Economic Factors Influencing Corporate Capital Structure in Three Asian Countries: Evidence from Japan, Malaysia and Pakistan

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## ABSTRACT

This study is an attempt to determine the factors that influence a firm's choice of capital structure in three Asian countries: Japan, Malaysia and Pakistan. The specific objective is to investigate if country's economic factors play a significant role in determining capital structure between markets. These countries are chosen in order to represent three different stages of economic development. Literature review reveals that considerable research has been made in the industrialized countries on the similar topic. Capital structure is one of the most complex areas of strategic financial decision making due to its interrelationship with macroeconomic variables. This study reveals that per capita GNP growth for Japan and Malaysia is significantly related to capital structure of firm and higher economic growth tends to cause to use more long term debt. These results for Pakistan are different from those other two countries. This also shows that inefficiencies coupled with high leverage may entangle Pakistani firms in debt trap. The indicator of prime lending rate is the most decisive factor affecting demand for credit for Japan and Malaysia. It is evident from the analysis that financial liberalization provides major support in the development of capital structure and overall corporate sector in all the three countries.

**Keywords:** Capital Structure, Business Cycle, Liquidity, Economic Growth

**JEL classification:** G1, G32, G33, O4

## 1. INTRODUCTION

The capital structure is a mix of a company's long-term debt, specific short-term debt, common

equity and preferred equity. The capital structure is how a firm finances its overall operations and growth by using different sources of funds. Debt comes in the form of bond issues or long-term notes payable, while equity is classified as common stock, preferred stock or retained earnings. Short-term debt such as working capital requirements is also considered to be part of the capital structure. A company's proportion of short and long-term debt is considered when analyzing capital structure. When people refer to capital structure they are most likely referring to a firm's debt-to-equity ratio, which provides insight into how risky a company is. Usually a company more heavily financed by debt poses greater risk, as this firm is relatively highly levered (www.investopedia.com).

"Corporate enterprise is a natural outcome of capitalism in the course of economic development. The underwriter firms and banks etc. initially meet the capital requirements of such enterprise. Later on it is the stock exchange that caries out redistribution of sharers of the enterprise" (Mahmud 2003).

A firm's capital structure can be broadly classified into debt and equity. Interest payments on debt are tax deductible; while dividends, a distribution to shareholders, are not tax deductible. The existence of such a tax shelter for interest may lead firms to use maximum amount of debt.

Analysis of U.S. industries by Brigham and Ehrhardt (2001:650) revealed that wide variations in capital structure exist among industries and among individual firms within those industries. Capital structure variations also occur within a given firm over time. The percentage of debt in a firm's capital structure also varies widely across apparently similar firms. The development of capital market also influences on capital structure (Booth, Aivazian, Demirgue-Kunt and Maksimovic 2001). The economic development of the country influences on capital structure decision (Rajan and Zingale 1995; (Booth, Aivazian, Demirgue-Kunt and Maksimovic 2001; Yong, Siah, Teck and Ool 2008). Therefore from the macroeconomic perceptive, the debt ratio of the firm is the function of economic growth rate, capital market development, liquidity and Miller's tax advantage (Booth, Aivazian, Demirgue-Kunt and Maksimovic 2001; Karajeczyk and Levy 2003; Pfaffermayr, Stock and Winner 2008).

Prime rate is most decisive factor, because it is commonly used in the banking system for short-term interest rate. Every type of lending institute uses the prime rate as an index or foundation rate in deciding price of various short-term loans products (www.wsjprimerate.us). It is evident from the analysis that financial liberalization provides major support in the development of capital structure and overall corporate sector. Corporate sector investment in India has found that from 1970-2002, traditional determinants still play major role in determining corporate investment. Corporate investment depends mostly on output and profits than macro economic and policy variables; in spite of that it is evident from positive coefficient that liberalization produced a favorable environment of investment. "Only index of domestic financial liberalization shows strong association with corporate investment. Index of money market liberalization also shows positive impact though the significance is weak at 10 per cent. Excessive liberalization prior to the achievement of full fledged domestic liberalization might have adversely affected the benefits of international financial liberalization which in turn will affect investment" (http://www.igidr).

The identification of factors affecting a firm's choice of capital structure has long been a subject of debate. Myers (1977) commented on the problem by noting the existence of an important gap in financial theory regarding the issue of corporate debt policy. He further implied that the theory does not explain why tax savings generated by debt do not lead firms to borrow to the maximum possible limit or why firms finance with instruments of widely different maturity. However, Prasad, Green

and Murinde (2001) pointed out that a very little is known about company financing decisions in developing countries. According to Rajan and Zingales (1995) the higher the company's dependence on external finance, in the initial phase of development it tends to be in relatively higher need of external finance. Staleryd and Vlachos (2002) and Beck (2003) have found that the level of development of the financial sector influences companies' and countries' industrial specialization and provides a comparative advantage to the companies that are more in need of external finance.

Country's economic development may be represented by a number of indicators. Growth in per capita is a barometer of economic activities. Interest rate is selected because it may affect the demand for credit.  The dummy variables are selected from the World Development Report (WDR 2003) to capture the specific financial liberalization phenomenon and country's law and order situation.

A number of arguments support the use of financial variables as predictors of the output gap and GNP growth. First, measures of most financial variables are fairly accurate and they are not subject to significant revisions. Second, financial variables may be leading indicators of developments in the real economy (Bernhardsen, Eitrheim, Jore and Roisland 2006).

A solid assessment of both the current economic situation and developments in the new era is essential to making sound projections for economic developments over a longer period. A short-term analysis is based primarily on current statistics and other information to project GNP growth in the next few quarters (Kloster and Johansen 2006).

The present study is designed to examine the extent to which a firm's financial and operating characteristics determine its capital structure in Asia. The Influence of macro-economic factors on capital structure is examined in this paper. The research paper is divided into six sections. Section two shows objectives of the study.  Procedure and analysis of data is discussed in section three followed by empirical analysis in section four. Results and prior literature is discussed in section five followed by concluding remarks in section six.

## 2.  OBJECTIVES OF THE STUDY

The current study is an attempt to determine the factors that influence a firm's choice of capital structure in three Asian countries: Japan, Malaysia and Pakistan. These countries are chosen in order to represent three different stages of economic development. One can hypothesize that capital market develops in tandem with general economic development. As capital market develops, firms tend to use more debt financing as evidenced from various other studies for example, Rajan and Zingales (1995). The specific objective is as follows:

To investigate if country's economic factors play a significant role in determining capital structure between markets.

### 2.1. Research Hypothesis

It is perhaps not incorrect to state that no other hypothesis in country's economic development has received as much research attention as the financial economics hypothesis. A large part of the responsibility of economic development has been shifted on corporate sector from the governmental agencies. Any incorrect decision regarding financial patterns in corporate sector may be a cause of heavy distortion in the society through volatility in the stock markets and distribution of income.

The effect of the determinants namely growth in gross national product, prime lending rate, financial liberalization, efficiency of financial markets, creditors rights and assessment of law and order (enforcement) have been given little attention and are being tested in this research.

The hypothesis is designed to test whether the country's economic performance influences the capital structure of company. The hypothesis is stated as:

H          Each of the following macroeconomic variables affects the capital structure of company.

The macroeconomic variables known as explanatory variable are:

A.          Growth in GNP per capital
B.          Prime lending rate
C.          Financial Liberalization
D.          Efficiency of Financial Markets
E.          Creditor's rights
F.          Enforcement

Leverage ratios measured as dependent variables are:

- Debt to equity ratio
- Long-term debt to total capitalization ratio
- Total debt to total assets ratio

The null and alternative operational statements of hypothesis are:

$H_o$      :          $b_i = 0$ , $i = 1,2 \ldots 6$
$H_a$      :          $b_i \neq 0$ , $i = 1,2 \ldots 6$

Where $b_1 \ldots b_6$ are the coefficients of the explanatory variables.

## 3. PROCEDURE AND ANALYSIS OF DATA

A regression framework employing growth and macroeconomic variables is used to explain the capital structure of firms in given country. The regression analysis employed cross-sectional data from 1996 to 2005 inclusive. The mean is taken for each year of the data for 525 Japanese companies, 129 Malaysian companies and 114 Pakistani companies and used for regression as cross-sectional data. The data was derived from various sources.

The research hypothesis uses 6 measures of country's economic development listed above. The following four measures are represented by dummy variables, while two dummy variables that are at serial 3 and 4 are selected from the World Development Report (WDR 2003). The dummy variables are:

- Financial liberalization
- Efficiency of financial markets
- Creditors' rights
- Enforcement

The other measures are:

- Growth in GNP per capita
- Prime lending rate

## 4. RESEARCH FINDINGS

How macroeconomic performance and growth phenomenon of a country affects the capital structure is addressed in research hypothesis. The dependence of three leverage ratios i.e. debt to equity ratio, long-term debt to total capitalization ratio, and total debt to total assets ratio is tested on the six economic development variables. The results are enumerated below:

### 4.1 Regression for Debt to Equity Ratio

Table-1 shows the results of regression analysis of debt to equity ratio. The adjusted $R^2$ has a value 0.9399, indicating that approximately 93.99 per cent of the variability in the debt to equity ratio is explained by the country's economic development factors (F-statistic = 91.7992). A Durbin-Watson statistic of 1.5749 indicates the absence of first-order autocorrelation. The t-statistic corresponding to those factors indicate that: (1) financial liberalization's with a coefficient of 0.6321 is a significant positive economic determinant, (2) efficiency of financial markets with a coefficient of 0. 0304, is a significant positive economic determinant, and (3) creditors' rights with a coefficient of – 1.5016, is a significant negative economic determinant of debt to equity ratio. The economic factor enforcement, with a coefficient of –2.1809, appeared significant, but with a "wrong" sign.

**Table-1:**

Regression Results of Debt to Equity Ratio on the Economic Development Factors (Inclusive Three Countries)

| *Variable* | *Coefficient* | *t-statistic* |
|---|---|---|
| **Constant** | **4.1718** | **25.3051** |
| **Growth in GNP per capita** | **0.1627** | **0.5363** |
| Prime lending rate | -0.0201 | -0.6653 |
| Financial liberalization | 0.6321 | 3.9998** |
| Efficiency of Financial Markets | 0.0304 | 2.2026* |
| Creditors' rights | -1.5016 | -10.6069** |
| Enforcement | -2.1809 | -17.6845 |

| | |
|---|---|
| Degree of Freedom | 30 |
| $R^2$ | 0.9503 |
| Adj. $R^2$ | 0.9399 |
| Durbin-Watson statistic | 1.5749 |
| F-statistic | 91.7992 |
| Prob(F-statistic) | 0.0000 |

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*Significant at least at 5% level critical value 2.042
**Significant at least at 1% level critical value 2.750

**4.2  Regression for Long-term Debt to Total Capitalization Ratio**

Table-2 shows the results of regression analysis of long-term debt to total capitalization ratio. The adjusted $R^2$ has a value 0.9594, indicating that approximately 95.94 per cent of the variability in the long-term debt to total capitalization ratio is explained by the country's economic development factors (F-statistic = 138.2619). A Durbin-Watson statistic of 1.7380 indicates the absence of first-order autocorrelation. The t-statistic corresponding to those factors indicate that: (1) financial liberalization's with a coefficient of 0.0820 is a significant positive economic determinant, (2) efficiency of financial markets with a coefficient of 0. 0710, is a significant positive economic determinant, and (3) creditors' rights with a coefficient of –0.2219, is a significant negative economic determinant of long-term debt to total capitalization ratio. The economic factor enforcement, with a coefficient of –0.2157, appeared significant but with a "wrong" sign.

**Table- 2:**

Regression Results of Long-term Debt to Total Capitalization Ratio on the Economic Development Factors (Inclusive Three Countries)

| Variable | Coefficient | t-statistic |
|---|---|---|
| **Constant** | **0.4909** | **30.7618** |
| **Growth in GNP per capita** | **0.0083** | **0.2847** |
| Prime lending rate | -0.0009 | -0.0029 |
| Financial liberalization | 0.0820 | 5.3621** |
| Efficiency of Financial Markets | 0.0710 | 3.9543** |
| Creditors' rights | -0.2219 | -16.1926** |
| Enforcement | -0.2157 | -18.0693 |
| | | |
| Degree of Freedom | 30 | |
| $R^2$ | 0.9664 | |
| Adj. $R^2$ | 0.9594 | |
| Durbin-Watson statistic | 1.7380 | |
| F-statistic | 138.2619 | |
| Prob.(F-statistic) | 0.0000 | |

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*Significant at least at 5% level critical value 2.042
**Significant at least at 1% level critical value 2.750

## 4.3 Regression for Total Debt to Total Assets Ratio

Table -3 shows the results of regression analysis of total debt to total assets ratio. The adjusted $R^2$ has a value 0.8132, indicating that approximately 81.32 per cent of the variability in the total debt to total assets ratio is explained by the country's economic development factors (F-statistic = 26.2586). A Durbin-Watson statistic of 2.4749 indicates the absence of first-order autocorrelation. The t-statistic corresponding to those factors indicate that: (1) financial liberalization's with a coefficient of 0.1041 is a significant positive economic determinant, (2) efficiency of financial markets with a coefficient of 0. 0602, is a significant positive economic determinant, and (3) creditors' rights with a coefficient of –0.1995, is a significant negative economic determinant of total debt to total assets ratio. The economic factor enforcement, with a coefficient of –0.2910, appeared significant but with a "wrong" sign.

**Table-3:**

Regression Results of Total Debt to Total Assets Ratio on the Economic Development Factors (Inclusive Three Countries)

| Variable | Coefficient | t-statistic |
|---|---|---|
| **Constant** | **0.9072** | **20.5188** |
| **Growth in GNP per capita** | **-0.1104** | **-1.3570** |
| Prime lending rate | -0.0143 | -1.7724 |
| Financial liberalization | 0.1041 | 2.4582** |
| Efficiency of Financial Markets | 0.0602 | 3.1499** |
| Creditors' rights | -0.1995 | -5.2562** |
| Enforcement | -0.2910 | -8.8000 |

| | |
|---|---|
| Degree of Freedom | 30 |
| $R^2$ | 0.8454 |
| Adj. $R^2$ | 0.8132 |
| Durbin-Watson statistic | 2.4749 |
| F-statistic | 26.2586 |
| Prob.(F-statistic) | 0.0000 |

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*Significant at least at 5% level critical value 2.042
**Significant at least at 1% level critical value 2.750

## 5. RESEARCH RESULTS OF HYPOTHESIS AND PRIOR LITERATURE

The research hypothesis is concerned to examine how economic performance affects the capital structure of company. This hypothesis is tested using t-statistic. The reported t-statistics indicate that the null hypothesis is clearly rejected for three economic variables, financial liberalization, efficiency of financial markets and creditors' rights for the three leverage ratios at 1% and 5% level of significance. However, $R^2$ of debt to equity ratio, long-term debt to total capitalization ratio and total debt to total assets ratio are large and suggest great economic significance in the apparent (statistical) predictability. Fama (1991:1575) argues that "a weaker and economically more sensible version of the efficiency hypothesis says that prices reflect information to the point where the marginal benefit of acting on information (the profits to be made) does not exceed the marginal cost".

Friedman (1972) has suggested that modification of interest rate structures and its degree of flexibility is a concern to policy makers, particularly in countries where macroeconomic policies have led to uncertainties regarding future interest rates and rates of inflation, or in countries where the regulatory frame work has been inadequate. According to Glen and Pinto (1994), variation in the debt-equity mix depends upon the macroeconomic environment as well as government controls and intervention in the domestic capital markets.

## 6. CONCLUSION

From the perspective of macroeconomic implication, the most significant statutory requirement on the capital structure of companies is the limitation on the distribution of a company's accumulated

net profit as dividends. The limitation result in higher equity capital in comparison the situation where no such restriction exists. This statement is valid if external financing are less costly for a company than equity capital.

It is found that firms in Japan, and surprisingly in Pakistan show very high leverage ratios with total debt to equity ratio amounting to more than 70%. For Malaysia the ratio is about 50% . The high gearing for Japanese companies is to be expected in view of its developed market status. But for Pakistan, the gearing is more due to undeveloped capital market which forces firms to opt for bank loans as opposed to raising new equities. Good economic policy requires both increasing the market capitalization and reorienting of government spending from consumption to investment in physical capital stock. Malaysia's conservative financing management may be due to the lack of competition in the market.

As a powerful anti-poverty tool, micro-credit has demonstrated relevance to poor people. Micro credit programs extend small loans to poor people for self-employment projects that generate income, allowing them to care for themselves and their families. In most cases, micro-credit programs offer a combination of services and resources to their clients in addition to credit for self-employment. These often include savings, training, network and peer support. Interest rates are high in Pakistan as compare to Japan and Malaysia. The following reforms needed from the Government of Pakistan:

- Strengthen legal and judicial reform laws to allow financial institutions to foreclose on collateral in the case of unpaid loans without going through lengthy court proceedings.
- Improve the National Savings Scheme
- Allow and encourage consideration of small financial institutions to reduce fragmentation in the financial sector

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