

# A Synthesis of the Determinants of Capital Structure: The Effects of Multinationality and Growth Opportunities

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## <Abstract>

An optimal capital structure is important to both information users and managers, but no single theory completely explains the variation in capital structure. A number of theories have been proposed recently to explain the variation in capital structure across firms. The main purpose of this paper is to survey and synthesize the relevant literature of general determinants of capital structure choice and suggest promising avenues for future research. This study especially focuses on capital structure characteristics of multinational firms and domestic firms, and those of growth firms and non-growth firms. Synthetical documentation of the determinants of capital structure with multinationality and growth opportunities can help information users to understand firm's financing policy decisions.

## 다국적화와 투자기회를 중심으로 한 자본구조결정요소의 종합적 검토

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### <요 약>

기업이 자본조달을 어떤 방법으로 하는 것이 기업에게 가장 유리한 방법인가를 설명하고 있는 자본구조에 관한 연구들은 기업의 경영자와 정보이용자들에게 중요한 관심사항 중의 하나로 인식되고 있다. 그러나 기업의 최적자본구조는 정보이용자와 경영자에게 중요한 과제임에도 불구하고 기업의 자본구조변화를 정확하고 논리적으로 설명하고 있는 단일의 자본구조이론은 존재하지 않고 있다. 본 논문의 목적은 회계학과 경영학에서 지금까지 논의된 자본구조결정요소들을 문헌조사 중심의 연구방법을 통하여 정리하여 종합하고, 미래연구의 방향을 제시하는 데 있다. 특히 본 논문에서는 다국적기업과 국내기업의 자본구조특성의 차이점과, 성장기업과 비성장기업의 자본구조특성의 차이점을 비교 설명하고 있다. 이와 같은 기업의 자본구조에 대한 종합적인 검토는 정보이용자들에게 기업의 재무의사결정이 어떤 방법으로 결정되고 있는 지를 이해하는 데 도움을 줄 수 있을 것이다.

## I. Introduction

An optimal capital structure is important to both information users and managers, but no single theory completely explains the variation in capital structure. A number of theories have been proposed recently to explain the variation in capital structure across firms. The theories suggest that firms select capital structures depending on attributes that determine the various costs and benefits associated with debt and equity financing.

Studies of multinational and domestic corporations have received much attention in business literature, but relatively a few studies have systematically evaluated financing policy decisions of multinational corporations (MNCs) and those of domestic corporations (DCs). Some researchers believe that multinational corporations tend to be more highly leveraged than domestic corporations because the cash flows of multinational corporations are internationally diversified and, consequently, multinational corporations are in a better position than domestic corporations to support higher debt ratios [Hughes, Logue, and Sweeney (1975), Agmon and Lessard (1977), Shapiro (1978)]. However, several recent studies indicate that firms with notable foreign involvement have target leverage ratios significantly below those of their domestic counterparts [Michel and Shaked (1986), Fatemi (1988), Lee and Kwok (1988), Chen, Cheng, He, and Kim (1997)].

Growth opportunities (investment opportunity sets, IOS) are of great importance to modern corporations since they account for a large fraction of a typical firm's market value. Several recent finance and accounting studies show that the debt-equity ratio is affected by the firm's future growth opportunities and suggest that non-growth firms will be more highly leveraged than growth firms [Smith and Watts (1992), Gaver and Gaver (1993), Skinner (1993), and Homaifar, Zietz, and Benkato (1994), Chen, Cheng, He, and Kim (1997)].

The main purpose of this paper is to survey and synthesize the relevant literature of general determinants of capital structure choice and suggest promising avenues for future research. This study especially focuses on capital structure characteristics of multinational firms and domestic firms, and those of growth firms and non-growth firms. Synthetical documentation of the determinants of capital structure with multinationality and growth opportunities can help information users to understand firm's financing policy decisions.

The remainder of this study is organized as follows. Section II briefly reviews extant literature on general determinants of capital structure. Section III focuses on the existing theories and related literature of financing policy decisions (capital structure theory) of multinational corporations (MNCs) and domestic corporations (DCs). Section IV surveys financing policy decisions of firms with the growth opportunities (IOS). Section V provides conclusions, promising avenues for future research, and limitations of this study.

## II. General Determinants of Capital Structure

A number of theories have been proposed to explain the variation in corporate financing policy decisions across firms. The theories suggest that firms select capital structures by relying on various attributes that determine the costs and benefits associated with debt and equity financing. In the seminal paper by Modigliani and Miller (1958), it is shown that in perfect markets (e.g., free entry, equal access to information, and absence of transaction costs and taxes), the choice of capital structure is inconsequential to firm value. However, many corporations in the real world follow certain optimal capital structure in financing investments. To bridge the gap between theory and practice, several theories have been suggested to explain the possible existence of an optimal capital structure. These theories are the agency theory (the concept of agency costs of debt) [Jensen and Meckling (1976, the asset substitution problem), and Myers (1977, the underinvestment problem)], the asymmetric information theory [Ross (1977), Myers and Majluf (1984), Myers (1984)], and the trade-off theory [Modigliani and Miller (1963), DeAngelo and Masulis (1980), Bradley, Jarrell, and Kim (1984), Mackie-Mason (1990)].

### 2.1 Trade-off Theory

Modigliani and Miller (1963) show that when corporate taxes are considered, there is an advantage to corporate borrowing and a corner solution of 100% debt is obtained. This prediction of the theory does not explain well with empirical evidence that firms typically use only moderate amounts of debt. This leads a number of studies to point

to the capital market imperfection of bankruptcy and liquidation costs [Miller (1977), Kim (1978), Bradley, Jarrell, and Kim (1984)]. Miller (1977) presents a challenge by showing that, under certain conditions, the tax advantage of debt financing at the firm level is exactly offset by the tax disadvantage of debt at the personal level. Kim (1978) also argues that when corporate bankruptcy costs are considered, an internal solution is obtained and a particular combination of debt and equity will maximize the value of the firm. Bradley, Jarrell, and Kim (1984) state that the firm's optimal capital structure involves a trade-off between the tax advantage of debt and various leverage related costs (such as bankruptcy costs, agency costs of debt, and loss of non-debt tax shields). This is called the trade-off theory of capital structure.

The trade-off theory has been criticized in a number of studies [Warner (1977), Haugen and Senbet (1978, 1988), etc.]. Warner (1977) shows that evidence on the direct costs of bankruptcy, such as lawyer's fees, suggests they are small. His study shows that the ratio of direct bankruptcy costs to the market value of the firm appears to fall as the value of the firm increases for a number of railroad firms. His study concludes the cost of bankruptcy is about one percent of the market value of the firm prior to bankruptcy. Haugen and Senbet (1978, 1988) argue that the bankruptcy cost is an insignificant determinant of a firm's capital structure and the liquidating decision and its associated costs should not be included in the bankruptcy costs under perfect capital market assumptions. To test the capital structure theories, studies use firm attributes to measure various costs and benefits. In testing the trade-off between the tax advantage of debt and various leverage related costs, studies use the tax shield ratios to measure the tax benefits [Ferri and Jones (1979), Friend and Hasbrouck (1988), Titman and Wessels (1988), Homaifer, Ziets, and Benkato (1994)]. The evidence, in general, fails to show the relation between the tax benefit ratios and the debt-equity ratios. This is mainly due to the difficulty to measure the effective tax rate [MacKie-Mason (1990)]. However, the negative relationship between the earnings volatility (the bankruptcy costs) and the debt ratio is generally found.

## 2.2 Asymmetric Information Theory

In the asymmetric information theory, firm managers or insiders are assumed to possess private information about the characteristics of the firm's return stream or investment opportunities. Thus, the choice of firm's capital structure signals to outside investors the information of insiders [Ross (1977)]. In the other approach of this theory, capital structure is designed to mitigate inefficiencies in the firm's investment decisions that are caused by the information asymmetry [Myers and Majluf (1984), Myers (1984)]. Ross (1977) develops a signaling model that examines the relation between leverage and firm quality. In his model, managers know the true distribution of firm returns, but investors do not. Managers benefit if the firm's securities are more highly

valued by the market but are penalized if the firm goes bankrupt. Investors take larger debt levels as a signal of higher firm quality. Since lower quality firms have higher marginal expected bankruptcy costs for any debt level, managers of low quality firms do not imitate higher quality firms by issuing more debt. Therefore, the issuance of debt in his model is a signal of high firm quality because the firm exposes itself to the costs of financial distress. Thus, high quality firms choose higher leverage.

Myers and Majluf (1984) imply that leverage increases with the extent of the informational asymmetry. They show that, if investors are less well-informed than current firm insiders about the value of the firm's assets, then equity may be mispriced by the market. If firms are required to finance new projects by issuing equity, underpricing may be so severe that new investors capture more than the NPV of the new project, resulting in a net loss to existing shareholders. In this case the project will be rejected even if its NPV is positive. This underinvestment can be avoided if the firm can finance the new project using a security that is not so severely undervalued by the market. Therefore, internal funds and riskless debt involving no undervaluation will be preferred to equity by firms in this situation. Myers (1984) refers to this as a pecking order theory of financing, i.e., that capital structure will be driven by firm's desire to finance new investments, first internally, then with low-risk debt, and finally with equity only as a last resort.

### 2.3 Agency Theory

A significant fraction of the effort of researchers over the last 10 years has been devoted to models in which capital structure is determined by agency costs of debt. Agency models have been among the most successful in generating interesting implications of the capital structure. Agency theory is based on the premise that manager's actions are unobservable and can not be contractually specified perfectly. Those unobserved actions of managers will affect the optimal capital structure [Jensen and Meckling (1976), Myers (1977), and Jensen (1986)]. In particular, agency models predict that leverage is positively associated with firm value [Harris and Raviv (1990)], free cash flow [Jensen (1986)], and negatively associated with the extent of growth opportunities [Jensen and Meckling (1976), Myers (1977), etc.].

Myers (1977) states that if a firm has risky debt outstanding, situations arise in which exercising the option to undertake a positive net-present-value project potentially reduces share value because debtholders have a senior claim on the project's cash flows. Therefore, there is a probability that the exercise of real investment options will be reduced. This underinvestment problem induces the firm to finance growth options with equity rather than debt. Hence, Myers (1977) predicts that the larger the proportion of firm value represented by growth options (higher agency costs of debt), the lower the firm's leverage.

Contracting arguments (the concept of agency costs of debt) imply that firms with more growth opportunities should have lower debt in their capital structure, whereas signaling and tax effects imply higher debt. If the estimated relation between growth options and leverage is significantly negative, the contracting effect is significant, whereas if the estimated relation is positive, the combination of signaling and tax effects is significant. Smith and Watts (1992) investigate this net effects and suggest contracting theories are more important in explaining cross-sectional variation in observed financial policies than either tax-based or signaling theories.

Jensen and Meckling (1976) suggest the existence of an agency cost of debt due to the asset substitution problem. They identify two types of conflicts: conflicts between shareholders and managers, and conflicts between debtholders and equityholders. Conflicts between shareholders and managers arise because managers hold less than 100% of the residual claim. Consequently, they do not capture the entire gain from their profit enhancement activities, but they do bear the entire cost of these activities. Therefore, managers may invest less effort in managing firm resources and may be able to transfer firm resources to their own personal benefit. This inefficiency is reduced the larger is the fraction of the firm's equity owned by the manager. This mitigation of the conflicts between managers and equityholders constitutes the benefit of debt financing.

Conflicts between debtholders and equityholders discussed in Jensen and Meckling (1976) arise because the debt contract gives equityholders an incentive to invest suboptimally. They contend that debt financing gives shareholders the incentive to accept high-risk projects which tend to transfer wealth from bondholders to shareholders. Bondholders recognize this substitution problem and demand a lower bond price when they purchase bonds issued by the company. This reduction of bond value is the agency cost of debt financing. They state that the costs of monitoring and bonding activities are agency costs.

## 2.4 Determinants of Capital Structure

Recent finance and accounting literature finds that the firm's capital structure (financing policy decision) is affected by several firm-related characteristics: future growth opportunities (investment opportunity sets, IOS) [Titman and Wessels (1988), Smith and Watts (1992), Gaver and Gaver (1993), Homaifer, Zietz, and Benkato (1994)], earnings volatility (EVOL) [Ferri and Jones (1979), Bradley, Jarrell, and Kim (1984), Friend and Hasbrouck (1988), Titman and Wessels (1988), Homaifer, Zietz, and Benkato (1994)], profitability [Friend and Hasbrouck (1988), Titman and Wessels (1988)], and non-debt tax shields [Bradley, Jarrell, and Kim (1984), Titman and Wessels (1988), Homaifer, Zietz, and Benkato (1994)] (see summaries in Table 1 for a review and commonly used proxies in Table 3).

Bradley, Jarrell, and Kim (1984) incorporate the model of positive personal taxes on equity and on bond income, expected costs of financial distress (bankruptcy costs and agency costs), and positive non-debt tax shields. They show that optimal firm leverage is related inversely to expected costs of financial distress and to the amount of non-debt tax shields. They investigate the cross-sectional behavior of 20-year average firm leverage ratios for 851 firms covering 25 two-digit SIC industries. Their results show that there exist strong industry influences across these firm leverage ratios, and the volatility of firm earnings is an important, inverse determinant of capital structure, and the intensity of R&D and advertising expenditures is inversely related to leverage.

Titman and Wessels (1988) introduce a factor analytic technique for estimating the impact of unobservable attributes on the choice of corporate debt ratios. This study extends empirical work in a much broader set of capital structure theory and analyze measures of short-term, long-term, and convertible debt rather than an aggregate measure of total debt. Their results suggest that firms with unique or specialized products have relatively low debt ratios. Uniqueness is categorized by the firms' expenditures on research and development, selling expenses, and the rate at which employees voluntarily leave their jobs. They also find that smaller firms tend to use significantly more short-term debt than larger firms, and find no evidence to support theoretical work that debt ratios are related to a firm's non-debt tax shields, volatility, or the collateral value of its assets. They find some support for the proposition that profitable firms have less debt relative to the market value of their equity.

Homaifar, Zietz, and Benkato (1994) estimate the long-run steady state determinants of the firm's capital structure by using a general autoregressive distributed lag model. They find that, in the long-run, the leverage ratio is indeed positively related to corporate tax rates. The relationship between leverage and non-debt tax shelter ratio is positive but statistically insignificant. They also find that, in the short-run, there is no statistically significant relationship between leverage and corporate tax rates or between leverage and non-debt tax shields. Their regression results also reveal that firm size and future growth opportunities appear to be important determinants of the capital structure. They find a strong negative relationship between future growth opportunities and leverage. This negative relationship between leverage and future growth opportunities is consistent with Myers' hypothesis (1977) that firms with greater future growth opportunities employ less debt.

The agency theory (contracting theory) is generally more important in explaining cross-sectional variation in observed financing policies (capital structure of firms) than either the tax-based or the signaling theory. Several firm-related characteristics discussed in this section are the important determinants of the firm's capital structure, for example, future growth opportunities, earnings volatility, and profitability (see summaries in Table 1 and Table 3). These firm-related characteristics might affect the different financing policy decisions between MNCs and DCs; however, few previous studies extensively investigate these attributes in the context of multinational financing

policy decisions.

### III. Multinationality and Capital Structure

Previous studies of the financing policy decisions of MNCs usually dealt directly with the influence of international environmental factors (e.g., foreign exchange risk, political risk, international tax differentials, corporate international diversification, etc.) on the financing policy decisions [the direct approach; e.g., Shapiro (1978), Senbet (1979), etc.] instead of considering the influence of firm-related characteristics [the indirect approach; e.g., Lee and Kwok (1988), Chen, Cheng, He, and Kim (1995), etc.]. The indirect approach relies on capital structure theory and evaluates the effect of internationalization on the determinants of capital structure to predict the differences in the debt ratios between MNCs and DCs.

There are two competing contradictory explanations for the cross-sectional variations of the financing policy decisions between multinational and domestic corporations (increasing the target debt-equity ratio of MNCs or decreasing the target debt-equity ratio of MNCs, see Figure 1).

#### 3.1 Less Volatile Earnings Effects and Risk Reduction Effects

Among those who believe that an optimal capital structure exists, it is thought that there is a trade-off between the tax advantage of debt financing and expected bankruptcy costs. Expected bankruptcy costs depend on the cost of bankruptcy (e.g., legal fees, loss of sales, loss of suppliers, etc.) and the probability of occurrence. Increased debt financing will increase the probability of bankruptcy and will in turn increase expected bankruptcy costs.

The optimal debt ratio of MNCs in the trade-off theory is reached when the marginal tax savings from debt financing is equal to the marginal loss from expected bankruptcy costs. A multinational firm may be able to push itself into a higher debt ratio without increasing its expected bankruptcy costs since the earnings of multinational corporations are less volatile than those of domestic corporations by the virtue of being diversified internationally and bankruptcy risk is a function of earnings volatility (less volatile earnings effect, see Figure 1) [Rugman (1976), Shapiro (1978), Fatemi (1984)].

Rugman (1976) finds that firms with a higher ratio of foreign activities to total activities are able to reduce the variance of their earnings, where variance is a proxy for risk. His empirical results show that the ratio of foreign to total activities is statistically significant and inversely related to the variance of profits. Shapiro (1978) discusses that although individual foreign investments may be riskier than comparable investments in the U.S., the diversification effect due to operating in a number of



countries can reduce the variation in a firm's earnings. His analysis of the evidence on the impact of foreign operations on firm riskiness suggests that it is generally to reduce both actual and perceived riskiness.

The risk reduction effect of MNCs might be facilitated by diversifying security portfolios internationally. There is the body of literature indicating that international operations result in reduced riskiness of the firm [Hughes, Logue, and Sweeney (1975), Rugman (1976), and Agmon and Lessard (1977), Fatemi (1984)]. Agmon and Lessard (1977) find that the higher the degree of MNCs' international involvement, the lower its market-assigned measure of systematic risk. Hughes, Logue, and Sweeney (1975) state that MNCs have lower systematic risk ( $\beta$ ) as well as lower unsystematic risk than DCs. They conclude that their results support the view that investors perceive MNCs as providing substantial diversification benefits. Since the degree of riskiness is a major determinant of the financing decision of the firm, international diversification may enhance debt capacity, raising the target debt ratio for MNCs.

Fatemi (1984) provides further evidence on the rates of return realized by the shareholders of MNCs relative to those of DCs. His results indicate that the monthly rates of return on the multinational portfolio fluctuate less than those on the portfolio of purely domestic firms. Thus, corporate international diversification may reduce shareholders' total risk. He also finds that the monthly betas of the multinational portfolio are significantly lower and more stable than those of the domestic portfolio, indicating that corporate international diversification reduces the degree of systematic risk. However, Cheng, Han, and Noland (1994) find that the foreign operations of MNCs are associated with greater profitability but greater accounting risk than DCs by using geographically segmented data. They investigate whether the geographically segmented data disclosed by U.S.-based MNCs are informative to financial statement users by assessing the cross-sectional variation in MNCs' profitability, risk, and stock returns.

### 3.2 Agency Theory Effects

The results obtained by Fatemi (1988), Lee and Kwok (1988), Michel and Shaked (1986), and Chen, Cheng, He, and Kim (1997) indicate that U.S.-based firms with significant foreign involvement have target leverage ratios significantly below those of their domestic counterparts (see summaries in Table 2). Fatemi (1988), and Lee and Kwok (1988) explain that this is possibly due to the greater agency and bankruptcy costs associated with international diversification. Lee and Kwok (1988) investigate whether MNCs are significantly different from DCs regarding two agency costs of debt (agency costs of debt according to Myers and agency costs of debt according to Jensen and Meckling), bankruptcy costs, and capital structure. They focus on the influence of environmental factors on the firm-related capital structure determinants

that in turn affect the capital structure of the MNCs. The major findings in this study include that MNCs tend to have higher agency costs of debt according to Myers' definition (growth opportunities) than DCs. Contrary to conventional wisdom, they find that MNCs do not have lower bankruptcy costs than DCs and that MNCs tend to have lower debt ratios than DCs.

Lee and Kwok (1988) emphasize on the discussion of two types of agency costs of debt in explaining the determinants of capital structure of MNCs and DCs [agency costs of Myers (1977) and agency costs of Jensen and Meckling (1976)]. Myers (1977) suggests that the value of a firm consists of assets in place and future growth options (IOS, investment opportunity sets). The future growth options are intangible assets, the value of which depends on future discretionary investments. When the asset structure of MNCs is analyzed, it is expected that MNCs will have a higher proportion of future growth options than DCs because intangible assets are less vulnerable to expropriation by host governments while assets already in place are more politically appropriable. Furthermore, MNCs possess monopolistic advantages which enable them to outperform local companies in host countries [Kim and Lyn (1986)]. These monopoly rents are reflected by the value of future growth options of the company. Therefore, MNCs' agency costs of debt according to Myers' underinvestment problem will be higher and, in turn, the debt ratios of MNCs will be lower.

Jensen and Meckling (1976) state that agency costs are composed of monitoring costs, bonding costs, and the residual loss. MNCs are also expected to incur higher agency costs of debt than DCs with regard to Jensen and Meckling's asset substitution problem. One disadvantage of MNCs is that they operate in a more complex political and institutional environment than their counterparts (DCs). Fatemi (1988) states that MNCs have additional agency costs of debt because of the more than proportionately larger monitoring costs associated with larger firms, greater costs of international dispute resolution, wider information gaps, and the risk of host governments' intervention. Fatemi (1988) and Lee and Kwok (1988) state that because of the complexity of international operations, agency costs due to the monitoring and bonding costs of MNCs are expected to be higher than those of DCs. Simunic (1980) finds a positive relationship between auditing fees and the degree of foreign involvement of the company. Geographic dispersion of MNCs increases auditing costs (monitoring costs) substantially. Since the MNCs are expected to incur higher agency costs of debt (higher monitoring costs and bonding costs) than DCs, the optimal leverage points of MNCs will be lower than those of DCs.

Fatemi (1988) also investigates whether international operations have a discernible effect on the financing policies of U.S.-based firms. His results indicate that firms with notable foreign investments have target leverage ratios significantly below those of DCs. This is possibly due to a higher level of expected noninterest tax shields, the greater agency and bankruptcy costs associated with international diversification, and the higher riskiness of foreign-currency denominated debt. It is also found that MNCs

secure a greater portion of their borrowing from short-term sources. This could be attributed to the greater access that MNCs have various money markets around the globe and a relative lack of depth in the markets for long-term funds elsewhere.

Michel and Shaked (1986) analyze that the financial performance of a sample of MNCs is compared with that derived for a control group of DCs using market-based performance measures and present a comparison of selected financial characteristics of the firms in the two groups. The results suggest that DCs appear to have significantly superior risk-adjusted market-based performance and DCs have higher total risk as well as higher systematic risk. They also find that MNCs are significantly more capitalized than DCs. The fact that the MNCs are substantially larger than DCs is not significant in explaining the observed difference between the two groups' performance.

Chen, Cheng, He, and Kim (1997) investigate two competing hypotheses (the trade-off hypothesis and the agency cost of debt hypothesis) to predict the effect of internationalization on the debt ratio differences between MNCs and DCs. The trade-off hypothesis predicts that the optimal debt-equity ratio will be reached when the marginal tax savings from debt financing is equal to the marginal loss from expected bankruptcy costs. The agency costs of debt hypothesis predicts that firms with higher agency costs will have lower debt-equity ratios. Their results confirm the prediction of both hypotheses that the debt-equity ratio is negatively related to bankruptcy cost as predicted by the trade-off hypothesis and negatively related to growth opportunities as predicted by the agency costs of debt hypothesis. They also find that MNCs have lower debt-equity ratios which is consistent with the agency cost of debt hypothesis after controlling for bankruptcy costs and growth opportunities; however, the debt-equity ratio is higher for more internationalized firms.

The net effects of these two opposing forces (increasing the target debt-equity ratios of MNCs or decreasing the target debt-equity ratios of MNCs) will depend on the relative size of additional agency costs of debt according to Jensen and Meckling (decreasing the target debt-equity ratios), additional agency costs of debt according to Myers (decreasing the target debt-equity ratios), lower bankruptcy costs of MNCs due to less volatile earnings effect (increasing the target debt-equity ratios), risk reduction effect (increasing the target debt-equity ratios) (see Figure 1).

#### IV. Growth Opportunities and Capital Structure

Growth opportunities (IOS, investment opportunity sets) are of great importance to modern corporations since they account for a large fraction of a typical firm's market value. Myers (1977) describes the firm as a combination of assets in place and future investment opportunities. The value of the firm's potential investment opportunities, call options, depends on the likelihood that management will exercise them. Virtually any

discretionary expenditure can be viewed as a future growth opportunity. Advertising and R&D programs can also be treated as growth opportunities insofar as they represent investments in real assets like brand name and technical expertise that will generate long-term benefits. Assets of growth firms are more difficult to observe because they are primarily represented by future investments. Therefore, the firm's future growth opportunities (IOS) are unobservable and there is no consensus in the accounting and finance literature concerning an approximate proxy variable. The most commonly used proxies for IOS in finance and accounting literature are presented in Table 3.

Watts and Zimmerman (1986, 1990) suggest that tests of accounting method choices depend on the firm's investment opportunity set (IOS) which is correlated with the firm's financial, dividend, compensation, and accounting policies. In recent years, a number of papers have discussed the robust empirical relations between corporate policy decisions and growth opportunities [Smith and Watts (1992), Gaver and Gaver (1993), Skinner (1993)]. These papers suggest IOS, firm size, regulation, and other firm characteristics as potential explanatory variables for the cross-sectional policy variation and the accounting procedure choices. In particular, these studies suggest IOS as a potential explanatory variable for the cross-sectional policy variation and the accounting procedure choices.

Smith and Watts (1992) document that firms with more growth opportunities (growth firms) have lower leverage, lower dividend yields, higher executive compensation, and greater use of stock-option plans by using industry level data from 1965 to 1985. They also find that regulated firms have higher leverage, higher dividend yields, lower executive compensation, and less frequent use of both stock-option and bonus plans, and show that larger firms have higher dividend yields and higher levels of executive compensation. Their evidence suggests that contracting theories, which are based on the explanation of higher agency costs of debt for the growth-firms according to Myers' underinvestment problem, are more important in explaining cross-sectional variation in observed financial, dividend, and compensation policies than either tax-based theories or asymmetric information concepts (see summaries in Figure 2). The primary variable used in this study as a proxy for the IOS is the ratio of book value of assets to firm value ( $A/V$ ). They predict that the higher  $A/V$ , the higher the ratio of assets in place to firm value, and the lower the ratio of the value of investment opportunities to firm value. They also use several other IOS measures as proxies for the IOS in the sensitivity analysis: the ratio of depreciation to firm value, the ratio of R&D to firm value, the variance of the rate of return on the firm, the ratio of capital expenditures to firm value, and the earnings price ratio. Their analysis shows that there is considerable correlation among these alternate measures.

Gaver and Gaver (1993) present additional evidence on the relation between the investment opportunity sets and financing, dividend, and compensation policies by using common factor analysis to construct an index of investment opportunities for each firm,

which is based on six variables: 1) the ratio of the market value of the firm to the book value of assets, 2) the ratio of the market value of equity to the book value of equity, 3) the ratio of R&D expenditures to the book value of assets, 4) the earnings/price ratio, 5) the variance of the total return of the firm, and 6) the frequency that the firm is included in the holdings of growth-oriented mutual funds. They find that growth firms have significantly lower debt-equity ratios, exhibit significantly lower dividend yields, pay significantly higher levels of cash compensation to their executives than non-growth firms.

These studies [Myers (1977), Smith and Watts (1992), and Gaver and Gaver (1993)] discussed above all suggest that firms with relatively more assets in place (non-growth firms) will be more highly leveraged than firms whose value is comprised principally of future growth opportunities (growth firms).

If non-growth firms are more likely to issue debt than growth firms based on contracting theory (agency theory), these firms also are more likely to have accounting-based debt covenants. Skinner (1993) investigates this indirect relationship between the firm's growth opportunities, through its effect on the debt-equity ratios, and accounting method choices. His study provides evidence on the cross-sectional relation between firm's investment opportunities, their debt and compensation contracts, their size and financial leverage, and three accounting procedures (inventory cost flow assumption, depreciation method, and goodwill amortization period) and the income strategy approach (the combination of depreciation method and goodwill amortization period). His evidence suggests that the traditional explanations (the firm-size hypothesis, the debt-equity hypothesis, and the bonus-plan hypothesis) in positive theory of accounting are important, even after controlling for the effects of IOS.

Several previous research has shown that the growth opportunities of MNCs are higher than those of DCs. Bodnar and Weintrop (1995) investigate the association between domestic and foreign annual earnings changes and annual excess returns for a sample of U.S. multinational firms and find that the association coefficient for foreign operations is statistically greater than it is for domestic operations. They also find that the difference in magnitudes of the association coefficients is related to the growth opportunities in foreign operations. Since foreign operations generally follow the development of successful domestic operations, foreign operations represent expansions into new, less exploited markets. Therefore, the foreign markets offer the potential for greater growth than the already more exploited domestic markets. Because of the opportunities for greater growth abroad, successful foreign operations can be interpreted by the market as indicating high future foreign earnings.

Chen, Cheng, He, and Kim (1997) investigate the effect of international activities on capital structure, measured by a debt ratio. In this study, the ratio of market value to book value of total assets is treated as an exogenous variable to measure a firm's investment opportunity sets which surrogate for Myers' agency costs. They show that MNCs in general are larger with lower volatility of cash flows and higher market-book

ratio of assets (higher IOS) in the sample covering the ten-year period from 1984 to 1993. They find that the lower debt ratio associated with MNCs are mainly due to higher growth opportunities of MNCs, which is consistent with agency theory of capital structure. This study concludes that IOS is the most powerful variable to explain the capital structure among generally accepted determinants whereas multinational activity is the most important variable to explain the difference between MNCs' capital structure and DCs' capital structure.

## V. Conclusions

This study surveys and synthesizes the relevant literature of general determinants of capital structure choice and also focuses on the capital structure characteristics of multinational firms and domestic firms, and those of growth firms and non-growth firms. The agency theory concept in the general capital structure of firms is more important in explaining cross-sectional variation in observed financing policies than either the trade-off theory or the asymmetric information theory concept.

Several firm-related characteristics surveyed in this paper are the important determinants of the firm's capital structure, for example, future growth opportunities, earnings volatility, firm size, and profitability. Most studies in capital structure show that leverage is positively associated with firm size and negatively associated with future growth opportunities, earnings volatility, and profitability.

Firm-related characteristics might affect the different financing policy decisions between MNCs and DCs. The net effects of two opposing forces (increasing the target debt-equity ratios of MNCs or decreasing the target debt-equity ratios of MNCs) will depend on the relative size of additional agency costs of debt according to Jensen and Meckling, additional agency costs of debt according to Myers, lower bankruptcy costs of MNCs due to less volatile earnings effect, and risk reduction effect. Recently, the effects of the additional agency costs of debt according to Myers (1977), and Jensen and Meckling (1976) are more dominated in explaining the capital structure of MNCs than the less volatile earnings effect and risk reduction effect. In particular, agency costs of debt explain that firms with significant foreign involvement have target leverage ratios significantly below those of their domestic counterparts.

The future growth opportunities which surrogate for Myers' agency costs of debt are of great importance even though there is no consensus in the accounting and finance literature concerning an approximate proxy variable. Recently, most studies conclude that non-growth firms will be more highly leveraged than growth firms.

This study may improve our understanding of current research in determinants of capital structure and synthetical documentation of the determinants of capital structure with multinationality and growth opportunities can help information users to understand

firm's financing policy decisions. However, certain areas in capital structure theory are unexplored and there may exist some other important capital structure determinants not surveyed in this study. Synthetical documentation in this area is still in its infancy and promising. Further research directions include adding other important general capital structure determinants not surveyed in this study, improving the research in capital structure.

**Table 1**  
**Determinants of a Firm's Capital Structure**

The firm-related characteristics are in the first column. The sign in the second column is the change in leverage (debt ratio proxies) as a result of an increase in the given characteristics. Measurements of the firm-related characteristics are in the third column.

**(1) Homaifer, Zietz, and Benkato, 1994, "An empirical model of capital structure : Some new evidence", Journal of Business Finance and Accounting \***

Firm-related characteristics	Signs	Measurements
unlevered effective tax rate	+ (in the long-run) not significant (in the short-run)**	$[(Tr - Td) + T \cdot I] / CF$ Tr : reported tax payment Td : tax deferral T : the statutory tax rate I : interest expense
non-debt tax shelter ratio	not significant	the sum of depreciation, investment tax credits, & tax loss carry forward
firm size	+	Ln (TA)***
future growth opportunities	-	Ln (E mkt / E book)
capital market conditions	- (in the long-run) + (in the short-run)	the first differences of Ln (stock prices)
inflation rate	not significant	the first differences of the consumer price index
earnings volatility	-	Ln (the standard deviation of the first difference of operating income)

\* This study estimates the long-run steady state determinants of the firm's capital structure by using a general autoregressive distributed lag model (ADL).

\*\* This paper investigates two models : the long-run equilibrium model (ADL approach) and the simple annual cross-section model (the short-run model).

\*\*\* TA : total assets.

**(2) Gaver and Gaver, 1993, "Additional evidence on the association between the investment opportunity set and corporate financing, dividend, and compensation policies", Journal of Accounting and Economics \***



Firm-related characteristics	Signs	Measurements
growth opportunities	**	(1) the market value of the firm / TA (2) E mkt / E book (3) R&D / TA (4) the earnings-price ratio (5) the variance of the total return of the firm (6) growth oriented mutual funds ***
firm size	+	Log (TA)

\* This paper also found that growth firms exhibit lower dividend yields, higher levels of cash compensation to their executives, and higher incidence of stock option plans than nongrowth firms based on a sample of 237 growth firms and 237 nongrowth firms in 1985.

\*\* A composite measure of growth opportunities is used in this paper (by using common factor analysis).

\*\*\* The frequency that the firm is included in the holdings of growth-oriented mutual funds.

**(3) Smith and Watts, 1992, "The investment opportunity set and corporate financing, dividend, and compensation policies", Journal of Financial Economics \***

Firm-related characteristics	Signs	Measurements
growth opportunities	-	TA / firm value (A/V) **
regulation	+	dummy variable 1 = regulated industries 0 = otherwise ***
firm size	+	Log (sales)

\* This paper suggests that agency theories (contracting theories) are more important in explaining cross-sectional variation in observed financing policies than either tax-based or signaling theories.

\* The financing policy regression is estimated over 94 observations.

\*\* The book value of assets (TA) is used as a surrogate for assets in place. It is predicted that the higher the A/V ratio, the higher ratio of assets in place to firm value, and the lower the ratio of the value of growth opportunities to firm value.

\*\*\* Insurance, gas and electric utilities, and commercial banking for the regulated industries.

**(4) Titman and Wessels, 1988; "The determinants of capital structure choice", Journal of Finance**

Firm-related characteristics	Signs	Measurements
collateral value of assets	not significant (mixed signs)	(1) intangible assets / TA (2) (inventory + gross plant and equipment) / TA
non-debt tax shields	not significant (-) **	(1) investment tax credits / TA (2) depreciation / TA (3) non-debt tax shields / TA
Growth	not significant (mixed signs)	(1) capital expenditure / TA (2) the growth of TA (3) R&D / sales
uniqueness	-	(1) R&D / sales (2) selling expenses / sales
industry classification	not significant (-)	dummy variable 1 = SIC (3400-4000) 0 = otherwise
firm size	not significant (-)	(1) Ln (sales) (2) quit rates (QR)
volatility	not significant (-)	the standard deviation of the % change in operating income
profitability	-	(1) operating income / sales (2) operating income / TA

- \* This study uses a factor-analytic technique that mitigates the measurement problems with proxy variables.
- \* Six measures of financial leverage are used in this study : long-term, short-term, and convertible debt divided by market value and book value.
- \* This study finds that debt ratios are negatively related to the uniqueness of a firm's line of business and negatively related to past profitability.
- \* This study also finds that smaller firms tend to use significantly more short-term debt than larger firms.
- \*\* The results show negative relationships that are statistically not significant.

(5) Friend and Hasbrouck, 1988, "Determinants of Capital Structure",  
Research in Finance

Firm-related characteristics	Signs	Measurements
fixed assets	+	net property, plant, and equipment / TA
profitability	-	return on assets (EBIT/TA)
earnings volatility	-	standard deviation of return on assets
firm size	not significant (+) *	Log (TA)
inside factors	not significant	(1) fraction of equity held by dominant insider (2) market value of equity held by dominant insider

\* Weakly positive relationship between firm size and debt ratio.

**(6) Bradley, Jarrell, and Kim, 1984, "On the existence of an optimal capital structure : Theory and evidence", Journal of Finance \***

Firm-related characteristics	Signs	Measurements
earnings volatility	-	the standard deviation of the first difference in annual earnings / the average of TA
non-debt tax shields	+	the sum of annual depreciation charges and investment tax credits / the sum of annual earnings before depreciation, interest, and taxes
advertising and R&D expenses	-	(advertising expenses + R&D expenses) / sales

\* This paper investigates the cross-sectional behavior of 20-year average firm leverage ratios for 851 firms covering 25 two-digit SIC industries.

\* This study finds strong industry influences across these firm leverage ratios.

**(7) Ferri and Jones, 1979, "Determinants of financial structure : A new methodological approach", Journal of Finance**

Firm-related characteristics	Signs	Measurements
industry	N/A *	(1) four digit SIC code (from COMPUSTAT tapes) (2) generic industry measure **
firm size	N/A ***	(1) total sales (2) TA (3) the average of TA : $\mu$ (TA) (4) the average of total sales : $\mu$ (total sales)
business risk (the volatility in income)	not significant	(1) $\sigma$ (sales) / $\mu$ (sales) (2) $\sigma$ (pre-tax CF) / $\mu$ (pre-tax CF) (3) $\sigma$ (the standardized growth in sales) (4) $\sigma$ (the standardized growth in CF)
operating leverage	-	(1) the degree of operating leverage (DOL) (2) net fixed assets / TA (3) the average of net fixed assets

\* Industry class is linked to a firm's debt ratio.

\*\* A generic industry measure defined by grouping firms with similar dominant product lines and SIC codes

\*\*\* The debt levels are related to firm size, but the relationship does not conform to the positive.

**Table 2**  
**Determinants of Capital Structure for US-based MNCs in Recent Studies**

The firm-related characteristics are in the first column. The sign in the second column is the change in leverage (debt ratio proxies) as a result of an increase in the given characteristics. Measurements of the firm-related characteristics are in the third column.

**(1) Chen, Cheng, He, and Kim, 1997, "An investigation of the relationship between international activities and capital structure", Journal of International Business Studies \***

Firm-related characteristics	Signs	Measurements
firm size	-	natural logarithm of market value of common equity
bankruptcy costs	-	variance of change of CFs / average assets
growth options	-	(total assets - common equity + market value of equity) / total assets
multinationality	-	1 : multinational, positive foreign pre-tax income 0 : domestic, zero foreign pre-tax income
profitability	-	income before extraordinary items / total assets

\* This paper uses multiple regression analysis to add measures of international activities after controlling for measures pertinent to both MNCs and DCs.

**(2) Fatemi, 1988, "The effect of international diversification on corporate financing policy", Journal of Business Research**

Firm-related characteristics	Signs	Measurements
multinationality	-	foreign sales / total sales (25%) *
firm size	control variable	proxied by annual sales

\* This paper also found that MNCs secure a greater portion of their borrowings from short-term sources.

\* A group of 84 MNCs is compared to a group of 52 purely domestic firms

- (3) Lee and Kwok, 1988, "Multinational corporations vs. domestic corporations : International environmental factors and determinants of capital structure", *Journal of International Business Studies*

Firm-related characteristics	Signs	Measurements
multinationality	-	foreign tax / total tax (10%, 25%) *
industry	control variable	
firm size	control variable	asset size

- \* This paper also found that MNCs have higher agency costs of debt, but not lower bankruptcy costs than DCs.
- \* Myer's (1977) agency cost of debt is used as an agency cost proxy [(advertising + R&D expenses) / annual sales].

- (4) Michel and Shaked, 1986, "Multinational corporations vs. domestic corporations : Financial performance and characteristics", *Journal of International Business Studies*

Firm-related characteristics	Signs	Measurements
multinationality	-	foreign sales / total sales (20%) capital investment exists in at least 6 countries

- \* 58 MNCs (from Forbes MNCs) and 43 DCs (from Fortune 500) are used as samples in this study.
- \* The capitalization ratio is used as proxy for leverage (This paper found that MNCs are significantly more highly capitalized than DCs).
- \* This paper also found that DCs appear to have a superior risk-adjusted, market-based performance than MNCs, the average standard deviation of equity of the DCs is significantly higher than that of MNCs, and the average systematic risk (beta) of DCs is higher than that of MNCs.

**Table 3**  
**Commonly Used Proxies for Each Variable**

**A. Debt-equity ratio**

	Definition	Literature
book debt-equity ratio	debt / book equity	Gaver and Gaver (1993)
market debt-equity ratio	debt / market equity	Gaver and Gaver (1993)
equity-to-value ratio	equity / market value of firm	Smith and Watts (1992)
long-term debt ratio	LTD / (market value of equity + LTD)	Lee and Kwok (1988) Chen, Cheng, He, and Kim (1997)

**B. Multinationality**

	Definition	Literature
foreign sales ratio	foreign sales / total sales	Fatemi (1988) Michel and Shaked (1986)
foreign tax ratio	foreign taxes / total taxes	Lee and Kwok (1988)
foreign pretax income ratio	foreign pretax income / total pretax income	Chen, Cheng, He, and Kim (1997)

**C. Growth opportunities (IOS)**

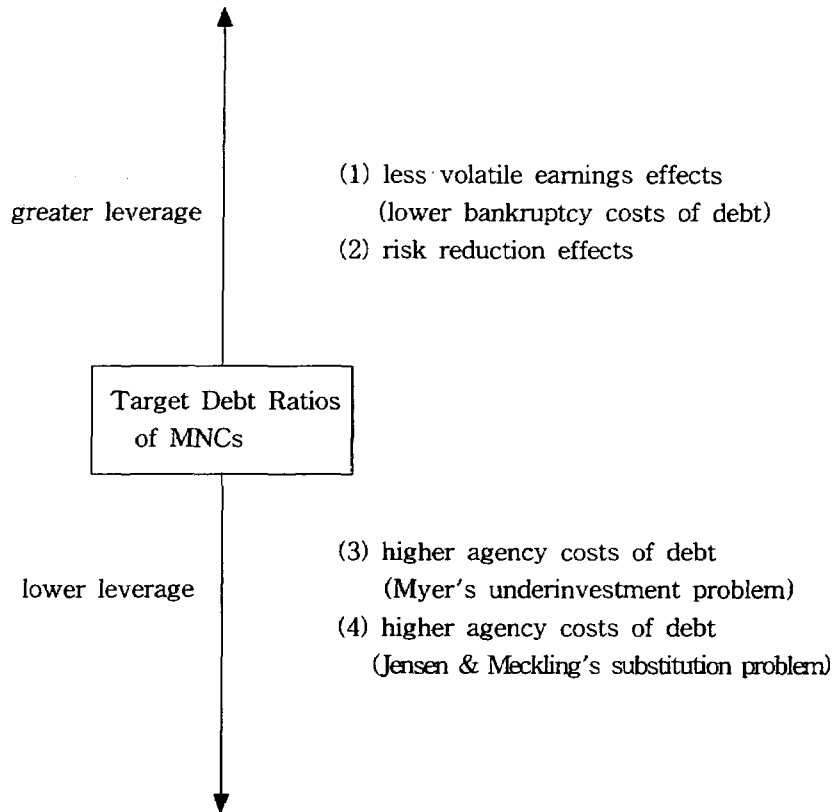
	Definition	Literature
assets to firm value	assets / market value of firm	Smith and Watts (1992) Myers (1977)
market-to-book assets	market value of assets / book value of assets	Gaver and Gaver (1993) Chen, Cheng, He, and Kim (1997)
market-to-book equity	Market value of equity / book value of equity	Gaver and Gaver (1993) Collins and Kothari (1989)
R&D	R&D expenses / assets	Gaver and Gaver (1993) Skinner (1993) Titman and Wessels (1988)
Tobin's Q ratio	market value of firm / replacement cost of sales	Skinner (1993)

**D. Firm size**

	Definition	Literature
total assets	log (total assets)	Gaver and Gaver (1993)
total sales	log (total sales)	Smith and Watts (1992)
market value	ln (market value of common equity)	Chen, Cheng, He, and Kim (1997)



**Figure 1**  
**The Effects of Firm-related Characteristics on Financing Policy Decisions of U.S.-based MNCs**



- (1) Less volatile earnings effect : [Rugman (1976), Shapiro (1978), Fatemi (1984)]  
 MNCs may be able to push itself into a higher debt ratio without increasing its expected bankruptcy cost since the earnings of MNCs are less volatile than that of DCs by the virtue of being diversified internationally and bankruptcy risk is a function of earnings volatility.
- (2) Risk reduction effect : [Hughes, Logue, and Sweeney (1975), Agmon and Lessard (1977)]  
 Since the degree of riskiness is a major determinant of the financing decision of the firm, international diversification may enhance debt capacity, raising the target debt ratio for MNCs.

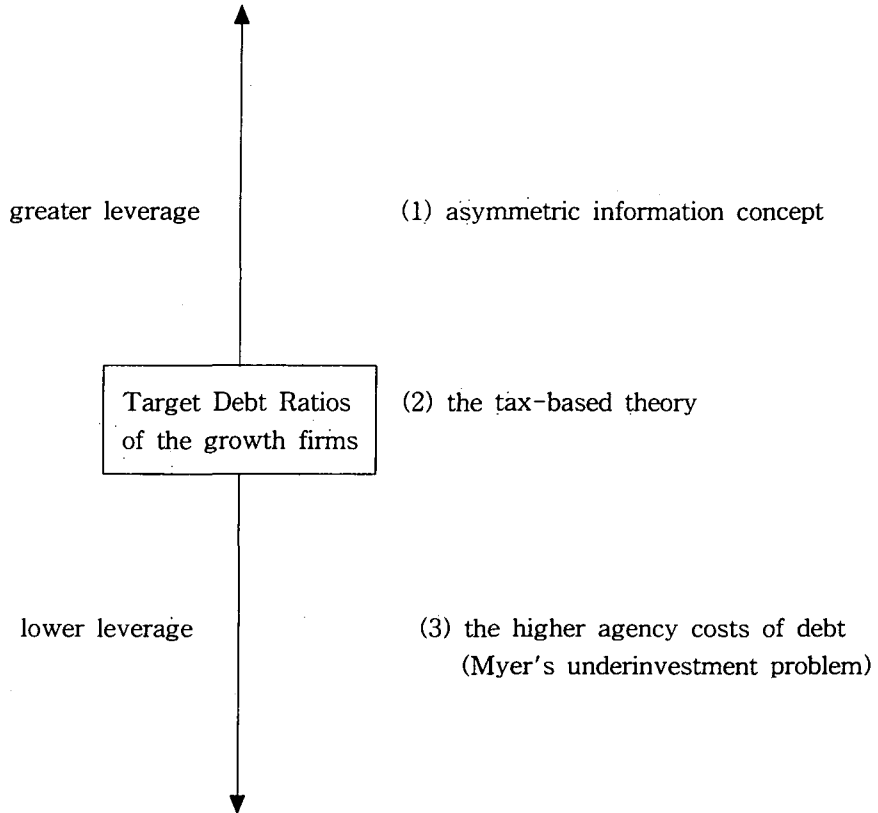
- (3) The higher agency costs of debt according to Myers : [Myers (1977), Lee and Kwok (1988)]

MNCs will have higher proportion of future growth options (intangible assets) than DCs which are less vulnerable to expropriation by host governments. MNCs also possess monopolistic advantages which enable them to outperform local companies in host countries.

- (4) The higher agency costs of debt according to Jensen & Meckling : [Jensen and Meckling (1976), Lee and Kwok (1988)]

MNCs are expected to incur higher monitoring costs and bonding costs than DCs because of their operation in a more complex political and institutional environment and in a more geographic dispersion.

**Figure 2**  
**Theoretical Explanations of the Optimal Capital Structure of Growth Firms**



(1) Asymmetric information concept :

If firms with more growth options face greater information disparities, they should be high-debt firms [Ross (1977), Smith and Watts (1992)].

(2) The tax-based theory :

If firms with more growth options have more volatile cash flows, they have incentives to reduce the amount of debt in their capital structure [Smith and Stulz (1985), Smith and Watts (1992)]. Therefore, the tax effect is mixed, if there are some tax benefits for debt financing.

(3) The higher agency costs of debt [Myers (1977)] :

One way to control Myers' underinvestment problem and its associated value loss (additional agency costs of debt) is to finance growth options with equity rather than debt. Thus, growth firms have lower debt-equity ratios [Myers (1977), Smith and Watts (1992), Gaver and Gaver (1993)].

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