Macroeconomic Conditions and Firm's Choices of Capital Structure: Evidence from Pakistan's Manufacturing Sectors

Farah Riaz[1]

Lecturer, Department of Management Sciences, COMSATS Wah Campus
Tel. #: +92-51-9314382 Ext: 268, Fax #: +92-51-4546850, Email: farview03@gmail.com

[1] The author did MS (finance) in 2010, has been teaching as Lecturer in different universities since November 2007. Major areas of interest are Financial Accounting, Business Finance, Financial Management and Corporate Finance. One paper is already published in an international journal and two are in pipe line. Currently serving as Lecturer in Management Sciences Department, COMSATS Wah Campus, The Mall Wah Cantt.

ABSTRACT

Purpose

Progressive economic growth in a county is essential for effective and sound decision making of firm's financial policies. Capital structure is one of the most significant areas of firms' strategic financial decision making. Several economic and institutional factors drive the economy towards a certain direction and play a vital role in influencing the firms' choices of leverage. The aim of this study is an attempt to investigate the role of key economic factors in strategic financial decisions among listed firms from Pakistan's major manufacturing sectors.

Methodology

Using Ordinary Least Square (OLS) technique, a theoretical model has been designed, termed as 'Economic Factors Model' in a pooled cross-sectional framework and three sub-models are further formulated taking three different measures of debt ratios with key economic factors; GDP growth rate, inflation rate and lending rate. To investigate the expected relationship, a panel regression model is formulated taking individual samples of the firms from five major large-scale manufacturing sectors of Pakistan during the period 2001-2008 inclusive.

Findings

Empirical results demonstrate that the key economic factors might influence firm's leverage. Findings showed that GDP growth rate of Pakistan has a significant negative association with debt ratios. Inflation rate, an important and significant economic indicator, found a significant and positive association with debt ratios only in case of textile firms whereas mix results are found taking lending rate with debt ratios. A negative association of lending rate suggests lower demands of the firms for debt financing when lending rates rise. Contrary to this, positive association indicates that due to emerging capital markets in our country, it is

difficult for the firms to bear high floatation cost while issuing the common equity, so the main source of debt financing for the firms is commercial banks.

Research limitations

The existence of several economic and institutional factors in our economy potentially influence the profitability, growth, performance and financial decisions of the firms but this study is confined to only three key macroeconomic factors.

Originality

Pakistan's manufacturing sector plays a vital role in our economic growth and progression as it remarkably contributes in country's GDP. Few studies are carried out on influential behavior of economic factors with firm's leverage measures among Pakistani firms. Therefore this study will also add value to the existing literature in analyzing the influential behavior of key economic factors on firm's leverage.

Keywords:

Capital structure, economic factors model, leverage ratios, panel data analysis

1. Introduction

A progressive trend in the economy is essential for the effective and sound decision making of firm's financial policies. A theoretical relationship exists between firm's leverage and economic indicators and already discussed and analyzed by a number of researchers. Capital structure decisions are the most significant areas of firms' strategic decision making. Past studies confirm that capital structure is a substantial part of firms' strategic financial decisions due to its association with country's economic and institutional environment.

The capital structure of a firm is also termed as leverage. It comprises of mix proportion of debt (long-term and short-term), common stock and preferred stock etc. A firm requires all these financing instruments or a combination of these in order to carry out its operational activities. These are the sources of funds which enable a firm to finance its assets (resources). Debt financing comprises of issuance of bond or long-term debt instruments whereas; equity is categorized in terms of common stock, preferred stock and retained earnings. The short-term debt available to a firm is also a source of additional funds for any business. Capital structure decisions of a company are of relative importance, on the basis of which future projections can be made.

A detailed analysis of capital structure is helpful for the managers in order to formulate strategic financial decisions and effective debt issuing policies for the firms. Firms whether small or large, need to grow over time and expand their business operations. Firms from manufacturing sectors grow in size by expanding their business operations, resulting in increasing levels of productivity as well as boosting economic growth. In case of developing countries like Pakistan, firms can additionally finance their operations using external

financing options. Therefore it is necessary for the firms to analyze the financial factors as well as economic and institutional factors that might contribute in formulating their strategic financing decisions and a wide range of debt policy issues.

Pakistan's economy followed a growth pattern during the last several years, yet it entered into a declining phase by the end of 2007. Several political and socio-economic factors like; the increasing political disputes, country-wide spreading terrorist activities, fuel and energy crises, electricity shortages, increasing poverty etc. coupled with several external factors like adverse international financial crisis, external pressure on our government caused by the developed nations and unusual growing prices of consumable goods etc. interrupt the smooth performance of fundamental economic variables. In spite of having multiple challenges, the overall performance of our economy is found satisfactory. Moreover, the economic situation exhibits upgradations in country's operational sectors since the beginning of 2010. Substantial efforts have been carried out in achieving macroeconomic stability within the country. Pakistan emerged as one of the best performers after the global financial crisis. However, further improvements are still needed by improving government policies, investment and renewed access to global markets, have generated solid macroeconomic recovery during the last decade.

Pakistan is a semi-industrialized economy. Our major manufacturing industries involve steel, cement, automobiles, sugar, fertilizer, cloth and vegetable ghee, industrial chemicals, refined petroleum and a variety of other industries that manufacture products not only to fulfill the demands of our domestic markets but also in many cases for the world market too. Several economic factors as well as international financial crisis critically affected the growth and expansion of our manufacturing sectors. Yet structural reforms and technological improvements are bringing about among the manufacturing firms as well as effective projections and planning is also carried out in order to bring our industries on the roads of success.

The manufacturing sector is further classified in terms of two groups; Large-scale Manufacturing and Small & Medium manufacturing. The large-scale manufacturing sector has a remarkable contribution in our country's GDP. [1] It is our largest growing sector and includes several sub-sectors. Despite of having growth in this sector, unfortunately several firms from large-scale manufacturing are not showing notable statistics of productivity and profitability due to economic slumps. It is said that Pakistan's manufacturing sector had to

face the most critical time period of its recent history during (July-March) 2008-09 due to decline of 8.2 percent (-8.2%) in growth as compared to the 4.1 percent (4.1%) growth during the last year, 2007-08. The economic disorders like; higher inflation, rising level fuel and energy crises, power shortages, increasing cost of conducting businesses, growing demands of several commodities, declining exports and growing levels of imports, worsening law and order situation etc. are highly disturbing the operational activities of our manufacturing firms.

1.1 Study Objectives

In order to have a realistic analysis based on the available data, five prominent sectors are chosen out of our large scale manufacturing. These sectors are said to be the backbone of Pakistan's manufacturing sector due to having their considerable importance among the economic groups. Only a few studies are conducted in this regard that focuses over the influential behavior of economic factors with debt ratios. Therefore, the aim of this study is to explore the influential behavior of key economic variables on firm's capital structure decisions on Pakistan's large-scale manufacturing firms.

2. Review of Literature

Various studies are conducted on multiple aspects of the firms' choices of leverage, shedding light on several factors that affect the firms' capital structure decisions. Firms performing their business activities also belong to an economic group therefore, the existence of economic factors in the economy has a substantial impact on firm's operational activities and leverage measures. Few researchers analyzed the impact of key economic factors on the leverage of the firms leverage, especially in case of Pakistan. A brief overview of research studies from the existing literature, evaluating the firm's economic environment and the influential behavior of economic factors on capital structure are presented below:

As a developing nation, Pakistan is rigorously facing irregularities and disturbances in its routine economic activities due to having lots of disturbances among economic indicators and prevailing war on terrorism spreading across the country. Rapid fluctuations among the economic factors tend to increase the monetary requirements of manufacturing firms. Hence the firms have to rely upon some external source of financing. The study (Mahmud, 2003) explored the association between economic growth and capital structure decisions among the firms from three Asian countries (Pakistan, Malaysia and Japan). Findings suggest in case of

Japanese and Pakistani firms, a high leverage ratio is observed comparable to Malaysian firms.

In a similar study, (Mahmud et al., 2009) researchers examined the role of a country's key economic variables in determining the capital structure (debt ratios) among the selected firms from three Asian countries (Pakistan, Malaysia and Japan) for the study. Results of this study state that there found a significant relationship between per capita GNP growth and capital structure among the firms from Japan and Malaysia. Furthermore, the study concludes that higher economic growth enables the firms to use more long term debt. Further analysis shows that the empirical results in case of Pakistani firms are somewhat different as compared to Japanese and Malaysian firms, showing somewhat incompetence attached with higher leverage might force Pakistani firms to bear debt burden. Moreover, a high gearing is observed among Pakistani firms due to having undeveloped capital market, firms have to switch towards debt financing through commercial banks.

Another study is carried out on similar issue (Bas et al., 2009) in which researchers examined that a country's macroeconomic situations significantly affect the decision-making patterns of their firms leverage. It further examines that the fundamental economic factors (such as per capita GDP, GDP growth, inflation rate, interest rate and taxes etc.) significantly influence the firms' choices of capital structure and debt maturities. For study purpose, data samples of private, small and large listed firms are chosen from 25 various developing countries. Empirical results suggest that per capita GDP relates positively with firm's leverage, advocating that as countries become richer and richer, firms operating in those countries are able to find out several opportunities to invest their additional funds. Furthermore, when the value of a country's GDP improves, firms operating in those countries are more likely to have easily available external funds in order to meet their additional financing needs. Analysis of GDP growth rate shows that it positively relates with firms leverage. Inflation factor, on the other hand, associates negatively with firm's leverage, implying that rising level of inflation in a country brings down the firms level of borrowings (external debt). In many cases, a significant positive relationship is observed between interest rates and firms' leverage, advocating that firms switch towards additional debt financing despite of increasing interest rates. Contrary to this, negative association of interest rate is also observed when company's long-term debt ratio is considered, suggesting that firms may not wish to finance long-term debt when the interest rates in the economy become higher. Therefore, an influential behavior of macroeconomic factors with firms' capital structure is found to be crucial.

Another study discussing about the relationship between interest rates and firms' borrowing decisions is presented here (Eldomiaty, 2007). In this study, interest rate is considered as one of the key determinants of free cash flow theory. Empirical findings suggest a negative and significant relationship between interest rates and borrowing decisions of the firms. Arguments in favor of this relationship suggest that the borrowing decisions of the firms depend upon the trends in the interest rates. Usually firms plan to borrow funds when interest rates in the economy are lower. Further research showed that the firms' short-term borrowing decisions found to be unrelated in case of two main industries (engineering and electrical equipment & utilities), yet it relates in case of textile industry.

Another key study is carried out (Jong et al., 2006) which explored the empirical relationship between firms' capital structure and macroeconomic (country-specific) variables, taking sample data of several firms from 42 different countries around the world. Researchers examined a number of economic factors (i.e., interest rates, GDP growth, inflation rate, stock market development, and capital markets, legal and judicial systems of a country and corruption factor). Based on these explanatory variables, findings suggest that country's macro-economic variables have a direct influence on the level of a firm's leverage as well as these variables might influence the leverage indirectly. Furthermore, a country's legal environment and economic conditions play a vital role in strategic financial decision-making of that country's corporate capital structure in both cases (directly and indirectly). Further analysis indicates that a country having stabilized economic conditions and vigorous outlook of economic developments, major economic indicators such as GDP growth and inflation rate etc. have a significant impact on market value and book value of leverage.

The importance of macroeconomic (country-specific) variables in analyzing the choices of firms' capital structure across different countries by taking sample data of several firms from 39 various countries has been analyzed. Their study presents the substantial influence of several macroeconomic variables such as the degree of development in banking sector, equity and bond markets (Fan et al., 2004). Prior to this study, it is already analyzed the leverage measures of the firms from 19 developed and 11 developing nations, suggesting that there exist some institutional differences between developed and developing countries therefore larger extent of variations in usage of long-term debt exist among different countries. They further suggest that in case of developing countries, the influential behavior of some

institutional factors on the leverage of large firms is different from that of smaller firms (Demirguc-Kunt and Maksimovic, 1999).

Many researchers applied pooled data analysis approach to examine the variants in firms' capital structure due to their interrelationship with macroeconomic variables (such as GDP, interest rate, inflation, capital markets development etc.). In another research study, observed the dissimilarities in firms' leverage measures due to the existence of numerous macroeconomic indicators in the economy. It further examined the influence of GDP growth, inflation, and capital market development on changing behavior of firms' choices for debt financing. Their ending comments state that further research need to be carried out at broader level to realize the effect of institutional factors on corporate leverage (Booth et al., 2001).

Pakistan's economy has a stronger influence on operational activities of our manufacturing sector. Economic progression and smoothness in macroeconomic indicators has a substantial impact on corporate leverage decisions. Moreover, researchers analyzed that variations in the financing mix of a firm also depend upon varying economic situations, government policies and intrusions, institutional factors and other determinants (financial factors) of leverage but only a few studies are carried out in this regard, based on the influential behavior of economic factors with different measures of firm's leverage among Pakistani firms. Therefore, in this regard, this study will also add value to the existing body of literature in investigating the influential behavior of key economic factors on firm's leverage, taking sample data of 236 manufacturing firms from our five large scale manufacturing sectors. A theoretical model will be formulated in this regard, taking three key economic factors and hence their impact on three measures of firms' leverage (debt ratios) would be analyzed.

3. Methodology and Data

Following the main objectives of the study, we shall investigate the influential behavior of key economic factors on firms' leverage. For this purpose, a theoretical model has been formulated, termed as ***'Economic Factors Model'*** based on an expected relationship of economic factors and firms' choices of capital structure decisions. To examine this relationship, three debt/leverage ratios are chosen as dependent variables whereas three key economic variables (GDP Growth Rate, Inflation Rate and Lending Rate) have been short-listed from economic indicators. Using 'Ordinary Least Square' (OLS) technique, these dependent and explanatory variables are therefore combined into a pooled cross-sectional framework in order to examine the degree of association of economic variables with

corporate leverage, taking individual samples of all the firms from five major large-scale manufacturing sectors of Pakistan (i.e. Textile, Engineering, Sugar and Allied, Chemical and Cement) listed in Karachi Stock Exchange (KSE) during the study period (2001-2008 inclusive).

3.1 Theoretical Models

To estimate and empirically analyse the expected relationship, sis, *'Economic Factors Model'* is further divided into three sub-models, using three different measures of debt ratios as dependent variables and key economic factors as explanatory variables. Mathematically, these theoretical sub-models are shown below:

Model I: $$DER_{it} = \alpha_0 + \alpha_1 GR_t + \alpha_2 IR_t + \alpha_3 LR_t + \mu_{1t} \quad \ldots\ldots\ldots\ldots\ldots (i)$$

Model II: $$DAR_{it} = \alpha_0 + \alpha_1 GR_t + \alpha_2 IR_t + \alpha_3 LR_t + \mu_{2t} \quad \ldots\ldots\ldots\ldots\ldots (ii)$$

Model III: $$CPR_{it} = \alpha_0 + \alpha_1 GR_t + \alpha_2 IR_t + \alpha_3 LR_t + \mu_{3t} \quad \ldots\ldots\ldots\ldots\ldots (iii)$$

Where,

i = ith firm from the textile, engineering, sugar, chemical or cement sector

t = time period (2001-2008)

DER = debt to equity ratio

DAR = debt to total assets ratio

CPR = capitalization ratio

GR = GDP growth rate

IR = inflation rate

LR = lending rate

$\alpha_1, \alpha_2, \alpha_3$ = the regression coefficients of explanatory variables

$\mu_{1t}, \mu_{2t}, \mu_{3t}$ = the error terms that satisfy the classical regression assumptions

3.2 Description of variables

To analyze the choices of firms' leverage, three debt ratios are chosen as the dependent variables whereas; three economic factors are selected as explanatory variables and modeled them with debt ratios. An overview of depend and explanatory variables selected for economic factors model is presented below:

3.2.1 Dependent Variables

The capital structure of any firm is measured in terms of its debt ratios (also termed as leverage ratios). Several researchers analyzed different measures of debt ratios in their research studies in order to investigate their relationship with other variables. In this study, capital structure of the firms will be measured in terms of following three debt ratios; debt to equity ratio, debt to assets ratio and capitalization ratio, as explained below:

- ***Debt to Equity Ratio*** - Debt to equity ratio refers to the portion of firm's debt financing as a proportion of equity funds provided by its shareholders. It also advocates the creditworthiness and financial risk of the firm. A lower value of debt ratio shows a lower level of risk for the firm's creditors, indicating a good sign for the company. Many researchers used this ratio to measure the firm's capital structure. It is calculated by dividing total leverage (debt) of the firm by its shareholder's equity. Where, the value of total debt includes total liabilities of the firm (including firm's debentures, preference shares and total fixed liabilities) whereas total equity presents the total value of ordinary share capital and adding surplus on share capital of the firm.
- ***Debt to Assets Ratio*** - The debt to assets ratio demonstrates the level of debt financing of the firm by its total assets. Several researchers have used this ratio as a measure of debt ratio. It is calculated by dividing the total leverage (debt) of the firm by its total assets.
- ***Capitalization Ratio*** - Capital of the firm is the portion of firm's long-term debt plus book value of its equity. Capitalization ratio measures the firm's long-term financing mix. Several researchers utilized this ratio in their research studies to examine the level of firm's long-term leverage (debt) as a portion of its total capital. The ratio is calculated by dividing firm's total fixed liabilities by its total capital.

3.2.2 Independent Variables

Several economic indicators are a part of existing economy. Past studies confirm that the existence of macroeconomic factors in an economy play a vital role in determining the capital structure of the firm. Keeping in mind the objectives of this study, the impact of key economic variables on firms' leverage among Pakistan's manufacturing firms would be analyzed, to check if there exist any relationship between key economic indicators and capital firms' leverage. Furthermore, three key economic indicators have chosen out of several existing macroeconomic factors. These are; Pakistan's GDP Growth Rate, inflation rate and

lending (interest) rate. A summary of these key economic factors (explanatory variables) is presented below:

- ***Growth Rate*** - Gross Domestic Product (GDP) of a country is the cumulative of total goods and services produced in a country during a given year. The growth rate (GDP rate) of Pakistan is calculated as the percentage change in the aggregate value of total number of goods and services produces in our country during one year with respect to the value in previous year. The growth rate of Pakistan is available in published data of Pakistan's Economic Survey on annual basis. Past studies illustrate that GDP growth rate positively relates with debt ratios. [2] They further investigate that when countries encounter economic development, they have a smooth and constant growth pattern and their financial institutions are also stabilized. Therefore, debt financing options are easily available for their firms.
- ***Inflation Rate*** - In any economy, inflation is regarded as an important economic indicator which provides an insight about the trends in an economy as well as the sound economic policies. Economists suggest that a stable inflation is necessary for the economic development of a country but very high as well as a down turn in inflation is also disastrous for the economic growth. Inflation needs to follow a smooth pattern for the substantial growth and economic stability. Inflation rate is a quantitative measure of inflation. It is measured by calculating the percentage change in the prices of a group of commodities during a year with respect to the previous year. A review of literature shows that inflation influences leverage ratios in both ways (significant positive as well negative). A higher level of inflation may relates positively related with debt measures ratios whereas, some researchers also suggest that rising level of inflation causes a rise in cost of debt therefore firms have to switch towards other financing options.

- ***Lending (interest) Rate*** - Lending rates are the interest rates offered by State Bank of Pakistan for the firms to obtain loans from financial intermediaries (like banks). A sudden rise or fall in the percentage of interest rate affects the debt policy and financial decisions of the firms. Studies related to Pakistan illustrate that prime lending rate (as stated by State Bank of Pakistan) positively relates with the leverage. Some studies show significant negative association in this regard. In our study, we expect mix results in this matter.

3.3 Sample for Study

In order to analyze the association between economic factors and debt measures, five major sectors from Pakistan's manufacturing The study sample consists of different number of firms from Textile, Engineering, Sugar, Chemical and Cement sectors. There are 654 companies listed in Karachi stock exchange but we have chosen 236 companies which belong to five major and large-scale manufacturing sectors. The study period comprises of eight financial years (2001 to 2008 inclusive) and only those firms have been chosen for the analysis for which complete data was available. The textile sector of Pakistan includes firms from textile spinning, textile weaving and textile composite. The engineering sector includes automobile manufacturers, electronics manufacturing firms and other engineering goods manufacturing firms. The chemical sector includes pharmaceutical firms, fertilizer manufacturing companies, paint manufacturers and chemical manufacturing companies whereas, cement and sugar sectors include all respective firms that manufacture cement and sugar respectively. The study sample is presented in table 1:

Table 1: Study Sample for Analysis

3.4 Data Analysis Tools and Techniques

For the purpose of estimation, a panel regression model is applied [3] to empirically analyse the given samples based on a balanced panel of all the firms from five major listed manufacturing sectors. The observations included in the sample data are pooled together in a cross-sectional framework. Using ordinary least squares (OLS) approach, 'Panel Data Analysis' technique is applied.[4] Panel data analysis is a comprehensive technique that provides more informative data in a combine set of cross-section and time-series data set. Panel data is also helpful in minimizing the errors or biases in the data set. "*Regression Analysis"* technique would be further applied to check the dependent-independent relationship in three different models as well as analyzing the long-run relationship among the variables.

4. Empirical Analysis

The empirical analysis section includes both descriptive and quantitative analysis. Descriptive statistics analyze the average values, range and dispersion of values of the underlying variables. Quantitative analysis includes correlation analysis and regression analysis. Correlation analysis confirms the level of association between any two independent

variables whereas regression analysis is carried out in order to analyze the dependent-independent relationship among the variables of interest.

4.1 Descriptive Statistics

Pakistan's economy has to face several unprecedented challenges since the day it came into being. Continuous disruptions and rapid fluctuations among the key economic indicators are observed during last ten years. A down-turn has been experienced by the economy during 2006-07. The year 2008-09 came with unique challenges for the economy, weakening the position of several economic variables in our economy. Yet the economy seems to follow a recovery pattern since 2009-10 onwards. The annual trends among key economic factors during the last ten years are summarized in Table 2:

Table 2: Annual Trends among Key Economic Factors

The descriptive statistics of dependent and independent variables from the economic factors model has been carried out. The mean values of variables demonstrate the average value of all firms included in the sample in each year. Standard deviation among variables represents the extent of dispersion in the data from the mean value. The values of range shows the difference between the lowest and highest value in the observation a variable attained in the sample data whereas CV represents the coefficient of variation among the values in the observations. The mean values of variables demonstrate the average value attained by each variable during a year. Debt to equity ratio (DER) shows the highest average value in the manufacturing sector as compared to debt to assets ratio (DAR) and capitalization ratio (CPR), showing that manufacturing sector in Pakistan is financed with debt more than three times than equity. Standard deviation among variables represents the extent of dispersion in the data from the mean value. Similarly, debt to equity ratio (DER) is showing the maximum variations in the data set among other leverage ratios.

The descriptive statistics among key economic variables is also analysed. Pakistan's average GDP growth remained 5% whereas inflation and interest rates showed an average value of 8.5% and 11% respectively during the last ten years. Furthermore, a higher level of dispersion among the values of inflation rate has been analysed as compared to other chosen economic variables. Table 3 presents the summary of descriptive statistics among dependent variables and key economic factors.

Table 3: Descriptive Statistics

4.2 Correlation Analysis

To test the existence of multicollinearity among the key economic factors (independent variables), we perform correlation test. Correlation analysis examines the degree of association between any two independent variables. The results of correlation analysis are shown in the given table:

Table 4: Correlation Matrix

Table 4 illustrates the results of correlation analysis. There exists a significant positive correlation between Pakistan's growth rate and inflation rate. Other pairs of macroeconomic variables are less correlated with each other.

4.3 Regression Analysis of Economic Factors Model

Regression analysis technique is utilized to analyse the dependent-independent relationship in the economic factors model. Furthermore, three sub-models are formulated and regression analysis is performed separately on these sub-models. For the purpose of estimation, panel data analysis technique is utilized to test the behavior of these models. The regression results are shown in Table 5:

Table 5: Regression Results of Model I

Table 5 illustrates the results of Model I. The analysis shows that there is a negative association between GDP growth rate and debt to equity ratio (leverage ratio) in case of all sectors but the association is significant only in data samples of Textile, Engineering and Cement sectors. Past studies showed that in case of developed and developing countries, the profitability of the firms from these countries show significantly negative association with leverage/debt ratios because when the level of profitability among these firms rises, they preferably reinvest their own income or may look for equity financing instead of additional debt financing. Furthermore, the profit-making firms usually have an increasing level of output therefore they are able to contribute a larger part in the value of country's GDP. As far as textile sector is concerned, it is largest manufacturing sector of Pakistan having more than 150 firms running their businesses. Therefore, its contribution to GDP growth rate would be higher as compared to other sectors.

Another important key economic factor is the inflation rate. Findings show that inflation rate positively relates with debt to equity ratio but significant only in case of Textile sector. This shows when the price level different commodities rise, the overall costs of firms' raw materials and other facilities (like fuel and energy, transportation etc.) also rise. Therefore, the firms may switch towards external financing options in order to meet their financial requirements. Thus the relationship is found to be positive.

Firms usually carefully analyze the lending (interest) rates available to them while planning for debt financing. Literature reveals that firms with high profitability are less likely to get benefit from debt financing options available to them. When the economy is facing higher levels of inflation, the State Bank of Pakistan has to adopt a tight monetary policy by increasing the interest rate values. In case of an economy facing hyper-inflation, firms usually suffer from the effects of hyper-inflation, cutting down their level of profitability. Firms may switch towards debt financing in order to fulfill their desires for external financing. Research findings show mix results of lending rates with debt to equity ratio. A significant negative relationship is observed in case of firms from sugar sector with a regression coefficient of magnitude 9.409. As far as Pakistan's sugar sector is concerned, it does not show encouraging growth situation. The level of growth, profitability and sales in case of Sugar sector was not up to the mark as compared to other manufacturing sectors since last several years. Therefore, it may face difficulties in obtaining long term loans due to higher lending rates. The chemical sector on the other hand, experienced a smooth growth pattern during past years. The chemical manufacturing firms are continuously producing output in order to meet the growing demands of the customers. Moreover, the financial position and performance of chemicals manufacturing is encouraging enough to obtain bank loans. Accordingly, firms can easily take loans from the bank even when the interest rates are higher Therefore, a positive significant association is observed in this case.

The significance of the model in case of textile and engineering sectors is determined by F-statistics and the respective values of coefficient of determination (R^2). The given model is significant in case of chemical sector. A less autocorrelation is found among these three sectors.

Table 6: Regression Results of Model II

Table 6 illustrates the results of Model II. The given analysis shows that regression results Model II with debt to assets ratio are somewhat similar as in case of Model I. The results

growth rates with debt to assets ratios shows a significant negative association in case of textile chemical and cement sectors. Inflation rates and lending rates behave in similar manner with debt to assets ratio as in case of debt to equity ratio. Both these explanatory variables illustrate similar findings as already presented in previous case (regression results of Model I). The empirical findings of regression analysis demonstrate that overall Model II is found to be significant among all sectors except sugar sector. A higher value of coefficient of determination (R^2) is observed in case of textile and engineering sectors. Furthermore, the value of durbin-watson statistics shows less autocorrelation among three sectors (textile, engineering and chemical).

Table 7: Regression Results of Model III

Table 7 presents the regression results of Model III. The growth rate (GDP) of Pakistan found to be significantly negatively related with capitalization ratio in engineering and sugar sectors (similar behavior is observed in this case as already discussed in case of debt to equity and debt to assets ratio). Inflation rate on the other hand, surprisingly, did not show any significant association with capitalization ratio. Economists generally argue that a steady rise in the inflation at a slower rate is necessary for the progressive economic growth. Literature reveals that hyper-inflation is disastrous for all economic sectors. Inflation does affect the financing decisions of firms, but unlike debt to equity ratio and debt to assets ratio, its relationship is found insignificant with capitalization ratio in our sample data.

Mixed results are found if lending rates are taken into account as an explanatory variable with capitalization ratio. As a result of State Bank's tight monetary policy, interest rates become higher. As capitalization ratio is a measure of firm's long-term debt ratio, therefore in an uncertain environment, firms usually predict the future economic conditions and based on these projections, they plan to choose future debt financing instruments. In case of Pakistan's economy, due to continuous rise in the inflation and prevailing disturbances in other economic factors, firms might go for debt financing. Therefore, rising lending rates have a significant positive relationship with capitalization ratio in case of engineering, chemical and cement sectors but the relationship is negative only in case of sugar sector ($p<0.1$). Overall, the given model remains insignificant in case of textile and chemical sector.

Inclusively, the empirical findings illustrate that the key economic factors have an influence on capital structure decisions of Pakistan's manufacturing firms. The results are encouraging

and also consistent with the expected theoretical findings. The growth rate (GDP) of Pakistan has a significant negative impact on debt ratios (debt to equity ratio, debt to assets ratio and capitalization ratio). Matching with previous findings, the results indicate that in general; firms whenever gain profitability; they would become able to fulfill their additional financing requirements. Moreover, the profitability of the firm is found parallel to the economic growth of a country, hence a higher economic growth relates negatively with firm's leverage.

Another important key economic factor is inflation. Inflation rate is an important and significant economic indicator that might affect the financial decisions of the firms. In our study, inflation showed a significant and positive association with debt ratios in case of only textile manufacturing firms (results are significant with debt to equity ratio and debt to assets ratio and insignificant in case of capitalization ratio). Overall, the results of inflation are not encouraging, yet no one can negate with the importance and influential behavior of inflation in the economy.

We found mix results while analyzing the relationship between lending rate and three debt ratios. The values of lending rate coefficients indicate both signs in the analysis (significant positive or negative in different cases). A negative association of lending rate with debt ratios suggests that firms lower their demand for additional debt financing as lending rates rises. Hence, the firms switch towards other financing options. Contrary to this, positive and significant results are also found in some cases, suggesting that although interest rates in Pakistan are higher as compared to other countries, yet due to having undeveloped capital markets in our country, it is burdensome for the companies to float shares with higher costs. Also, the main source of debt financing in Pakistan is commercial banks, therefore firms have to take debt from the banks take even at a higher interest rate whenever they need it. Therefore, a higher level of leverage is observed in case of Pakistani firms when compare with high lending rates.

5. Conclusions

A progressive trend in the economy is essential for the effective and sound decision making of firm's financial policies. Capital structure policies and decisions are the most significant part of firms' strategic decision making. Several financial, business and institutional factors influence the firms' choices of leverage. The aim of our study is an attempt to investigate the role of key economic factors in strategic financial decisions of the listed firms from Pakistan's five major manufacturing sectors. Therefore, this study is based on an in-depth

analysis of influential behavior of economic factors with debt ratios of the firms from Pakistan's large-scale manufacturing sectors.

To analyse the extent of association of key economic factors with firms' capital structure, a theoretical model has been formulated, termed as 'Economic Factors Model' using Ordinary Least Square (OLS) Regression technique in a pooled cross-sectional framework. We have chosen three debt ratios; debt to equity ratio, debt to assets ratio and capitalization ratio as our dependent variables and fitted in a model along with three key economic factors; GDP growth rate, inflation rate and lending rate. The analysis was carried out separately on available data samples of different firms from five major sectors (see Table 1).

The research findings illustrate that the key economic factors have an influence on capital structure decisions of Pakistan's manufacturing firms. The results are encouraging and also consistent with our expected findings. The GDP growth rate of Pakistan has a significant negative impact on debt ratios. Inflation rate, an important and significant economic indicator, found a significant and positive association with debt ratios only in case of textile firms but the overall results of inflation are not that much encouraging. Mix results are found while analyzing the relationship between lending rate and three debt ratios. A negative association of lending rate with debt ratios suggests lower demands of the firms for debt financing when lending rates increase. Contrary to this, it is already suggested that due to having undeveloped capital markets in our country, it is burdensome for the companies to float shares with higher costs. So, the main source of debt financing is commercial banks. Therefore a significant positive relationship might be also analyzed.

The major objective of this study is to analyze the role of key economic factors in determining firm's leverage measures. A smooth pattern of economic growth is crucial for the growth of our manufacturing sector. Pakistan, being a developing nation, has been facing lots of social and economic challenges since the day it came into being. A generalized analysis of economic factors from Pakistan's economy indicates that in spite of having lots of challenges, our economic situation exhibits upgradations in country's operational sectors since the beginning of 2010. Yet it is essential for our economy to follow a recovery pattern after coming out from a deep recession. For this, we need to have an effective control over major issues, like; the rising political tensions among the political parties, terrorist activities, fuel and energy crises, electricity shortages and increasing poverty etc. Structural reforms and technological improvements should bring about among the manufacturing firms. Only then

we would be able to bring noticeable improvements among all economic sectors. Efficient and effective projections are necessary for the economists as well as financial analysts in order to drive our economy on the roads to success.

Our study also encompasses with some limitations. The study is based on secondary database organized and generated by State bank of Pakistan and Ministry of Finance, Government of Pakistan, therefore empirical results might be affected due to any reservations involved in the data. Moreover, only major non-financial sectors are selected due to the differences in the financial setup of the firms from Pakistan's financial sector. The existence of several economic and institutional factors in our economy potentially influence the profitability, growth, performance and financial decisions of the firms but our study is confined to only three key economic factors. Several economic and institutional factors exist in our economy that may affect the profitability, growth potentials and firm's leverage. The future prospects for further research seems to be very encouraging therefore, additional research on similar topics should be carried out in this regard.

Table 1: Study Sample for Analysis

Period of study: 2001-2008	
Sector	Sample Data
Textile	121 firms
Engineering	35 firms
Sugar & Allied	32 firms
Chemical	31 firms
Cement	17 firms
Total	236 firms

Table 2: Annual Trends among Key Economic Factors

Year	GDP Growth Rate (%)	Inflation Rate (%)	Lending Rate (%)
1999-00	3.91	2.2	13.619
2000-01	1.96	3.6	12.847
2001-02	3.11	2.5	13.619
2002-03	4.73	2.9	10.329
2003-04	7.48	6.0	5.171
2004-05	8.96	12.5	6.856
2005-06	5.82	6.9	9.753
2006-07	6.83	10.3	10.70
2007-08	5.78	12.0	10.96
2008-09	2.00	22.4	14.40
2009-10	4.10	11.5	13.56

Notes:

- Growth Rate (GDP) = Annual average %age value of GDP.
- Inflation Rate = Annual average %age value of consumer price index (CPI).
- Lending Rate = Weighted-average %age value of Lending rates.

Table 3: Descriptive Statistics

Variable	Mean	Median	Std. Dev.	CV	Range
Dependent Variables					
DER	3.234	1.673	11.629	3.596	340.2
DAR	0.692	0.662	0.365	0.527	4.126
CPR	0.486	0.260	5.395	11.10	233.2
Key Economic Variables					
GR	4.971	4.730	2.139	0.430	7.000
IR	8.436	6.900	5.827	0.691	20.20
LR	11.07	10.96	2.835	0.256	9.229

Table 4: Correlation Matrix – Economic Factors

Macroeconomic Factors			
Variable	GR	IR	LR
GR	1.000		
IR	0.70**	1.000	
LR	0.213	0.282	1.000

* Correlation is significant at 5 percent level.
** Correlation is significant at 1 percent level.

Table 5: Regression Results of Model I

Model I: $DER_{it} = \alpha_0 + \alpha_1 GR_t + \alpha_2 IR_t + \alpha_3 LR_t + \mu_{2t}$

	Textile	Engineering	Sugar	Chemical	Cement
Constant	**1.75** (0.229) [7.62]***	**2.75** (0.440) [6.253]***	**3.016** (0.887) [3.399]**	**0.611** (0.504) [1.212]	**1.699** (0.344) [4.941]***
GR	**-0.027** (0.007) [-4.021]**	**-0.015** (0.013) [-1.204]*	**-0.030** (0.026) [-1.172]	**-0.026** (0.015) [-1.777]	**-0.012** (0.010) [-1.452]*
IR	**1.60** (0.504) [3.174]**	**0.221** (0.966) [0.229]	**2.560** (1.949) [1.313]	**1.360** (1.107) [1.229]	**0.312** (0.756) [0.413]
LR	**0.755** (1.148) [0.657]	**-2.096** (2.20) [-0.953]	**-9.409** (4.439) [-2.119]*	**6.202** (2.522) [2.459]*	**1.509** (1.721) [0.877]
R^2	0.881	0.863	0.550	0.794	0.799
D-W Stat	2.139	2.382	1.623	2.649	3.285
SE	0.0821	0.1574	0.3175	0.1803	0.1231
F-Stat	9.911**	8.379**	1.631	5.134*	5.300*

Note-1: *, ** and *** Significant at 10 percent, 5 percent and 1 percent level respectively.
Note-2: Regression Coefficients in bold, Standard Errors in parenthesis & t-statistic in brackets

Table 6: Regression Results of Model II

Model II: $DAR_{it} = \alpha_0 + \alpha_1 GR_t + \alpha_2 IR_t + \alpha_3 LR_t + \mu_{2t}$

	Textile	Engineering	Sugar	Chemical	Cement
Constant	**0.638** (0.022) [29.1]***	**0.786** (0.061) [12.89]***	**0.7513** (0.046) [16.52]***	**0.4232** (0.087) [4.874]***	**0.6394** (0.052) [12.37]***
GR	**-0.03** (0.01) [-4.515]**	**-0.002** (0.002) [-0.991]	**-0.001** (0.001) [-1.107]	**-0.005** (0.003) [-1.979]*	**-0.002** (0.002) [-1.427]*
IR	**0.175** (0.048) [3.634]**	**-0.001** (0.134) [-0.006]	**0.127** (0.100) [1.276]	**0.278** (0.191) [1.459]	**0.045** (0.114) [0.400]
LR	**0.044** (0.110) [0.401]	**-0.289** (0.305) [-1.948]*	**-0.485** (0.228) [-2.130]*	**1.001** (0.434) [2.305]*	**0.199** (0.259) [0.768]
R^2	0.896	0.868	0.553	0.791	0.830
D-W Stat	2.091	2.311	1.650	2.454	3.320
SE	0.0078	0.0214	0.0163	0.0311	0.0185
F-Stat	11.474**	8.740**	1.647	5.050*	6.511*

Note-1: *, ** and *** Significant at 10 percent, 5 percent and 1 percent level respectively.
Note-2: Regression Coefficients in bold, Standard Errors in parenthesis & t-statistic in brackets

Table 7: Regression Results of Model III

Model III: $CPR_{it} = \alpha_0 + \alpha_1 GR_t + \alpha_2 IR_t + \alpha_3 LR_t + \mu_{3t}$

	Textile	Engineering	Sugar	Chemical	Cement
Constant	**0.4026** (0.053) [7.592]***	**0.2321** (0.019) [12.29]***	**0.5310** (0.044) [12.19]***	**-0.0266** (0.205) [-0.130]	**0.5599** (8.675) [6.454]***
GR	**-0.001** (0.002) [-8.13]	**-0.002** (0.001) [-3.366]**	**-0.002** (0.001) [-2.368]*	**-0.006** (0.006) [-0.930]	**-0.001** (0.003) [-0.495]
IR	**0.053** (0.116) [0.457]	**0.006** (0.041) [0.155]	**0.117** (0.096) [1.224]	**0.306** (0.450) [0.682]	**-0.072** (0.191) [-0.376]
LR	**-0.076** (0.265) [-0.288]	**0.788** (0.095) [8.338]***	**-1.072** (0.218) [2.224]*	**2.142** (1.024) [2.091]*	**0.498** (0.434) [2.148]*
R^2	0.462	0.977	0.875	0.642	0.806
D-W Stat	1.746	2.412	2.548	2.170	2.769
SE	0.019	0.0068	0.0156	0.0732	0.0310
F-Stat	1.146	100.828***	9.320**	2.386	5.537*

Note-1: *, ** and *** Significant at 10 percent, 5 percent and 1 percent level respectively.
Note-2: Regression Coefficients in bold, Standard Errors in parenthesis & t-statistic in brackets

References

1. Bas, T., Muradoglu, G. and Phylaktis, K. (2009), "Determinants of Capital Structure in Developing Countries", working paper, Cass Business School, London EC1Y 8TZ, U.K.

2. Booth, L., Aivazian, V., Demirguc-Kunt, A., and Maksimovic, V. (2001), "Capital structure in developing countries", Journal of Finance, Vol. 56, pp. 87-130.

3. Danbolt, Jo, Rees, W. and Shamsher, M. (2000), "Disadvantaged capital access – impediments to Scotland's economic growth", working paper, University of Glasgow & University Putra Malaysia.

4. Deesomsak, R., Paudyal, K., and Pescetto, G. (2004), "The determinants of capital structure: evidence from the Asia Pacific region", Journal of Multinational Financial Management, Vol. 14, pp. 387-405.

5. Demirguc-Kunt, A. and Maksimovic, V. (1999), "Institutions, financial markets and firm debt maturity", Journal of Financial Economics, Vol. 54, pp. 295-336.

6. Eldomiaty, Tarek. I (2007), "Determinants of corporate capital structure: evidence from an emerging economy", International Journal of Commerce and Management, Vol. 17(1/2) pp. 25-43.

7. Fan, J., Titman, S. and Twite, G. (2004), "An international comparison of capital structure and debt maturity choices", working paper, available at: http://www.ssrn.com.

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

9. Gujarati and Sangeeta (2007), Basic Econometrics, New York: McGraw Hill.

10. Jong, Abe de, Kabir, R. and Nguyen, T. T. (2006), "Capital structure around the world: the roles of firm- and country-specific determinants", working paper, Seminar in Department of Financial Management, RSM Erasmus University.

11. Mahmud, M. (2003), "The Relationship between Economics Growth and Capital Structure of Listed Companies: Evidence from Japan, Malaysia and Pakistan", The Pakistan Development Review, Vol. 42 No. 4, pp. 727-750.

12. Mahmud, M., Herani, Gobind M., Rajar, A.W. and Farooqi, W. (2009), "Economic Factors Infuencing Corporate Capital Structure in Three Asian Countries: Evidence from Japan,Malaysia and Pakistan", Indus Journal of Management & Social Sciences, Vol. 3 No. 1, pp. 9-17.

13. Mazhar, Ayesha and Nasr, M. (2010), "Determinants of Capital Structure Decisions: Case of Pakistani Government Owned and Private Firms", International Review of Business Research Papers, Vol. 6 No.1, (February 2010), pp. 40-46

14. Pakistan Economic Survey, available at: http://www.finance.gov.pk/survey_1011.html, (accessed 30 June 2010).

15. Rajan, R. G., and L. Zingales. (1995), "What Do We Know About Capital Structure? Some Evidence from International Data", Journal of Finance, Vol. 50 No.5, pp. 1421-1460.

16. Shah and Hijazi, T. (2004), "The Determinants of Capital Structure of Stock Exchange-listed Non-financial Firms in Pakistan", The Pakistan Development Review, Vol. 43 No.4 Part II, pp. 605–618.

17. State Bank of Pakistan, "Balance Sheet analysis of joint stock companies listed on the Karachi Stock Exchange 2008", available at: http://www.sbp.gov.pk/publications/index2.asp, (accessed 5 January 2010).

End Notes

[1] According to Pakistan Economic Survey, (2009-10), our large-scale manufacturing sector contributed to 23% in overall GDP growth.

[2] As explained by (Jong et al., 2006) that a positive relationship between GDP and leverage is analyzed when direct impact of country-specific factors on leverage is taken into account.

[3] Panel data analysis is a modern technique that involves pooling of all observations on a cross-section of units over several time periods. It also increases the degrees of freedom by reducing the collinearity among explanatory variables.

[4] A balanced panel data is a set of data that contains equal number of observations in cross-sectional as well time series units. (Gujarati and Sangeeta, (2007), p. 654).