**Summary of “An International Comparison of Capital Structure and**

**Debt Maturity Choices”**

**Introduction:**

The capital structure has significant effect on the operations as well as on the progress of a firm. Therefore, it is very important to understand the factors that determine the capital structure of a firm. The earlier studies conducted to study the capital structure of a firm focused on firm level characteristics only. With the passage of time, the more recent studies considered the influence of other macro level factors on capital structure. These factors include institutional environment and country level factors as well. However, these studies did not include many important institutional level variables that have to be studied. Furthermore, small number of countries was taken to study the cross country differences in capital structure.

This study has filled the gap by not only studying the capital structure across a large number of countries, but also by including many important variables that were not studied previously. Regression analysis is used to study the impact of country level variables, institutional variables, and firm specific variables on the leverage of a firm. The results indicate that a firm’s financing depends more on the country specific factors as compared to the industry specific factors in which a firm operates. A sample of 39 countries is used to study the issue in detail. Panel regression is used to study the cross country differences in capital structure due to factors such as tax policies and legal environment.

Furthermore, previous studies were unable to find a significant relationship between tax policy and debt ratio of a firm. For example, Booth, Demirguc-Kunt, Maksimovic, and Aivazian (2001) studied the relation between debt ratio and tax policy. The result of their study was not significant. This paper also has examined the relation between tax policy and debt ratio. It is observed that the countries where there is more tax gain from leverage, the firms operating in those countries use more debt financing. Other country specific factors are also examined in this paper, which will be discussed in the later sections.

**Literature review:**

**Impact of institutional factors on capital structure:**

The institutional factors of a country are important determinants of capital structure of firms operating in that country. The capital structure differences across countries can be attributed to the differences in institutional factors among the countries. The three factors that will be discussed in this research paper include the legal system of a country, the tax regulations, and the extent to which the financial institutions operating in the country are regulated.

It is expected that in countries where legal system and law enforcement is weak, the external equity of the firms is less. The debt contracts are also expected to be of shorter maturity in such situation. It is also expected that if the tax treatment of debt is less preferable in a country, then firms operating in that country are less levered. Furthermore, the capital structure of a firm is not determined by the managers of the firm only. The suppliers of capital i.e. investors also influence the capital structure of a firm. The factors affecting investors’ decision in determining capital structure are also discussed in this paper.

Each of the above mentioned variables will now be discussed in detail. The impact of these variables on the debt ratio of the countries taken as sample in this study will also be discussed.

**Legal environment:**

The agency problem i.e. the conflict of interest between external capital providers and the management of a firm is an important factor in many decisions taken by a firm. this prolem can be reduced with the help of contracts. La Porta, Shleifer, Vishny, and Lopez-de-Silanes (1998) examined in their study that the agency problem can be reduced with the help of contracts only when the legal system of a country is strong. The legal system includes both content of the law and the enforcement of the law.

It is observed that in countries where legal system is weak, the debts with short term maturities dominate. The common law is observed to provide more legal protection to external investors as compared to civil law. This phenomenon was observed by La Porta, Shleifer, Vishny, and Lopez-de-Silanes (1998). It suggests that other things being equal, the firms in the countries where common law is followed will use more external equity and longer-maturity debt. To test this hypothesis, an indicator variable is used in this study. The variable assumes the value of one if common law is followed in a country; otherwise the value assumed is zero.

 It is also observed that the enforcement of the law is equally important to the content of the law. In this study the law enforceability is measured with the help of perceived level of corruption in a country. The reason for taking corruption as a measure of law enforceability is that the corruption level in a country pays a key role in shaping legal system of a country, as is observed by La Porta, Lopez-de-Silanes, Djankov, and Shleifer (2003). To examine the effect of corruption on law enforceability, the measures of perceived corruption are taken from Corruption Perception Index. The index measures perceived corruption in terms of the extent to which corruption is perceived to exist among politicians and public officials. The index ranges from 0 to 10. The higher values represent higher level of corruption.

Consequently, it is expected that in the countries where corruption is more in public sector, debt financing would be preferred over equity financing. The reason for it could be that when the public sector is more corrupt, it is easier to expropriate the rights of external equity holders as compared to the debt holders. It is also believed that short-term debt is difficult to expropriate as compared to long-term debt. Therefore, it is expected that short-term debt will be preferred as compared to long-term debt in countries with high level of corruption.

As the level of corruption differs across different countries, the enforcement of contracts such as debt contracts also differs across countries. In some countries e.g. US there is bankruptcy code, which explicitly states the claims and rights of creditors when a firm defaults. Therefore, in US creditors face fewer problems in recovering their credit when a firm gets bankrupt. The bankruptcy code protects creditors in such a way that not only benefits creditors, but also helps the firm in reorganization. In this way the bankrupted firm can continue its business. In contrast to US the countries where the code for enforcement of debt contracts does not exist or is weak, the creditors great difficulties in recovering their debt. The rights and claims of the creditors are also not clear, which results in liquidation of the bankrupted firm for the recovery of creditors’ investment. This phenomenon is observed by Caessens, Mody, and Djankov (2001) and also by Claessens and Klapper (2005).

Therefore, it is proposed in this study that in the absence of proper bankruptcy code, the firms do not prefer debt specifically the long-term debt. The reason could be that in case of bankruptcy the creditors might liquidate the firm to recover their investment. To test this proposition, an indicator based on a study conducted by Hart, Djankov, and Sheilfer (2008) is used. The value of the indicator is one for the countries in which bankrupted firm can undergo reorganization supervised by the firm.

**Taxation:**

The tax treatment of dividend and interest plays a very important role in determining the capital structure of a firm, as was studied was Miller & Modigliani (1963). In this study, three different types of tax systems are studied. The first type discussed is the classical tax system. In this system dividends are taxed at both personal and corporate level whereas interest is treated as tax-deductible corporate expenses. This system is followed in a number of countries including Pakistan, India, and China.

The second type of tax system studied is the dividend relief tax system. In this system, reduced tax rate is applied on dividends at the personal level. This system is followed in Turkey, Greece, and Austria along with many other countries. The third tax system studied is the dividend imputation tax system. In this system, companies are able to deduct interest payments, and the domestic shareholders of the company receive tax credit because of the taxes paid by the company. Germany, France, and Australia along with many other countries follow this system. It is expected that less debt financing will be used by firms in the countries where dividend imputation system or the tax relief system is followed. In this study this relationship is test with the help of estimating tax shield, which estimates tax gain from leverage. It was used by Miler (1977) in his study. The variable can assume both positive and negative values.

**Suppliers of capital:**

In the previous literature, the capital structure is studied from the perspective of complete and competitive financial markets where both debt and equity are offered at equivalent rates. However, this is not always the case. The preference of investors for equity vs. debt financing plays a key role in determining capital structure of a firm. Miller (1977) observed that at the aggregate level, the debt ratio in an economy depends upon the investors’ preference of debt vs. equity financing. In this study the financing preferences of banks, insurance companies, and pension funds are considered specifically. The existing literature has focused on those determinants of capital structure, which are influenced by capital structure preferences of companies and not of its investors. These studies include Kabir, De Jong, and Nguyen (2008) and Dermirguc-Kunt and Maksimovic (1999). Therefore, this study has considered the determinants of capital structure that are influenced by the preferences of investors.

**Firm specific characteristics and choice of capital structure:**

The firm-level variables are important determinants of capital structure choices of a firm. To study the impact of firm specific variables on capital structure, some firm specific variables such as profitability, asset tangibility, firm size, and the market to book ratio are used in this study. These variables are also used in previous studies, for example, Titman and Wessels (1988) and Olper (1996)

**Methodology:**

**Data and Sample:**

In the sample for this study only the firms listed on the stock exchange of the countries in which they are domiciled are included. The total number of firms included in the sample is 36,767. These firms are selected from 39 different countries. In the sample, firms from both developed and developing countries are taken. The financial data for the firms is taken from Worldscope, which contains financial data on a number of industries operating in 50 countries. The data is taken for the period of 1991 to 2006.

**Variables:**

The capital structure is measured in terms of:

1. Leverage, which is equal to total debt/ market value of the firm. Total debt includes both short and long-term debt. Market value of the firm equals market value of common equity plus preferred stocks’ book value plus total debt.
2. Debt maturity, which is equal to long-term debt/ total debt.

Along with country-level and firm specific variables, other variables such as inflation, inflation volatility ( measured as standard deviation of inflation over preceding four years) and an indicator of developed economy are also used. The indicator assumes the value of one if the country is developed country according to the classification of World Bank. Inflation as a variable is included because the maturity of the debt contracts is affected by the future level of inflation. High potential level of inflation is observed to be associated with short-term debt contracts. Similarly, high inflation volatility indicates high uncertainty regarding future inflation, which results in the avoidance of long-term debt by the lenders. An indicator for developed economy is used because it can capture a variable of economic development, which is not captured by other variables.

**Firm-specific variables:**

1. Profitability, measured as net income/ total assets.
2. Asset tangibility, measured as fixed assets/ total assets.
3. Firm size, measured as natural logarithm of total assets.
4. Market-to-book ratio, measured as market value of equity/ book value of equity.

**Institutional-specific variables:**

1. Supply of funds to banks, measured as deposits/ GDP. As the debt financing is mostly provided by banks to the corporations, which in turn depend on deposits as the supply of funds. Therefore, the availability of funds to the bank influences the decision of the bank to extend debt to corporations, which then determines the debt ratio in capital structure of a firm.
2. Deposit insurance, measured by an indicator variable that assumes the value of 1 if the deposits in a bank are even partially insured by the government. The value is 0 for all other situations. The deposit insurance provides protection to the depositors of a bank in case the bank fails to meet its debt obligations when they are due. The deposit insurance also smoothens the functioning of a bank, which in turn affects the bank’s choices of lending and maturity periods of debt. Therefore, it is expected that in the countries where bank deposits are insured, the firms operating in those countries have high leverage and more long-term debt.
3. Insurance penetration, as measured by value of total insurance premiums/ GDP. It measures the amount of funds available to the insurance companies. The insurance companies depend upon the insurance premiums for choosing between long-term vs. short-term debt maturities. Therefore, this variable is included in the study.
4. Pension fund penetration, measured as value of defined benefit pension fund assets/ GDP and value of defined contribution pension fund assets/ GDP.
5. Relative restrictions on debt and equity holdings, measured as the ratio of the proportional limit on equity holdings/ the proportional limit on debt holdings. The data for it is taken from the Survey of Investment Regulation of Pension Funds, OECD. It is believed that if the relative restriction on debt is tighter as compared to restriction on equity then pension funds will hold more equity as compared to debt.
6. Eve of domestic savings, measured as gross domestic saving/ GDP. It is an alternative measure of the availability of funds to financial intermediaries such as banks, insurance companies and pension funds.

**Country-specific variables:**

The country-specific variables include:

1. Corruption index i.e. Corruption Perception Index based on the extent to which corruption is perceived to exist among politicians and public officials. The rationale for taking this variable is that the choice of capital structure depends upon the legal system of a country, which in turn is affected by the level of corruption in a country.
2. Common law, as measured by an indicator assuming the value of 1 if common law is followed in a country. It is believed that common law is associated with more external equity and long-term debt.
3. Bankruptcy code, the firms operating in countries with well developed bankruptcy code prefer debt financing more than firms operating in countries with poorly defined bankruptcy code.
4. Tax, as measured by tax shield (the tax gain due to leverage). The taxation system of a country is observed to be strongly associated with capital structure of firms operating in that country.

**Dependent and independent variables:**

The dependent variable in this study is the capital structure of the firms. The independent variables include firm-level, institutional-level and country-level variables.

**Regression analysis:**

The technique used for analysis in this study is regression analysis. The General Methods of Moments (GMM) approach is used for regression estimates in this study. This method accounts for the fact that regression residuals are serially correlated and heteroskedastic across both country and firm level observations. The effect of country level variables on capital structure is determined controlling for industry-level and firm-level variables.

**Findings:**

It is observed that leverage is negatively related to market-to-book ratio and profitability and positively related to firm size and asset tangibility. These results are consistent with the findings of Kabir, De Jong, and Nguyen (2008) and Rajan, and Zingales (1995). The leverage is also observed to be positively related to economic development. However, no relation is observed between leverage and inflation and also between leverage and inflation volatility. In accordance with the phenomenon that better protection of investors leads to more use of equity financing, it is also observed that corruption is related to higher ratios of debt, common law is related with lower ratios of debt and the bankruptcy code, if stated explicitly, is related to higher ratios of debt. It is also observed that in countries where tax gain from leverage is positive, the use of leverage is also higher. These findings are in contrast with the findings of Booth, Demirguc-Kunt, Aivazian, and Maksimovic (2001) who did not find any significant relation between tax policy and debt ratios. The difference in results can be due to difference in samples and time periods of both studies. It was proposed earlier in this study that suppliers of capital play a key role in determining debt ratio in a firm’s capital structure. Accordingly, it is observed in this study that firms use more leverage in countries where deposits are insured. No significant relationship is observed between leverage and domestic savings. It is also observed that in countries where defined benefit pension funds are larger, the firms operating in those countries have higher debt ratios. However, the countries where defined contribution pension funds are larger, the firms in those countries have lower debt ratios.

In addition to analyzing the determinants of leverage, the determinants of debt maturity are also analyzed in this study. It is observed that firms with larger asset tangibility, larger size, and greater profits are inclined more towards long-term debt. It is also observed that market-to-book ratio is not strongly associated with debt maturity when full sample is taken for analysis. When only the subsample of developed economies is taken for analysis then in that case the market-to-book ratio is observed to be unrelated to debt maturity. It is also observed that debt maturity has a negative relation with level of corruption in a country, but positive relation with the common law indicator. These findings are consistent with the concept that low level of corruption and strong legal framework for investor protection encourages long-term debt financing. The debt maturity is also observed to be positively related to economic development in a country. It was proposed earlier in this study that the preferences of suppliers of capital influence the capital structure of a firm. Consistent with this proposition, it is observed that debt maturity has a strong negative relation with the amount of deposits in the banking sector of a country. Demirguc-Kunt and Maksimovic (1999) were unable to find significant relation between debt maturity and amount of deposits in a country’s banking sector. This research, on the other hand, found the relationship of debt maturity and banking sector to be significantly negative. Furthermore, the level of domestic savings is observed to be negatively related to debt maturity. It is also observed that in countries where bank deposits are insured, the debt maturity is observed to be longer. This is consistent with the concept that when deposits are insured the banks are inclined more towards lending long-term debts. However, no significant and reliable results can be found for the relation between debt maturity and the insurance penetration.

Some of the results observed in this study are not found to be significant for both full sample and subsamples. For example, it is observed that inflation rate volatility is associated with shorter debt maturity in developed economies. No relation is observed in case of the developing economies. Similarly, the size of insurance industry is observed to be positively related to debt maturity in developing economies. No relation is observed in case of developed economies. Furthermore, a significant positive relation in observed between debt maturity and inflation only in case of subsample of developing economies.

**Conclusion:**

The capital structure choices of a firm depend on a number of factors. These factors include firm-specific factors, institutional-level factors that differ across countries, and country-specific factors. In the previous studies, many important institutional level factors were not studied. It was also considered that the determination of capital structure depends on the firm-specific factors and not on the preference of investors. The number of countries taken for cross-country analysis was also small. In this study many important institutional-level factors such as deposits insurance, supply of funds to banks, size of insurance sector are taken for analysis. These variables indicate that capital structure depends on the preferences of suppliers of capital. Furthermore, a larger sample of 39 countries is taken. It is observed that firm-specific factors such as firm size, asset tangibility, and profitability play an important role in determining debt ratio and, therefore, the capital structure of a firm. The institutional-level factors are also observed to influence debt maturity and leverage of a firm. The country-specific factors such as inflation rate, inflation volatility, and size of insurance industry are observed to have different impact across different economies. It can be concluded, therefore, that capital structure depends on a wide range of factors, which differ across different countries. Furthermore, the capital structure of a firm depends more on the country in which it operates as compared to the industry it is affiliated to.