short-term possibly because the benefits do not outweigh the costs incurred in the short run.

In regards to agency costs, following the POT, firms prefer to issue debt as a first choice, then convertibles and finally issue equity (Gaud et al., 2005). The logic behind this theory suggests that conflict agency costs would increase as firms borrow more debt, as supported by previous studies (Jensen and Meckling, 1976; Qureshi et al., 2014). The results for this study are significant for debt as a total, but insignificant for both short and long-term debt. These results revealed for Jordanian firm indicates the opposite notion to traditional theory, in particular, that agency costs seem to decline as firms borrow more. These result were supported by Bathala et al. (1994) for leverage and Ahsan et al. (2016) for short-term debt in their studies.

The firm growth variable for Jordanian firms although insignificant as a result seems to follow traditional schools of thought which stipulates that as firms tend to rely more on short-term debt in earlier stages of growth, then switch to longer-term financing of their operations. Also firms which grow tend to face a greater chance of risk and agency problems due to the increase in variability or flexibility in their earnings stream. Accordingly, firms should borrow less as they grow to avoid such problems. However, the positive association with long-term debt reveals that as Jordanian firms grow, the potential and preference to take on more long-term debt increases, in spite of its draw backs. This can be due to the possibility that the benefits of tax and non-debt TSs inherent in long-term debt maturities outweigh the negative costs involved. According to Zeitun and Tian (2007), Bhaduri (2002) and Al-Najjar (2011) the reliance of firms on debt seems to add value in light of firm growth and may reduce the likelihood of bankruptcy. Previous studies of Jordanian firms revealed that the corporate governance seemed to play a vital role in the financing decisions of these firms, enhancing the recognition by lenders. This supervisory and balancing role reduces uncertainty and agency conflict (Pfeffer and Salancick, 1978), and therefore may explain such an outcome[17].

**Table 3: Correlation matrix**

| | STL | LTL | TL | TS | NDTS | AC | GROW | CPROF | PPROF | LIQ | TANG | SIZE | RISK | GDPG | INF | SMD | BC | FF | VIF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TS | −0.09* | −0.08* | −0.12* | | | | | | | | | | | | | | | | 10.07 |
| NDTS | 0.09* | 0.09* | 0.12* | −0.01 | | | | | | | | | | | | | | | 1.2 |
| AC | 0.09* | 0.02 | 0.09* | −0.05 | 0.06* | | | | | | | | | | | | | | 1.04 |
| GROW | −0.04 | 0.03 | −0.02 | 0.019 | −0.09* | −0.02 | | | | | | | | | | | | | 1.07 |
| CPROF | −0.44* | −0.40* | −0.53* | 0.15* | −0.15* | −0.06* | 0.08* | | | | | | | | | | | | 2.69 |
| PPROF | −0.66* | −0.37* | −0.71* | 0.16* | −0.17* | −0.11* | 0.07* | 0.78* | | | | | | | | | | | 2.84 |
| LIQ | −0.28* | −0.17* | −0.31* | −0.04 | −0.11* | −0.045 | 0.19* | 0.09* | 0.08* | | | | | | | | | | 1.17 |
| TANG | −0.06* | 0.16* | 0.02 | −0.04 | 0.35* | 0.12* | −0.05 | −0.07* | −0.07* | −0.19* | | | | | | | | | 1.18 |
| SIZE | −0.01 | 0.23* | 0.10* | 0.18* | 0.05 | −0.05 | 0.06* | 0.18* | 0.27* | −0.21* | 0.02 | | | | | | | | 1.22 |
| RISK | 0.018 | 0.016 | 0.02 | 0.02 | 0.09* | −0.002 | 0.006 | −0.06* | −0.09* | 0.05 | −0.02 | −0.07* | | | | | | | 1.03 |
| GDPG | −0.03 | −0.03 | −0.04 | 0.08 | −0.051 | 0.003 | 0.06* | 0.10* | 0.06* | 0.08* | −0.01 | −0.09* | 0.02 | | | | | | 7.13 |
| INF | 0.07* | −0.03 | 0.04 | 0.03 | −0.004 | −0.03 | 0.017 | −0.002 | −0.01 | −0.07* | 0.005 | 0.043 | 0.01 | 0.19* | | | | | 1.54 |
| SMD | 0.06* | −0.04 | 0.03 | 0.01 | −0.04 | −0.05 | −0.06* | −0.05* | −0.001 | −0.14* | 0.03 | 0.09* | −0.04 | −0.11* | 0.34* | | | | 1.89 |
| BC | −0.027 | −0.03 | −0.04 | 0.08* | −0.03 | 0.03 | 0.08* | 0.09* | 0.03 | 0.08* | −0.005 | −0.12* | 0.03 | 0.84* | 0.33* | −0.09* | | | 6.81 |
| FF | 0.020 | 0.04 | 0.04 | −0.07* | 0.04 | −0.03 | −0.04 | −0.06* | −0.04 | −0.05 | 0.002 | 0.11* | −0.002 | −0.62* | −0.20* | −0.09* | −0.76* | | 2.76 |
| CL | −0.044 | −0.01 | −0.05 | 0.08* | −0.06* | 0.002 | 0.08* | 0.09* | 0.05 | 0.10* | −0.02 | −0.07* | 0.03 | 0.78* | 0.08* | −0.41* | 0.60* | −0.35* | 3.81 |

In the case of current and past profitability, the results of this study were all significant and coincide with previous findings that more profitable generally take on less debt especially of long-term maturities. Among many of the previous literatures, Van der Wijst and Thurik (1993); Chittenden et al. (1996); Adedeji (1998); Jordan et al. (1998); Michaelas et al. (1999); Gajdka (2002); Drever and Hutchinson (2007); Lipson and Mortal (2009); Akdal (2010); Sarlija and Harc (2012), and therefore is consistent with Myer's (1984) pecking order theory. The positive relationship between current profitability and short-term debt may indicate that firms opt for higher reliance on short-term debt to off-set the weak tax and non-debt TS benefits inherent in such leverage, at least in their earlier stages of growth. The results for liquidity may also lend a hand in explaining the results for profitability, current and past, revealing that firms with higher liquidity generally borrow less, especially short-term debt (Rajan and Zingales, 1995; Ozkan, 2001; Gaud et al., 2005; Omet, 2006; Supanvanij, 2006; Shah and Khan, 2007; Daskalakis and Psillaki, 2008; De Jong et al., 2008; and Mitton, 2008). The results of the study further reveal a positive relationship between liquidity between liquidity and long-term debt, suggesting that as the liquidity of these firms increases, so would their potential to finance their operation with long-term debt.

The types of assets that a firm possesses has also been examined as a contributing factor in the determination of the debt-to-equity ratio. As confirmed by many previous studies, the significant results found for total/long-term debt levels of this study coincide with the notion that higher tangibility of assets leads to greater use of debt, regardless of maturity (Titman and Wessels, 1988; Rajan and Zingales, 1995; Booth et al., 2001; Antoniou et al. 2008; Buferna et al., 2005; Khrawish and Kraiwesh, 2010). However, for short-term debt, the results were not significant. Furthermore, the POT predicts that a firms with tangible assets issue more debt because tangible assets are less subject to information asymmetries and are easy to collateralize and retain more value in liquidation. Tangible assets reduce the agency costs by assuring the creditors the ability to sell the assets in the case of default (Myers and Majluf, 1984; Gaud et al., 2005; Mitton, 2008; Pandey, 2001; Rajan and Zingales, 1995; Fernández and Aplicada, 2005). Firms rich in tangible assets are able to tolerate higher debt ratios than firms rich in intangible assets. The TOT too predicts a positive relationship between leverage and tangible assets, because with collateralized assets creditors have an improved guarantee of repayment, but without the collateralized assets, such a guarantee does not exist (Teker et al., 2009; Shah and Khan, 2007; Harris and Raviv, 1990).

As for firm size, the results were all significant and confirmed previous studies, in the notion that larger Jordanian firms tend to employ more dent in their capital structures. Accordingly, large size firms are considered less risky by creditors because they can diversify their tangible assets and though increase the stability of their cash flows. Among the many previous studies which support these finding include Ozkan (2001); Gaud et al. (2005); Daskalakis and Psillaki (2008); Mazhar and Nasr (2010); Kayo and Kimura (2011); and Katagiri (2014).

Based on both the pecking-order and trade-off theories, a firm's volatility of earnings (operating risk) increases probability of default because debt holders consider a firm's future earnings as protection for debt (Mehran, 1992). The results reveal a negative, although insignificant relationship between earnings volatility and leverage, suggesting that as Jordanian firms borrow more, their risk of bankruptcy also increases. Therefore, high risk firms may have a negative impact on firm leverage levels. McConnell and Pettit (1984) and Subadar et al. (2010) also find a significant negative relationship between financial firms' risk and leverage levels. Although limited empirical studies find a significant positive relationship between firm risk and leverage ratio (Jordan et al. 1998; Michaelas et al. 1999), the could explain the positive relationship found between risk and long-term debt, as the agency cost theory predicts, were risk intensifies a negative impact on asymmetric information (Schoubben and Hulle, 2004; Chen and Strange, 2005). Even though insignificant, the positive association between volatility and long-term debt seems to show that the probability of bankruptcy and associated costs are being mitigated through the increased benefits of tax and non-debt TSs, the ownership structure, higher profitability and liquidity of the firms' assets structure and relatively larger size of companies.

Furthermore, many studies examined the determinants of capital structure choice in light of internal and external 'country-specific' factors including the economic, political, judicial and financial system (Demiguc-Kunt and Maksimovic, 1999; Booth et al., 2001; Claessens et al., 2001; Bancel and Mittoo, 2004; Song and Philippatos, 2004; Brounen et al., 2006; Daskalakis and Psillaki, 2008; De Jong et al., 2008). Regarding the effect of macroeconomics variables, the results reveal that capital structure decision is significantly influenced by inflation rate, stock market development, and corruption level. The adjusted R-squared is 54%.

In specific, the results indicate to a positive relationship between GDP growth and leverage in general and a significant one to short-term leverage in particular, and a negative relationship with long-term debt. Previous studies confirm the positive relationship, indicating that increase in real GDP leads to an increase debt relative to equity, because a higher GDP would spur economic activities and investment opportunities in a country (Beck et al., 2008, De Jong et al., 2008; Chipeta and Mbululu, 2013; Muthama et al., 2013; and Tomschik, 2015). Moreover, the negative relationship found by the study in regards to long-term debt coincides with the POT, that firms prefer retained earnings as a first choice, therefore, a negative or inverse relation between profitability and leverage and in turn between economic growth and leverage. Korajczky and Levy (2003), Gajurel (2005) and Bokpin (2009) also confirmed such a negative relationship, while Muthama et al. (2013) contradict these results for long-term debt.

In regards to the results for inflation and its effect on leverage, a significant positive relationship is revealed for total debt and short-term debt, and an insignificant negative relationship with long-term debt. These results suggest that firms in Jordan prefer the financing from short-term debt in the light of increased inflation and less on debt of longer-term nature. These results were confirmed by Frank and Goyal (2009) and Jõeveer (2013) stating that high inflation rates increase volatility of a firm's cost/ price structure and in turn revenues as a result of increasing prices;

and that in turn increases debt as companies find it easier to repay the obligations of new debt. On the other hand, an increase in inflation (especially unanticipated inflation) may have a negative effect on economic demand and that increases the volatility of firm revenue and consequently increases business risk, the probability of insolvency. As a result firms tend to decrease their leverage in periods of uncertain inflation (Booth et al., 2001; Beck et al., 2008; Muthama et al., 2013); were investors are forced to sell bonds in exchange for stock (Dammon, 1988); and it creates a redistribution of wealth between creditors (bondholders) and debtors (shareholders) (Dokko, 1989).

Stock market development was also considered by many studies[18] as an important variable for the evaluation of the impact of macroeconomic factors on capital structure choice. Such an influence is justified by the market timing theory which states that the decision to issue either debt or equity is related to the question of whether the stock market is undervalued or overvalued. Although all the results were insignificant, they do reveal a negative relationship between stock market development and leverage as was hypothesized. Jordanian firms in the light of an undervalued stock market, would prefer to issue more equity and less debt. These results coincide with the effect found by De Jong et al. (2008), Sett and Sarkhel (2010) and Kayo and Kimura (2011) who indicate to the importance of stock market development as an important factor influencing capital structure choice. Specifically, these results confirm those found by Demirguc-Kunt and Maksimovic (1999), Wen et al. (2002), Giannetti (2003), Agarwal and Mohtadi (2004), and Hasan et al. (2009) who also find a significant negative relationship to exist. However, result of other studies find a positive relationship between stock market development and firm leverage[19].

The results for total debt reveal a negative relationship most likely due to the stronger preference for short-term debt, which also shows a negative relation to bank concentration. The results are insignificant but follow expectations and assumptions of past research. Futhermore, the results also indicate that Jordanian firms show more potential to borrow more long-term debt relative to less short-term debt in the light of increased bank concentration. The negative relationship can be supported by the market power theory which states that the increase of industry concentration is related to a reduction of competition and to greater inefficiencies in markets without information asymmetries (Carbó-Valverde et al., 2009). This means that if the financial market (credit) becomes inefficient, firms will tend to ration the credits, in other words demand for leverage declines, which will impedes growth. The results also are supported by negative relationship between Jordanian firms' growth and their reliance on short-term debt. In addition, as Black and Strahan (2002) have shown, fewer enterprises are established in a concentrated banking market. This was suggested by Jõeveer (2013) who claimed that higher bank concentration would lower the level of competition and lead to an increase in the cost of debt.

The positive relationship found between bank concentration and long-term debt can be explained by the relationship lending (or information-based) theory. In particular, higher concentration in the banking market translates into a reduction of information asymmetries and hence into a reduction of credit rationing (Stiglitz

and Weiss, 1981; Hake, 2012). Jappelli and Pagano (2002) go on to suggest that higher bank concentration could make banks more efficient because the standards of information sharing improve in parallel with concentration. Further studies including those of Cetorelli and Gambera (2001), Padachi and Seetanah (2007); Brown et al. (2011), and Abadi et al. (2016) all confirm the positive effect of banking concentration on corporate credit growth in light of the fact that the more developed the information sharing standards between the banks are, the more the costs of investment financing decline, and the fewer obstacles there are to investment financing.

Financial freedom plays a crucial role as a macroeconomic factor which influences how firms optimize their capital structure. In particular the dynamic TOT is concerned with the adjustment speed of the capital structure. The results for financial freedom were insignificant, but do correspond with those for bank concentration in influencing the capital structures of Jordanian firms. Specifically, a negative relationship between financial freedom and total/short-term-debt and positive relationship to long-term debt indicates that firms are more likely to finance themselves long-term given the increase in financial freedom brought about by the increase in bank concentration. This is confirmed by Delcoure (2007) and Antoniou et al. (2008) who suggest that increasing the financial system independence and decreasing the constraints on the banking system in a country gives more space for banks towards competition and decrease in the cost of debt. Therefore, companies will adjust their capital structures more quickly under favorable macroeconomic conditions, which would indicate to a positive relationship. A plausible reason for the results of both short-term versus long-term debt is that with the increase in bank concentration, they become 'financially unconstrained' and will prefer funding using long-term debt over debt with shorter maturities (Levy and Hennessey, 2007; and Hanousek and Shamshur 2011). Specifically, is seems that firms in Jordan have a greater incentives to borrow more under such favorable conditions.

Finally, the measure for corruption level resulted in similar directional relationships as with bank concentration and financial freedom, but were significant for total debt and short-term debt. In particular, corruption levels showed to have a negative relation with total/short-term debt but a positive relation with long-term debt levels. The negative relational results were confirmed by Hanousek and Shamshur (2011) and is also consistent with the findings of Jõeveer (2013). This is a plausible outcome as shareholders may grant the use of additional debt since this would limit the funds available to executives that allow them to pursue personal agendas and, moreover, ties them to a repayment obligation (Kayo and Kimura, 2011). Fan and Twite (2012) also suggested that countries with higher corruption levels borrow more in total but less in long-term debt. In the case of Jordan, the results contradict this notion because as corruption levels increase so would the likelihood of long-term borrowing, mainly because of the apparent benefits that outweigh the damaging costs that come with it. The effect of non-executive concentration in these firms as depicted by Wen et al. (2002) and Yusuf et al. (2015) may help explain the increased use short-term debt by Jordanian firms

relative to long-term debt maturities. The following section will examine the results of the analysis of the determinants of capital structure choice of Jordanian firms when including industry effects.

## 5. INDUSTRY EFFECT

In aid of the regression results found, this section will shed light on the differences between the two main sectors, namely the industrial and service sectors of Jordan. The results of the analysis at the industry level are summarized in Table 5. The results reveal that the determinants of the capital structure differ between the service sector and the industrial sector for the three measurement used for leverage.

More specifically, the variables that significantly influence TL for service sector and are tax- and non-debt TS, profitability, liquidity, asset tangibility, firm size, and corruption level. Jordanian firms seem to rely more on external financing as they grow, have higher profits and have a higher concentration of tangible assets. This seems plausible as these firms can shelter themselves from financial distress as suggested by Rajan and Zingales, 1995; Ozkan, 2001; Gaud et al., 2005; Supanvanij, 2006; Shah and Khan, 2007; Daskalakis and Psillaki, 2008; De Jong et al. 2008; and Mitton, 2008 among others. The results are also supported by the negative relationship between debt, and liquidity/past profitability, which may indicate that firms rely more on debt, particularly short-term financing, to offset the weak effect of both tax and non-debt TSs.

Then again, the firm's variables that were noticed to significantly affect TL for the industrial sector are agency cost, growth, profitability, liquidity, asset tangibility, and firm size. Generally speaking, industrial firms show the same results as for service firms, except for the significant effect of agency costs and of growth in these firms. It seems that higher counts of both current and past profitability leads to less borrowing, most significantly for short-term debt; taking into consideration that as these firms grow, would borrow less (Zeitun and Tian, 2007; Bhaduri, 2002; and Al-Najjar, 2011), in an attempt to avoid conflicts of interest and the costs associated with it (Gaud et al., 2005; Qureshi et al. 2014).

Regarding the macroeconomic variables, the capital structure decision for industrial companies in Jordan are significantly influenced by all of the macroeconomic factors tested, except for financial freedom; unlike service firms which showed no significant relationships with total debt. The results reveal a positive significant relationship between GDP growth and inflation, while a significant negative relationship with stock market development; bank concentration; and corruption level. Firms in Jordan generally seem to borrow more with growth in GDP (Beck et al., 2008; Muthama et al. 2013; and Tomschik, 2015) and increased inflation (Frank and Goyal, 2009 and Jõeveer, 2013) affecting the cost/price and revenues of these firms. Even though insignificant, unlike industrial firms, service companies in Jordan tend to borrow more in light of increased bank concentration. With higher profit abilities and liquidity, industrial firms tend to borrow less.

On the other hand, when leverage is disaggregated and defined as long-term and short-term liabilities, the results seem to favor service firms when it comes to long-term debt, while short-term maturity financing for industrial firms. Specifically, Jordanian firms are significantly affected by tax and non-debt TSs, profitability, asset tangibility, firm size, as well as macroeconomic factors such as inflation, bank concentration and corruption levels, when it comes to capital structure choice. On the other hand, industrial firms in their choice of financing were affected significantly by past profitability, growth opportunity, tangibility of assets, size of the firm and only corruption level for the macroeconomic effect. In both sectors, less profitable firms with higher asset tangibility and growth potential lead firms to borrow longer-term debt. These results were documented and support the results of previous studies such as Titman and Wessels (1988); Rajan and Zingales (1995); Booth et al. (2001); Antoniou et al. (2008); Buferna et al. (2005); Khrawish and Kraiwesh (2010). Furthermore, results also show a positive significant relationship between long-term debt borrowing and both increased bank concentration and corruption levels. This result confirms again the results found earlier and can be explained by the information-based theory, meaning that higher bank concentration leads to a reduction in credit rationing and therefore higher borrowing (Stiglitz and Weiss, 1981; Jappelli and Pagano, 1988; and Hake, 2012).

From Table 5, results revealed that the firm variables that significantly affect short-term liabilities decision for service companies included profitability, asset tangibility, firm size, Non-debt TSs; and for macroeconomic effect, inflation and corruption levels. For industrial firms in Jordan, capital structure choices was significantly influenced by similar factors as the service sector firms, but was also effected by both growth in GDP and bank concentration. Accordingly, current profitability seems to be a predominant factor when financing using short-term debt for service firms, while past profitability for raising long-term debt. Past research confirm the results for these firms in that in conjunction with profitability, lower liquidity and higher asset tangibility and firm size lead to firms borrowing more (Supanvanij, 2006; Shah and Khan, 2007; Daskalakis and Psillaki, 2008; De Jong et al. 2008; and Mitton, 2008). Also higher concentration of banks could make these firms more efficient in information sharing and therefore reducing agency conflict (Cetorelli and Gambera (2001), Padachi and Seetanah (2007); Brown et al. (2011), and Abadi et al. (2016).

For industrial firms in Jordan, tax and non-debt TS do not play a significant role. The negative relationships found indicate that firms' with lower profitability and liquidity tend to borrow more and seem to rely on growth potential in the light of GDP growth and higher inflation. These results coincide with those of Frank and Goyal (2009) and Jõeveer (2013) who suggest firm borrow more when their cost-revenue structure becomes more volatile due to inflation. The growth in GDP tend to spur economic activity and provides better investment activity for firms in Jordan, thereby lending more of the less distress inherent funding[20]. Finally, corruption levels showed to have a negative relation with total/short-term debt but a positive relation with long-term debt levels. The negative relational results were confirmed by Hanousek

**Table 4: Panel data regression results for of Jordanian firms for 1239 observations from 2000 to 2015**

| Independent variables | Dependent variable: Total debt | | |
|---|---|---|---|
| Independent variable | TL | LTL | STL |
| Constant | −1.493 (−3.42)*** | −0.6901 (−2.28)** | −0.8032 (−1.68)* |
| TS | 0.0101 (0.18) | 0.0191 (0.49) | −0.0091 (−0.15) |
| NDTS | −0.0953 (−0.54) | 0.2687 (2.18)** | −0.3639 (−1.88)* |
| AC | −0.0044 (−2.03)** | −0.0013 (−0.87) | −0.0031 (−1.30) |
| GROW | 0.0005 (0.14) | 0.0016 (0.64) | −0.0011 (−0.28) |
| CPROF | 0.0761 (2.67)** | −0.1638 (8.26)*** | 0.2399 (7.68)*** |
| PPROF | −0.5295 (−31.74)*** | −0.0501 (−4.32)*** | −0.4794 (−26.27)*** |
| LIQ | −0.0074 (−6.7)*** | 0.0001 (0.05)*** | −0.0074 (−6.15)*** |
| TANG | 0.0663702 (3.00)*** | 0.0545 (3.56)*** | 0.0112 (0.48) |
| SIZE | 0.1406 (12.41)*** | 0.0329 (4.18)*** | 0.1077 (8.49)*** |
| RISK | −0.0003 (−0.69) | 0.0002 (0.77) | −0.0006 (−1.12) |
| GDPGROWTH | 0.0053 (1.48) | −0.0025 (−1.01) | 0.0078 (1.99)** |
| INFLATION | 0022 (1.88)* | −0.0013 (−1.59) | 0.0035 (2.73)*** |
| SMD | −0.0001 (−2.09)** | −0.0001 (−1.67)* | −0.0001 (−0.85)* |
| BC | −0.0026 (−0.92) | 0.0018 (0.92) | −0.0044 (−1.42) |
| FF | −0.0024 (−0.91) | 0.0008 (0.45) | −0.0032 (−1.12) |
| CL | −0.0351 (−1.99)** | 0.0021 (0.17) | −0.8032 (1.92)** |
| Number of Observations | 1239 | 1239 | 1239 |
| R² | 54% | 27% | 40.7% |

***, **, *indicated significance level at the 1, 5, and 10 per cent levels. Values for each of the variables represent β coefficients and t-values (in parentheses)

**Table 5: Panel data regression results for of Jordanian firms for 1239 observations from 2000 to 2015 at two-main industries level, Service companies (S) and Industrial companies (I)**

| Independent variables | Dependent variables | | | | | |
|---|---|---|---|---|---|---|
| | Total debt | | Long-term debt | | Short-term debt | |
| | Service | Industry | Service | Industry | Service | Industry |
| Constant | −1.8881 (−2.69)** | 0.9625 (−1.78)*** | −1.8973 (−3.78)*** | −0.1485 (−0.39) | 0.0091 (0.01) | −0.8140 (−1.54) |
| Tax Shields | −0.1955 (−1.66)* | 0.0338 (0.57) | −0.0547 (−0.65)* | 0.0539 (1.29) | −0.1407 (−1.05) | −0.0201 (−0.35) |
| Non-debt Tax | −0.6407 (−2.11)** | 0.2280 (1.12) | 0.4414 (−2.03)** | 0.0904 (0.63) | −1.082 (−3.13)*** | 0.1376 (0.69) |
| Agency Cost | 0.0141 (0.47) | −0.0039 (−1.97)** | −0.0268 (−1.27) | −0.0019 (−1.39) | 0.0408 (1.21) | −0.0021 (−1.02) |
| Growth | −0.0023 (−0.61) | 0.0211 (1.66)* | 0.0005 (0.23) | 0.0156 (1.74)* | −0.0028 (−0.68) | 0.0055 (0.44) |
| Current Profitability | 0.2861 (7.23)*** | −0.3056 (−5.49)*** | −0.2939 (10.4)*** | −0.0618 (−1.59) | 0.5800 (12.91)*** | −0.2438 (−4.49)** |
| Past Profitability | −0.6521 (−28.49)*** | −0.4045 (−16.97)*** | 0.0242 (1.76)* | −0.1311 (−7.86)*** | −0.6824 (−26.00)*** | −0.2735 (−11.7)*** |
| Liquidity | −0.0060 (−4.41)*** | −0.0082 (−4.31)*** | −0.0009 (−0.94) | −0.0009 (−0.69) | −0.0051 (−3.29)*** | −0.0091 (−4.92)*** |
| Asset Tangibility | 0.1404 (3.05)** | 0.0401 (1.7)* | 0.0667 (2.03)** | 0.0366 (2.22)** | 0.0737 (1.41)** | 0.0035 (0.15) |
| Firm Size | 0.1405 (8.43)*** | 0.1326 (8.41)*** | 0.0659 (5.53)*** | 0.0186 (1.69)* | 0.0746 (3.94)*** | 0.1139 (7.41)*** |
| Business Risk | −0.0005 (−0.79) | 0.0003 (0.50) | 0.0002 (0.57) | 0.0006 (1.26) | −0.0007 (−1.05) | −0.0003 (−0.39) |
| Growth in GDP | 0.0015 (0.28) | 0.0103 (2.42)** | −0.0021 (−0.52) | −0.0031 (−1.03) | 0.0036 (0.57) | 0.0134 (3.22)*** |
| Inflation | 0.0014 (0.77) | 0.0021 (1.65)* | −0.0028 (−2.10)** | −0.0004 (−0.51) | 0.0042 (2.00)** | 0.0026 (1.97)** |
| Stock Market Development | −.0001 (−1.43) | −0.0001 (−2.01)** | −0.0001 (−1.56) | −0.0001 (−1.41) | −0.0001 (−0.28) | −0.0001 (−1.04) |
| Bank Concentration | 0.0024 (0.53) | −0.0073 (−2.21)** | 0.0075 (2.28)** | −0.0002 (−0.07) | −0.0051 (−0.97) | −0.0072 (−2.22)** |
| Financial Freedom | −0.0044 (−1.04) | −0.0008 (−0.26) | 0.0031 (1.01) | −0.0007 (−0.32) | −0.0075 (−1.56) | −0.0001 (−0.04) |
| Corruption Levels | −0.0295 (−1.05)** | −0.0457 (−2.17)** | 0.0045 (0.23)** | −0.0044 (−0.30)** | −0.0342 (0.01)** | −0.8140 (−2.01)** |
| Number of Observations | 514 | 725 | 514 | 725 | 514 | 725 |
| R Square | 62.4% | 46.7% | 35.6% | 20.5% | 58.40% | 28% |
| Hausman Test | 14.32*** | | | | | |

***, **, * indicated significance level at the 1, 5, and 10 per cent levels. Values for each of the variables represent β coefficients and t-values (in parentheses)

and Shamshur (2011) and is also consistent with the findings of Jõeveer (2013). This is a plausible outcome as shareholders may grant the use of additional debt since this would limit the funds available to executives that allow them to pursue personal agendas and, moreover, ties them to a repayment obligation (Kayo and Kimura, 2011).

# 6. CONCLUSION AND POLICY IMPLICATIONS

The empirical evidence obtained in this study suggests that like in many of the previous studies, and in varying significance levels, non-debt tax shields, asset tangibility, firm size, firm profitability, liquidity, and firm size were important influences upon the financing decisions of Jordanian firms. The inclusion of macroeconomic factors revealed that they also played a vital role in the capital structure choices of these firms.

It was noticed that Jordanian firms tend to favor leverage of short-term maturity to finance their operations as a proportion of total debt, but also would turn to long-term financing if conditions were favorable and the benefits outweighed the costs of financial distress and conflicts. Factors such as asset structure, firm size, firm growth and firm risk tend to favor the trade-off between agency costs and expensive debt financing and the benefits of increased leverage. The use of short-term debt rather than internal financing seems to add value to these firms as they grow, especially in the early stages of development, and also in later stages by financing long-term, and seemingly derive more benefits from the tax and non-debt shelter these types of debt provides to them. This action as noted in previous literature may increase risk inherent in these firms and intensifies the negative impact on asymmetric information. However, firms seem to be able to mitigate some of these impediments through other influences.

Generally speaking, more profitable and liquid firms would tend to use less debt in their capital structure, but with more tangible assets, growth and firm size, tend to risk taking on debt with longer-term maturities. Jordanian firms are generally not as profitable and liquid as may seem, or sufficiently so to manage the restrictions and burdens of repayment which accompany long-term debts, however, they can make up for such weaknesses by incorporating other, industry and country influences in their capital structure choices. Therefore, these firms turn to short-term leverage in an attempt to match the duration of their assets and liabilities and take on long-term debt when they have the capability to avoid potentially heavier penalties which may ensue.

Finally, the macroeconomic factors in these firms seem to play an equally important role in the capital structure decision as the more common factors do given the external nature in which these firms operate. Although not significant, bank concentration and subsequently financial freedom do shed some light on the firms' behavior towards leverage as was expected. The corruption level was a significant factor which, with other influences, would indicate a higher use of long-term debt by these firms. Inflation does increase costs of financing but also spurs revenues, and with accompanying financial market development which can provides better access to external financing and though increase debt with longer-maturities. In addition, the nature of the supervisory and balancing role helps reduce agency problems and uncertainty on behalf of the lenders and reduces but does eliminate any risk of refinancing.

Accordingly, the policy and decision makers in Jordan need to facilitate and improve the business environment for that firms would have a wider range to increase their capital through the use of the external resources. This could happen through improving the legal framework that encourages not only the firms, but also the creditors to offer financing. This could happen when the authorities apply improved corporate governance mechanisms which will increase not only the level of transparency but also the type, quality and liability of data disclosed. On the other hand, the research encourages the policy makers towards a wider and comprehensive improvements that includes macroeconomic factors as these factors, corruption and inflation in particular, proved to have an important effect on the financing activities of the listed firms. The research, in fact, emphasized that listed firms face several obstacles to their future growth. A fact that can be changed only through the application of comprehensive improvements to the whole financial market which would develop and enhance investment environment for the current listed firms and spur their future growth which will definitely magnetize more future growth to the market as a whole.

# REFERENCES

Abadi, F., Bany-Ariffin, R., Azman-Saini, K. (2016), The impact of banking concentration on firm leverage in emerging markets. International Journal of Emerging Markets, 11(4), 550-568.

Abor, J. (2007), Corporate governance and financing decisions of Ghanaian listed firms. Corporate Governance: International Journal of Business in Society, 7, 83-92.

Adedeji, A. (1998), Does the pecking order hypothesis explain the dividend payout ratios of firms in the UK? Journal of Business Finance and Accounting, 25, 1127-1155.

Agarwal, S., Mohtadi, H. (2004), Financial markets and the financing choice of firms: Evidence from developing countries. Global Finance Journal, 15, 57-70.

Ahsan, T., Wang, M., Qureshi, M.A. (2016), Mean reverting financial leverage: Theory and evidence from Pakistan. Applied Economics, 48(5), 379-388.

Akdal, S. (2011), How do Firm Characteristics Affect Capital Structure? Some UK Evidence. Available from: http://www.ssrn.com/abstract=1775706. [Last accessed on 2012 Feb 01].

Al-Najjar, B. (2011), Empirical modelling of capital structure: Jordanian evidence. Journal of Emerging Market Finance, 10(1), 1-19.

Al-Najjar, B., Taylor, P. (2008), The relationship between capital structure and ownership structure. Managerial Finance, 34(12), 919-933.

Al Khasawneh, O. (2006), The Ownership Structure and its Impact in Determining the Structure of Capital in the Jordanian Public Shareholding Companies (2000-2003) PhD Thesis, Amman Arab University for Graduate Studies.

Al Shaher, T. (2012), The impact of determinants of leverage on capital structure of service companies in Jordan. International Research Journal of Finance and Economics, 96, 1-12.

Antoniou, A., Guney, Y., Paudyal, K. (2008), Determinants of Corporate Capital Structure: Evidence from European Countries, University of Durham, Working Paper. p1-8.

Baker, M., Wurgler, J. (2002), Market timing and capital structure. The Journal of Finance, 57(1), 1-32.

Bancel, F., Mittoo, U. (2004), Cross-country determinants of capital structure choice: A survey of European firms. Financial Management, 33, 103-132.

Barclay M.J., Smith, C.W.Jr. (1999), The capital structure puzzle: Another

look at the evidence. Journal of Applied Corporate Finance, Spring, 12(1), 8-20.

Barton, S.L., Ned, C.H., Sundaram, S. (1989), An empirical test of stakeholder theory Predictions of capital. Financial Management, 18(1), 36-44.

Bathala, C., Moon, K., Rao, R. (1994), Managerial ownership, debt policy and the impact of institutional Holdings: An agency perspective. Financial Management, 23(3), 38-50.

Bayrakdaroglu, A., Ege, İ., Yazici, N. (2013), A panel data analysis of capital structure determinants: Empirical results from Turkish capital market. International Journal of Economics and Finance, 5(4), 131-140.

Beck, T., Demirgüç-Kunt, A., Maksimovic, V. (2008), Financing patterns around the world: Are small firms different? Journal of Financial Economics, 89(3), 467-487.

Berger, P., Ofek, E., Yermack, D. (1997), Managerial entrenchment and capital structure decisions. Journal of Finance, 52(4), 1411-1438.

Bevan, A., Danbolt, J. (2002), Capital Structure and its Determinants in the United Kingdom: A Decompositional Analysis, Mimeo, 2000/2, Department of Accounting and Finance, University of Glasgow.

Bhaduri, S. (2002), Determinants of corporate borrowing: Some evidence from the Indian corporate structure. Journal of Economics and Finance, 26(2), 200-215.

Black, S., Strahan, P. (2002), Entrepreneurship and bank credit availability. Journal of Finance, 57(6), 2807-2833.

Bokpin, G.A. (2009), Macroeconomic development and capital structure decisions of firms. Studies in Economics and Finance, 26(2), 129- 142.

Booth, L., Aivazian, V., Demirguc-Kunt, A., Maksimovic, V. (2001), Capital structures in developing countries. Journal of Finance, 57(1), 87-130.

Bradley, M., Jarrel, G.A., Kim, E.H. (1984), On the existence of an optimal capital structure: Theory and evidence. Journal of Finance, 39(3), 857-880.

Brounen, D., Jong, A., Koedijk, K. (2005), Capital structure policies in Europe: Survey evidence. Journal of Banking and Finance, 30(5), 1409-1442.

Brown, P., Beekes, W., Verhoeven, P. (2011), Corporate governance, accounting and finance: A review. Accounting and Finance, 51(1), 96-172.

Buferna, F., Bangassa, K., Hodgkinson, L. (2005), Determinants of Capital Structure: Evidence from Libya, University of Liverpool Working Paper. p 2-7.

Carbo-Valverde, S., Rodriguez-Fernandez, F., Udell, G.F. (2009), Bank market power and SME financing constraints. Review of Finance, 13(2), 309-340.

Cassar, G., Holmes, S. (2003), Capital structure and financing of SMEs: Australian evidence. Accounting and Finance, 43, 123-147.

Cetorelli, N., Gambera, M. (2001), Banking market structure, financial dependence, and growth: International evidence from industry data. Journal of Finance, 106(2), 617-48.

Chen, J., Strange, R. (2005), The determinants of capital structure: Evidence from Chinese listed companies. Economic Change and Restructuring, 38, 11-35.

Chipeta, C., Mbululu, D. (2013), Firm heterogeneity, macroeconomic conditions and capital structure adjustment speeds: Evidence from the JSE. Investment Analysts Journal, 44(77), 69-80.

Chittenden, F., Hall, G., Hutchinson, P. (1996), Small firm growth, access to capital markets and financial structure: Review of issues and an empirical investigation. Small Business Economics, 8, 59-67.

Cho, S., El Ghoul, S., Guedhami, O., Suh, J. (2014), Creditor rights and capital structure: Evidence from international data. Journal of Corporate Finance, 25, 40-60.

Claessens, S., Djankov, S., Fan, J.P.H., Lang, L.H.P. (2002), Disentangling the incentive and entrenchment effects of large shareholdings. Journal of Finance, 57, 2741-2771.

Dammon, R.M. (1988), A security market and capital structure equilibrium: Under uncertainty with progressive personnel taxes. Journal of Finance, 7, 53-74.

Daskalakis, N.Y., Psillaki, M. (2008), The Determinants of Capital Structure of the SMEs: Evidence from the Greek and the French Firms. Available from: http://www.univ-orleans.fr/deg/GDRecomofi/Activ.

De Angelo, H., Masulis, R.W. (1980), Optimal capital structure under corporate and personal taxation. Journal of Financial Economics, 8(1), 3-29.

De Jong, A., Kabir, R., Nguyen, T.T. (2008), Capital structure around the world: The roles of firm-and country-specific determinants. Journal of Banking and Finance, 32(9), 1954-1969.

Delcoure, N. (2007), The determinants of capital structure in transitional economies. International Review of Economics and Finance, 16(3), 400-415.

Demirgüç-Kunt, A., Maksimovic, V. (1999), Institutions, financial markets, and firm debt maturity. Journal of Financial Economics, 54(3), 295-336.

Dhaliwal, D., Heitzman, S., Zhen, L.I.O. (2006), Taxes, leverage, and the cost of equity capital. Journal of Accounting Research, 44(4), 691-723.

Dokko, Y. (1989), Are change in inflation expectations capitalized into stock prices? A micro firm test for the nominal contracting hypothesis. Review Journal of Economics and Statistics, 71, 309-317.

Donaldson, G. (1961), Corporate Debt Capacity. Boston: Harvard University Press.

Drever, M., Hutchinson, P. (2007), Industry differences in the determinants of the liquidity of Australian small and medium sized enterprises. Small Enterprise Research, 15(1), 60-76.

Fama, E.F., French, K. (2002), Testing tradeoff and pecking order predictions about dividends and debt. The Review of Financial Studies, 15, 1-33.

Fan, J.P., Titman, S., Twite, G. (2012), An international comparison of capital structure and debt maturity choices. Journal of Financial and Quantitative Analysis, 47, 23-34.

Fernández, V.P., Aplicada, U.D.C. (2005), What Drives Capital Structure? Evidence from Chilean Panel Data, Centro de Economía Aplicada, Departamento de Ingeniería Industrial, Universidad de Chile.

Fischer, E., Heinkel, R., Zechner, J. (1989), Dynamic capital structure choice: Theory and tests. The Journal of Finance, 44, 19-40.

Gajdka, J. (2002), Teorie Struktury Kapitału i Ich Aplikacja w Warunkach Polskich. 1st ed. Łódź: Wydawnictwo Uniwersytetu Łódzkiego.

Gajurel, D.P. (2005), Determinants of Capital Structure in Nepalese Enterprises, Published Master's Degree Thesis. Kathmandu, Nepal: Tribhuvan University.

Ganguli, S.K. (2013), Capital structure-does ownership structure matter? Theory and Indian evidence. Studies in Economics and Finance, 30(1), 56-72.

Gaud, P., Jani, E., Hoesli, M., Bender, A. (2005), The capital structure of Swiss companies: An empirical analysis using dynamic panel data. European Financial Management, 11(1), 51-69.

Giannetti, M. (2003), Do better institutions mitigate agency problems? Evidence from corporate finance choices. Journal of Financial and Quantitative Analysis, 38(1), 185-212.

Gomariz, M.F.C., Ballesta, J.P.S. (2014), Financial reporting quality, debt maturity and investment efficiency. Journal of Banking and Finance, 40(1), 494-506.

Graham, J., Harvey, C. (2001), The theory and practice of corporate finance: Evidence from the field. Journal of Financial Economics,

60, 187-243.

Gungoraydinoglu, A., Öztekin, Ö. (2011), Firm-and country-level determinants of corporate leverage: Some new international evidence. Journal of Corporate Finance, 17(5), 1457-1474.

Hackbarth, D., Jianjun, M., Erwan, M. (2006), Capital structure, credit risk and macroeconomic conditions. Journal of Financial Economics, 82(3), 519-550.

Hake, M. (2012), Banking sector concentration and firm indebtedness: Evidence from central and eastern Europe. Focus on European Economic Integration, Q3/12. Oesterreichische Nationalbank (Austrian Central Bank), 2, 65-71.

Hall, G., Hutchinson, P., Michaelas, N. (2004), Determinants of the capital structure of European SMEs. Journal of Business Finance and Accounting, 31(5), 711-728.

Hanousek, J., Shamshur, A. (2011), A stubborn persistence: Is the stability of leverage ratios determined by the stability of the economy? Journal of Corporate Finance, 17, 1360-1376.

Harris, M., Raviv, A. (1991), The theory of capital structure. Journal of Finance, 46, 297-356.

Hasan, A., Muhammad, A., Butt, S.A. (2009), The impact of ownership structure and corporate governance on capital structure on Pakistani listed companies. International Journal of Business and Management, 4(2), 8.

Hausman, J.A. (1978), Specification tests in econometrics. Econometrica, 46, 1251-1271.

Iqbal, A., Tanveer, A., Xianzhi, Z. (2016), Credit supply and corporate capital structure: Evidence from Pakistan. South Asian Journal of Global Business Research, 5(2), 250-267.

Jappelli, T., Pagano, M. (2002), Information sharing, lending and defaults: Cross-country evidence. Journal of Banking and Finance, 2002, 2017-2045.

Jensen, M. (1986), Agency costs of free cash flow, corporate finance and takeovers. American Economic Review, 76, 323-339.

Jensen, M., Meckling, W. (1976), Theory of the firm: Managerial behavior, agency costs and ownership structure. Journal of Financial Economics, 3, 305-360.

Jordan, J., Lowe, J., Taylor, P. (1998), Strategy and financial policy in UK small firms. Journal of Business Finance and Accounting, 25, 1-27.

Jõeveer, K. (2013), What Do We Know About The Capital Structure of Small Firms? Working Paper Series, Prague, December.

Karadagli, E.C. (2012), The effects of globalization on firm performance in emerging markets: Evidence from emerging-7 countries. Asian Economic and Financial Review, 2(7), 858-865.

Katagiri, M. (2014), A macroeconomic approach to corporate capital structure. Journal of Monetary Economics, 66, 79-94.

Kayo, E.K., Kimura, H. (2011), Hierarchical determinants of capital structure. Journal of Banking and Finance, 35(2), 358-371.

Kharawish, A.H. (2008), The determinants of the capital structure evidence from Jordanian industrial companies. Journal of King Abdulaziz University: Economics and Administration, 24(1), 173- 196.

Khrawish, A.H., Khraiwesh, A.H. (2010), The determinants of the capital structure: Evidence from Jordanian industrial companies. Journal of King Abdulaziz University: Economics and Administration, 24(1), 173-196.

Korajczky, R.A., Levy, A. (2003), Capital structure choice: Macroeconomic conditions and financial constraints. Journal of Financial Economics, 68, 75-109.

Kraus, A., Litzenberger, R.H. (1973), A state⬜preference model of optimal financial leverage. The Journal of Finance, 28(4), 911-922.

Levy, A., Hennessy, C. (2007), Why does capital structure choice vary with macroeconomic conditions? Journal of Monetary Economics, 54(6), 1545-1564.

Lipson, M.L., Mortal, S. (2009), Liquidity and capital structure. Journal of Financial Markets, 12(4), 611-644.

Mazhar, A., Nasr, M. (2010), Determinants of capital structure decisions: Case of Pakistani government owned and private firms. International Review of Business Research Papers, 6(1), 40-46.

Mazur, K. (2007), The determinants of capital structure choice: Evidence from polish companies. International Advances in Economic Research, 13(4), 495-514.

McConnell, J.J., Pettit, R.R. (1984), Application of the modern theory of finance to small business firms. In: Horvitz, P.M., Pettit, R.R., editors. Small Business Finance. 1st ed. Greenwich, Connecticut: JAI Press.

Mehran, H. (1992), Executive incentive plans, corporate control, and capital structure. Journal of Financial and Quantitative Analysis, 27(4), 787-821.

Memon, P.A., Rus, R.B., Ghazali, Z.B. (2015), Firm and macroeconomic determinants of debt: Pakistan evidence. Procedia-Social and Behavioral Sciences, 172, 200-207.

Michaelas, N., Chittenden, F., Poutziouris, P. (1999), Financial policy and capital structure choice in UK SMEs: Empirical evidence from company panel data. Small Business Economics, 12, 113-130.

Miller, M.H. (1977), Debt and taxes. Journal of Finance, 32, 261-275.

Mitton, T. (2008), Why have debt ratios increased for firms in emerging markets? European Financial Management, 14(1), 127-151.

Modigliani, F., Miller, M. (1958), The cost of capital, corporation finance and the theory of investment. American Economic Review, 48, 261-297.

Modigliani, F., Miller, M. (1963), Corporate income taxes and the cost of capital-a correction. American Economic Review, 53, 433-443.

Muthama, C., Mbaluka, P., Kalunda, E. (2013), Empirical analysis of macro-economic influences on corporate capital structure of listed companies in Kenya. Journal of Finance and Investment Analysis, 2, 41-62.

Myers, S., Majluf, N. (1984), Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics, 13, 187-221.

Myers, S.C. (1977), Determinants of corporate borrowing. Journal of Financial Economics, 5, 147-175.

Myers, S.C. (1984), The capital structure puzzle. Journal of Finance, 39, 575-592.

Omet, G. (2006), Ownership structure and capital structure: Evidence from the Jordanian capital market (1995-2003). Corporate Ownership Control, 3(4), 99-107.

Omet, G., Nobanee, H. (2001), The capital structure of listed industrial companies in Jordan. Arabic Journal of Administrative Sciences, 8, 273-289.

Ozkan, A. (2001), Determinants of capital structure and adjustment to long run target: Evidence from UK company panel data. Journal of Business Finance and Accounting, 28(1/2), 175-198.

O'Cook, D., Tang, T. (2010), Macroeconomic conditions and capital structure adjustment speed. Journal of Corporate Finance, 16(1), 73-87.

Padachi, K., Seetanah, B. (2007), Stock market development and financing choices of firms: A case study of SIDS. International Review of Business Research Papers, 3(2), 305-325.

Pandey, I. (2001), Corporate Dividend Policy and behaviour The Malaysian Experience, Working Paper No. 2001-11-01. Ahmadabad: Indian Institute of Management.

Pfeffer, J., Salancick, G.R. (1978), The External Control of Organisations: A Resource-Dependence Perspective. New York: Harper & Row.

Qureshi, M.A., Imdadullah, M., Ahsan, T. (2012), What determines leverage in Pakistan? A panel data analysis. African Journal of Business Management, 6(3), 978-985.

Rajan, R.G., Zingales, L. (1995), What do we know about capital

structure? Some evidence from international date. Journal of Finance, 5, 1421-1459.

Ramalingegowda, S., Yu, Y. (2012), Institutional ownership and conservatism. Journal of Accounting and Economics, 53(1), 98-114.

Sarlija, N., Harc, M. (2012), The impact of liquidity on the capital structure: A case study of Croatian firms. Business Systems Research, 3(1), 30-36.

Schmukler, S., Vesperoni, E. (2001), "Firms" financing choices in bank-based and market-based economies. In: Demirguc-Kunt, A., Levine, R., editors. Financial Structure and Economic Growth. Cambridge: MIT Press. p347-375.

Schoubben, F., Hulle, C.V. (2004), The determinants of leverage: Differences between quoted and non quoted firms. Tijdschrift Voor Economie en Management, 49, 589-621.

Sett, K., Sarkhel, J. (2010), Macroeconomic variables, financial sector development and capital structure of indian private corporate sector during the period 1981-2007. IUP Journal of Applied Finance, 16(1), 40.

Shah, A., Khan, S. (2007), Determinants of capital structure: Evidence from Pakistani panel data. International Review of Business Research Papers, 3(4), 265-282.

Sheikh, N.A., Qureshi, M.A. (2014), Crowding-out or shying-away: Impact of corporate income tax on capital structure choice of firms in Pakistan. Applied Financial Economics, 24(19), 1249-1260.

Song, J.Y., Philippatos, G.C. (2004), Revisiting Variations in International Capital Structure: Empirical Evidence from 16 OECD Countries, Working Paper, University of Tennessee.

Soumadi, M., Hayajneh, O.S. (2012), Capital structure and corporate performance empirical study on the public Jordanian shareholdings firms listed in the Amman stock market. European Scientific Journal October, 8(22), 173-189

Stiglitz, J.E., Weiss, A. (1981), Credit rationing in markets with imperfect information. American Economic Review, 71(3), 393-410.

Subadar, U.A., Lamport, M., Bhujoo-Hosany, W. (2010), Theories of Capital Structure: Evidence from Investment and Non-Investment Firms Listed on the Stock Exchange of Mauritius.

Supanvanij, J. (2006), Capital structure: Asian firms versus multinational firms in Asia. The Journal of American Academy of Business, Cambridge, 10, 324-330.

Teker, D., Tasseven, O., Tukel, A. (2009), Determinants of capital structure for Turkish firms: A panel data analysis. International Research Journal of Finance and Economics, 29, 179-187.

Titman, S., Wessels, R. (1988), The determinants of capital structure choice. Journal of Finance, March, 43, 1-19.

Tomschik, D. (2015), The Impact of Macroeconomic Variables on Capital Structure: A Comparison between Companies in E7 and G7 Countries, 5th IBA Bachelor Thesis Conference, July 2nd, Enschede, Netherlands.

Van der Wijst, N., Thurik, R. (1993), Determinants of small firm debt ratios: An analysis of retail panel data. Small Business Economics, 5, 55-65.

Voulgaris, E., Asteriou, D., Agiomirgianakis, G. (2004), Size and determinants of capital structure in the Greek manufacturing sector. International Review of Applied Economics, 18(2), 247-262.

Wellalage, H.H., Locke, S. (2012), Corporate governance and capital structure decision of Sri Lankan listed firms. Global Review of Business and Economic Research, 8(1), 157-169.

Wen, Y., Rwegasira, K., Bilderbeek, J. (2002), Corporate governance and capital structure decisions of Chinese listed firms. Corporate Governance: An International Review, 10(2), 75-83.

Yusuf, A.N., Al-Attar, A.M., Al-Shattarat, H.K. (2015), Empirical evidence on capital structure determinants in Jordan. International Journal of Business and Management, 10(5), 134-152.

Zeitun, R., Tian, G.G. (2007), Capital structure and corporate performance: Evidence from Jordan. Australasian Accounting Business and Finance Journal, 1(4), 41.

Zingales, L. (1995), In search of new foundations. Journal of Finance, 55(4), 1623-1653.