Australian Multinational and Domestic Corporations Capital Structure Determinants

Shumi Akhtar*

Abstract

This study investigates the significance of the determinants of capital structure on a sample of Australian multinational corporations and Australian domestic corporations over the period 1992 to 2001. The determinants of capital structure have captured academic thought for many decades, particularly since Modigliani and Miller (1958). If optimal capital structures do exist and that these structures maximise firm value, obtaining an understanding of the determinants of capital structure is important in obtaining an understanding of the way firms maximise value. Multinational corporations control considerable assets and some multinationals control more assets than that which is controlled by some countries. Decisions about capital structure may have important implications in regards to shareholder wealth effects. Therefore, obtaining an understanding of the determinants of capital structure and the differences between domestic and multinational capital structure is of interest to academics, politicians, shareholders and financiers

The results show that the level of leverage does not differ significantly between multinational and domestic corporations. Using cross-sectional Tobit regression analysis the results show substantial variation in capital structure determinants between multinational and domestic corporations. For both types of organisations growth, profitability and size are significant determinants of leverage. For domestic corporations collateral value of assets is also a significant determinant of leverage. For multinationals, bankruptcy costs and the number of overseas subsidiaries is a significant determinant of leverage. Surprisingly, bankruptcy costs are not significant for domestic corporations. In relation to interaction effects, bankruptcy costs and profitability are significant in explaining multinational leverage relative to domestic leverage.

When industry effects are considered the significance of the original determinants remained constant however, some industries became significant. The industry effect was not consistent across domestic and multinational corporations.

In relation to time variation in leverage and the determinants of capital structure, both varied across domestic and multinationals over the sample period.

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Capital structure; multinational; leverage
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1. Introduction

Despite the extensive research of over half a century, the knowledge of the determinants of capital structure for corporations remains a controversial issue in modern corporate finance.[1] Since the seminal work by Modigliani and Miller (1958), a plethora of research has been undertaken especially investigating the determinants of capital structure on domestic corporations (DCs) in the US.

Optimal capital structure may have important implication on firm valuation, capital budgeting decisions and long term corporate profits. Very little research has been published on capital structure determinants for multinational corporations (MCs). Some studies have been undertaken to investigate cross sectional differences in capital structure between US based DCs and MCs during 1990's (Lee and Kwok, 1988; Burgman, 1996; Homaifer et al., 1998; Chen et al., 1997), little research has been published on comparisons of the determinants of capital structure for DCs and MCs. In addition, the increased importance of 'globalised markets' with global competition suggests that the determinants of MCs capital structure are becoming increasingly important, particularly if they differ from domestic corporations.

This research draws upon existing theoretical determinants of capital structure and empirically tests the hypotheses across a sample of multinational and domestic corporations in Australia. Although the sample is from Australia the results have important implications for multinational corporations based in other countries.

The paper is divided into five sections. The next section reviews previous studies of capital structure literature, develops hypotheses and defines the variables.

[1] Throughout this thesis the terms company, firm and corporation are used interchangeably.

The third and fourth sections provide discussion of data collection and method. Section five discusses the results and section six summarises the key findings and concludes the paper.

2. Capital structure determinants: hypotheses and variables

Theoretical studies based on international environmental factors predict that MCs will have lower debt ratios than DCs (Shapiro, 1996; Lee and Kwok, 1988; Burgman, 1996). Two major determinants of a firm's capital structure include agency costs and bankruptcy costs. The higher these cost the lower the debt levels. The difference in capital structures between MCs and DCs depends upon the effect of multinationalisation on these two costs. MCs often possess monopolistic advantages that enable them to outperform local companies in host countries (Kim and Lyn 1986), and these advantages are reflected by the value of future growth options of the company. Therefore, MCs' agency costs of debt (according to Myers' (1977) under investment prediction) will be higher and the debt ratios of MCs will be lower. Additional monitoring costs, according to Jensen and Meckling (1976), are higher for the MCs that operate in more complex political and institutional environments than DCs (Burgman, 1996) and this is expected to lower MCs debt levels. Geographic dispersion of MCs also increases auditing costs substantially, which are expected to lower debt levels further.

On the other hand, MCs are thought to have diversification advantages in reducing risk. Studies have shown that international operations result in reduced risk for MCs (Hughes et al., 1975; Rugman, 1976; Agmon and Lessard 1977; Cheng and Han 1993). As the degree of risk is a major determinant in the firm's financing

decision, international diversification may enhance debt capacity, and thereby raise the target debt ratio for MCs.

The competition between theoretical predictions based on diversification benefits and those based on agency and bankruptcy costs has motivated a number of empirical investigations. Evidence regarding the direct effect of internationalisation activities on debt structure is scarce. The few studies which compare the difference in debt ratios between MCs and DCs, use a dichotomous classification and generally report that MCs have a lower debt level than DCs (Michel and Shaked 1986; Fatemi, 1988; Homaifer et al., 1998 and Doukas and Pantzalis, 2003). Whether this is the case for multinational corporations domiciled in Australia is an empirical question that leads to the first hypothesis (stated in null form):[2]

H_0 : *There is no significant difference between DCs and MCs leverage.*

The dependent variable, leverage (LTD) is defined as the ratio of the book value of long term debt to book value of long term debt and market value of equity (Burgman, 1996; Chkir and Jean-Clause, 2001). [3,4]

$$LTD = \frac{(Long\ Term\ Debt)}{(Long\ Term\ Debt + Market\ Value\ of\ Equity)}$$

[2] All hypotheses are stated in the null form.

[3] Market value of debt would be preferable since it is a more accurate measure of debt. However, Bowman (1980) reported a large cross-sectional correlation between the market and the book value of the debt.

[4] Equity is defined as market value of equity (Number of common shares outstanding multiplied by the year end closing price). Book value of debt is defined as the debt written in the financial report. Many studies have used value of debt in measuring leverage (see Friend and Lang (1988); Titman and Wessels (1988)). Bowman argues that even if the market value of debt is a more accurate measure of leverage, the use of book value of debt is not expected to distort leverage ratio.

Following the first hypothesis there are eleven hypotheses relating to capital structure determinants. Two further hypotheses relating to industry effects and time variation on capital structure are also considered. These are discussed below.

Agency costs of debt

Firms with higher agency costs of debt are expected to have lower debt levels (Jensen and Meckling, 1976; Fama, 1980 and Titman, 1984). Agency costs of debt include monitoring and control costs and this can be proxied by a range of variables including free cash flow (Jensen, 1986). A positive association between free cash flow and debt levels has been found by Agarwal and Jayaraman (1994), Jaggi and Gul (1999) and Filbeck and Gorman (2000). Agency costs can also be proxied by growth levels. Titman and Wessels (1988), Chung (1993), Barcklay et al. (1995) and Rajan and Zingales (1995) all find a negative relationship between growth and debt levels.

In relation to DCs and MCs agency cost of MCs is expected to be higher than DCs. As the operations of MCs are geographically dispersed, the difficulties in gathering and processing information make monitoring (auditing costs, language differences, varying legal and accounting systems) more costly and time consuming than the cost of monitoring DCs. Hence, it is expected that the inherent agency problems will be higher for MCs relative to DCs. Therefore, the agency cost hypothesis is as follows:

H_0: There is no significant relationship between agency costs and leverage for:

- *DCs*
- *MCs*

Three variables are used to capture different agency related issues. The first is as suggested by Titman and Wessels (1988) as cash and marketable securities over three years average of total assets:

$$Agency\ Costs\ =\ \frac{Cash\ and\ Marketable\ Securities}{3\ Years\ Average\ of\ Total\ Assets}$$

The second variable is free cash flow (Jensen, 1986). The measure of free cash flow used is that as defined by Lehn and Poulsen (1989) standardised by 10,000:[5]

$$FCFLP = \frac{\text{EBIT + DEP + AMO - TAX - DIV - INT}}{10{,}000}$$

where:

EBIT = earnings before interest and tax and abnormal return
DEP = depreciation expense
AMO = amortization reported separately
TAX = total tax paid
DIV = total dividends paid on ordinary and preference shares
INT = net interest expense

The final variable related to agency cost is growth. The firm's growth is calculated as the annual percentage change in total assets for last three years Jensen et al. (1992) and Mehran (1992). The growth in assets is a direct measure of current investment and, if investment is persistent, it is also a proxy for expected investment (Fama and French, 1998).

$$GROWTH = \frac{\Delta Total\ Assets_t}{Total\ Assets_t} = \frac{\left(Total\ Assets_t - Total\ Assets_{t-1}\right)}{Assets_t}$$

Bankruptcy costs

Firms with higher bankruptcy costs are expected to have lower debt levels (Kraus and Litzenberger, 1973).

[5] The 10,000 standardisation was done to ensure consistency across the other variables.

In relation to the differences in bankruptcy costs between MCs and DCs, Reeb (1998) and Armstrong and Riddick (1998) argue that MCs are expected to have lower bankruptcy costs than DCs. MCs have ability to diversify across less than perfectly correlated national economies and this should result in less volatility of earnings. This should lower the probability of bankruptcy and hence lower expected bankruptcy costs for MCs relative to DCs. However, MCs have operations in multiple legal jurisdictions and that creditors in different countries have differential information and remedies. Burgman (1996) argues that these jurisdictional and informational differences increase the costs associated with bankruptcy. Therefore, it is not clear if MCs are expected to have higher or lower costs of bankruptcy relative to DCs. However, generally firms with higher expected bankruptcy costs are expected to have lower leverage. This leads to the following hypothesis:

> *H_0 : There is no significant relationship between bankruptcy cost and leverage for:*
> - *DCs*
> - *MCs*

To proxy bankruptcy costs, several researchers, including Lee and Kwok (1988), Chaplinsky (1984), and Bradley et al. (1984) use the standard deviation of the first difference in earnings before interest and taxes (EBIT) scaled by the mean value of the firm's total assets. However, due to potential contemporaneous correlation of total assets with other variables, the numerator is scaled by interest expense.[6]

$$Bankruptcy\ Costs(BC) = \frac{Standard\ Deviation\ of\ First\ Difference\ in\ EBIT}{Interest\ Expenses}$$

[6] The standard deviation is estimated from four years of EBIT.

Non Debt Tax Shield

Taxation and its relationship to capital structure is explicitly linked to the applicable tax regime. Under the Australian imputation tax regime the tax deductibility of interest is not expected to induce a preference for debt as it does under a classical tax regime (Bishop et al., 2004). De Angelo and Masulis (1980) formalised a framework whereby tax deductions that are not associated with debt (NDTS) act as substitutes for interest deductions. These non-debt tax shields compete with interest as a tax deduction. However, these non-debt tax shields are only going to compete for interest in a classical tax environment. Therefore, for Australian organisations facing an imputations tax system, interest will not provide the same tax benefit as under a classical tax system.

In relation to MCs, they should be better equipped to arbitrage institutional restrictions than DCs for the purpose of reducing their tax liabilities, particularly for MCs that have subsidiaries in countries with a classical tax system. However, whether NDTS are a determinant of leverage for MCs is unknown. The above arguments lead to the following hypothesis:

H_0 : There is no significant relationship between non debt tax shield and leverage for:

- *DCs*
- *MCs*

Following Bradley et al., (1984), Titman and Wessels (1988) and Barton et al., (1989), depreciation charges are used to indicate non-debt tax shields scaled with total assets:

$$Non\ Debt\ Tax\ Shields(NDTS) = \frac{Total\ Annual\ Depreciation\ Expense}{Total\ Assets}$$

Profitability

Myer's (1984) pecking order theory of capital structure shows that if a firm is profitable then it is more likely that financing would be from internal sources rather than external sources. The argument is based on costly external sources of capital. More profitable firms are expected to have higher internal finances and hence, will tend to hold less debt, since it is easier and more cost effective to finance internally. Thus, this would suggest that there is a negative relationship between profitability and debt.

In relation to MCs and DCs, MCs have better opportunities than DCs to earn more profit mainly due to having access to more than one source of profit and better chances to have favourable business conditions in particular countries (Kogut, 1985 and Barlett and Ghoshal, 1989). Consequently, this would suggest that MCs are more profitable than DCs. This results in the following hypothesis:

H_0: There is no significant relationship between profitability and leverage for:

- *DCs*
- *MCs*

The variable chosen to measure profitability is the average net income to total sales for the previous three years (Doukas and Pantzalis, 2003):

$$Profitability(PROF) = \sum_{s=t-3}^{t} \frac{Net\ Income}{Total\ Sales} \Big/ 3$$

Size

Larger firms often have greater public exposure relative to smaller firms. This places greater demands on larger firms to provide more information for customers, suppliers, analysts and government bodies (Cooke, 1991). Provision of information is also

made easier because these larger firms possess the necessary resources to furnish stakeholders with the relevant information and hence producing extra data at a competitive cost than smaller firms (Cooke, 1991). In the presence of asymmetric information between smaller and larger firms, larger firms will be able to issue debt at more favourable rates relative to smaller firms. In additions, larger firms may be able to reduce the transaction costs associated with debt issuance. The reason being is that the transaction costs will be comparatively higher for smaller firms than for their larger peers (Smith, 1977). Here the argument is that firm size can be viewed as a proxy for information asymmetries between the firm and the market. So, a larger firm's corporate information is more easily available to public than a smaller firm therefore cost of debt will be lower due to information asymmetries. Therefore a positive relationship is expected between firm size and leverage. Many studies have found firm size as a determinant of leverage including Scott and Martin (1975), Ferri and Jones, 1979 and more recently Agrawal and Nagarajan (1990).

In relation to MCs and DC, it is expected that MCs are larger in size than DCs. This leads to the following hypothesis:

H_0 : *There is no significant relationship between size and leverage for:*

- *DCs*
- *MCs*

The natural logarithm of total assets are considered as a proxy for size:

$$SIZE = Ln(Total\ Assets)$$

Collateral Value of Assets

The tangibility of assets, or collateral value of assets held by a firm is a determinant of leverage (Rajan and Zingalis, 1995). Firms with highly tangible assets or assets with high collateral value can often borrow on relatively more favourable terms than firms

with high intangible assets or assets without collateral value. Firms with highly intangible assets have relatively lower borrowing costs since the assets offer better security for the debtholders (Graham, 2000). This would suggest that there is a positive relationship between leverages and collateral value of assets.

In relation to MCs and DCs, it is uncertain whether the level of collateral assets is higher or lower for MCs relative to DCs. This leads to the following hypothesis:

> *H_0 : There is no significant relationship between collateral value of assets and leverage for:*
>
> - *DCs*
> - *MCs*

The ratio of fixed assets to total assets is used as a measure of collateral value of assets (Chittenden et al., 1996 and Friend and Lang, 1988):

$$Collateral\ Value\ of\ Assets(CVA) = \frac{Fixed\ Assets}{Total\ Assets}$$

Additional multinational corporate capital structure determinants

Diversification

It is often argued that the international diversification of earnings should enable MCs to sustain a higher level of debt than DCs, without increasing their default risk (Eiteman et al., 1998 and Shapiro, 1996). However, while it is believed that there are several gains to be made by venturing into overseas markets, it can be argued that continued foreign expansion has increasing risks. Erunza et al. (1999) finds that the incremental gains from international diversification beyond home-made diversification portfolios have diminished over time in a way consistent with changes

in investment barriers. For example, continued expansion has to contend with the increasingly difficult prospect of managing a multicultural, multi-location workforce, serving distinctly different customer markets, and navigating through a maze of formidable constraints imposed by the number of locations where operations are established. This will drive MCs to reduce leverage. This leads to the following hypothesis:

H_0: There is no significant relationship between the level of MCs diversification and leverage.

Diversification is measured as the number of subsidiaries operating in overseas countries (Tallman and Li, 1996 and Doukas and Pantzalis, 2003):

Diversification (DIVER) = number of overseas subsidiaries

Foreign Exchange Risk

The more sensitive a firm's cash flow and earning are to foreign exchange rate fluctuations, the lower the expected level of debt. This is essentially due to the increases in expected costs of bankruptcy. Choi (1989) analysed the relationship between foreign exchange risk and corporate financing decisions and reported that foreign exchange risk affects significantly a firm's financing decisions for international investments. Therefore, it can be hypothesised that foreign exchange risk is likely to affect MCs leverage. This leads to the following hypothesis:

H_0 : There is no significant relationship between foreign exchange risk and MCs leverage.

Exchange rate movements affect both the cash flows of a firm's operations and discount rate employed to value these cash flows (Bartov et al., 1996).[7] Foreign production and sales are two important determinants of exchange rate exposure for any MC because exchange rate fluctuations directly impact the revenues and production costs of the firm through these two channels. This study measures foreign exchange risk exposure as per Wright et al. (2002):

$$Foreign\ Exchange\ Risk(FX) = \frac{Total\ Foreign\ Subsidiaries\ Sales}{Total\ Sales}$$

Political Risk

Political risk (PR) is the chance that political events will have an adverse effect on the operations and economic well being of the firm. The type of political risk could be country specific or firm/industry specific and could include expropriation of assets, trade controls, institutional ineffectiveness, threat of war, social unrest, disorderly transfers of power, political violence, international disputes, regime changes and regulatory restrictions (Jodice, 1985). Essentially, political risks are the risks that wealth will be transferred from the stakeholders of the firm to external parties, such as host governments. MCs that face higher political risk are expected to have less leverage due to greater probability of wealth loss. This leads to the following hypothesis:

H_0 : There is no significant relationship between political risk and MCs leverage.

[7] Bartov et al. (1996) shows that there is an increase in the variability of equity returns following the period of increased exchange-rate variability. The results suggest that the increase in exchange-rate fluctuations is an indication of an increase in the riskiness of the MCs cash flows.

Political risk is measured as follows. Let C be the sample of companies and R the set of different countries that companies in the sample operate from. Let Ic,r be the revenue of company c coming from a particular country, r. The sum of revenues for company c, from different countries is the sum of Ic,i. Pc,r is the proportion of revenue from a particular country relative to the total revenue of company c. Notationally this is as follows:

$$P_{c,r} = \frac{I_{c,r}}{\sum_{i \in R} I_{c,i}}$$

For each country in which a company operates a political risk rating is obtained from Handbook of Country and Political Risk Analysis (Llewellyn, 2001). This is denoted as lambda (λ_i). The political risk rating is then multiplied by the proportion of revenue from that particular country relative to the total revenue of the company. This provides a measure of political risk faced by the MC. Notationally this is as follows:

$$Political\ Risk(PR) = \gamma_c = \sum_{i \in R} \lambda_i P_{c,i} = \frac{\sum_{i \in R} \lambda_i I_{c,i}}{\sum_{i \in R} I_{c,i}}$$

The maximum value of the political risk rating variable is 100. This indicates a low risk. A minimum value of zero indicates the riskiest political risk rating.

Other factors influencing capital structure determinants

Industry

Myers (1984) suggests that since asset risk, asset type, and requirements for external funds vary by industry, debt ratios are also expected to vary from industry to industry (Harris and Raviv, 1991 and Michaelas et al., 1999). It is known that some

industries are characterised by high leverage (for instance, capital-intensive manufacturing firms, utilities) while others are known to have low leverage (for instance, hi-tech companies, mining companies). However, there is considerable disagreement concerning the strength of the industry effect on capital structures. The influence of industry on leverage should be independent of multinationality or domesticity of the firm. However, whether MCs and DCs are influenced in their capital structure by the type of industry they operate is an empirical question. This leads to the following hypothesis:

$H2_0$: There is no significant industry effect on leverage for:

- *DCs*
- *MCs*

To control for industry specific effects on firms' capital structure choice, a zero-one dummy is employed. To be consistent in industry effect on capital structure across DCs and MCs, the Dow Jones Global Indexes (DJGI) - industry classification is used to separate ten industry groups. DJGI classification contains ten main type of industries. This is a sufficient classification without creating insufficient sample sizes that accompany finer categorisations. The industry categories are:[8]

BSC= Basic materials; CYC= Consumer cyclical; NCY=Consumer non-cyclical; ENE=Energy; HCR=Healthcare; IDU=Industrial; TEC= Information technology; TLS= Telecommunications and UTI=Utilities.

Time variation

Capital structure does not stay constant over time (Bevan and Danbolt, 2002). However, it is uncertain if Australian MCs or DCs have time variant leverage levels. Therefore, to test the time variation of leverage the following hypothesis is proposed:

[8] Financial industry is excluded.

H_0: Leverage does not vary over time for:

- *DCs*
- *MCs*

To measure time variation zero-one dummy variables identify individual years.

3. Data

All firms listed on the Australian Stock Exchange for each year from 1992 to 2001 were initially selected.

[Insert Table 1 about here]

Table 1 outlines the process of sample selection. Initially 4,251 firms were identified across the sample period (1,637+2,614). For each firm the Osiris database was used to obtain annual balance sheet and income statement data. For each year, if a firm reported business activity from other than Australian sources (that is, a non-Australian geographical segment) it was coded as a multinational corporation (MC) otherwise it was coded as a domestic corporation (DC). There were 1,637 DCs and 2,614 MCs selected across the 10 years. For each year this represents approximately 163 domestic corporations (1,637/10 years) and 261 multinational corporations (2,614/10 years).

If business activity was reported in the balance sheet and income statement in a foreign currency then it was classified as a foreign multinational and excluded. This resulted in approximately 100 (973/10 years) corporations being excluded on average each year as being foreign multinationals. Foreign multinationals were excluded because capital structure determinants for foreign multinationals may be different than those of Australian domiciled multinationals.

Firms in the financial industry have capital structures that are determined by levels of deposits and financial regulation. Determinants of capital structure for these

firms are considerably different from other firms and as a result are also excluded. There were approximately 20 DCs and 35 MCs excluded on this criterion.

Firms were also excluded if the Osiris database failed to provide sufficient information for estimating the necessary variables. For example, a minimum of three years of data is necessary for estimating some variables. This resulted in approximately 66 DCs and 10 MCs being excluded. The final sample resulted in selection of 968 DCs (approximately 97 domestic firms) and 1,221 MCs (approximately 122 Australian multinational firms).

[Insert Table 2 about here]

Table 2 presents the number of DCs and MCs in each year for the samples. Table 2 shows that there has been a general increase in DCs per year in the sample up to 1998.[9] This is also the case for MCs up to 1998 when the number of MCs in the sample began to fall. It is unclear why the number of Australian DCs and MCs has fallen since 1998. Overall, in the sample there are more MCs than DCs in any year.

[Insert Table 3 about here]

Table 3 reports the sample distribution of each industry classification for MCs and DCs. Table 3 shows an almost equal distribution of sample selection across industries between DCs and MCs. For example, the proportion of DCs that are in basic material (BSC) and consumer cyclical (CYC) industries make up just over 50% of the DC sample. The proportion of MCs in these two industries makes up approximately 47% of MC sample.

[9] The decrease in DCs in 2001 was due to the Osiris database not being updated at time of data collection.

[Insert Table 4 about here]

Table 4 contains descriptive statistics of the variables in the sample. It shows that on average the leverage (LTD) is relatively similar between DCs and MCs (0.367 vs. 0.363). Also, on average, MCs agency costs-level of cash (AG), bankruptcy costs (BC), collateral value of assets (CVA) are comparatively smaller than DCs (0.101 vs. 0.131; 5.216 vs. 7.547 and 0.610 vs. 0.637). Australian DCs also holds relatively larger free cash flows (FCFLP) than MCs (5.173 vs. 1.623). Further, Australian MCs have higher growth (GROWTH) opportunities and are more profitable (PROF) and are also larger in size than Australian DCs counter parts (6.959 vs. 2.896; 0.748 vs. 0.596 and 12.694 vs. 11.969). The degree of international involvement of Australian MCs ranges from one overseas subsidiary to 220 overseas subsidiaries. While a foreign exchange ratio (FX) of 1 indicates the extremity of exposure, the mean of 0.634 indicates that Australian MCs have 63.4% of total sales from overseas sources. The average ratings of political risk (PR) faced by an Australian MCs is 80. This indicates that Australian MCs are facing relatively lower political risk, given 100 is the lowest and 0 is the highest.

4. Method

A Tobit regression model is used to analyse the variables and explain capital structure determinants. A Tobit model is appropriate due to the truncated leverage variable (Rajan and Zingales, 1995). This paper adopts three different models to investigate the DCs and MCs capital structure determinants. Model 1 is applicable to Australian DCs:

$$LEVERAGE_1 = \alpha+\beta_1 AG+\beta_2 FCFLP+\beta_3 GROWTH+\beta_4 BC+\beta_5 NDTS+\beta_6 PROF+\beta_7 CVA\ldots + \beta_8\, SIZE+\varepsilon_i$$

where:
Variables are as defined previously.

Model 2 is applicable to Australian MCs:

$$LEVERAGE_2 =\alpha+\beta_1 AG+\beta_2 FCFLP+\beta_3 GROWTH+\beta_4 BC+\beta_5 NDTS+\beta_6 PROF+\beta_7 CVA\ldots \ldots+\beta_8\, SIZE++\beta_9 DIVER+\beta_{10} FX+\beta_{11} PR +\varepsilon_i$$

where:
Variables are as defined previously.

Model 3 is applicable to the combined sample of DCs and MCs:

$$LEVERAGE_3 = \alpha+\beta_1 AG+\beta_2 FCFLP+\beta_3 GROWTH+\beta_4 BC+\beta_5 NDTS+\beta_6 PROF+\beta_7 CVA\ldots \ldots+\beta_8 SIZE+\beta_9 DIVER+\beta_{10} FX+\beta_{11} PR+\delta_{12}(D*AG)+ \delta_{13}(D*FCFLP)... \ldots+\delta_{14}(D*GROWTH)+ \delta_{15}(D*BC)+ \delta_{16}(D*NDTS)+ \delta_{17}(D*PROF)\ldots \ldots+\delta_{18}(D*CVA)+ \delta_{19}(D*SIZE)+\varepsilon_i$$

where

D = a dummy variable equal to unity if the firm is a MC and zero otherwise; and

Other variables as defined previously.

The purpose of the dummy variable is to test if whether being a MC has a different impact on leverage than being a DC for the eight common variables.

[Insert Table 5 about here]

Table 5 provides a summary of the hypotheses and the expected sign for each of the three models for each variable.

5. Results

A test of the difference in mean leverage for Australian DCs and MCs provides a t-statistic of 0.258 (prob-value= 0.796). This indicates that the mean leverage levels between Australian DCs and MCs is insignificantly different.

[Insert Table 6 about here]

Table 6 presents the Tobit regression results for Models 1,2 and 3. The adjusted R^2 for each model is approximately 18%, 21% and 17% respectively. The adjusted R^2 in Model 2 compares to Burgman (1996) who report an adjusted R^2 of 17.88% for a sample of US domiciled MCs.

Agency costs (AG) carry an expected sign for DCs (Model 1) and MCs (Model 2). However, statistically it is not significant. The insignificant coefficient on the interaction agency cost variable suggests that MCs agency costs relationship with leverage is no different from DCs. This finding is inconsistent with Burgman (1996), however the analysis is different as Burgman only conducted univariate. Burgman finds agency costs higher and significant US MCs relative to US DCs.

The sign on the free cash flow variable (FCFLP) is positive but not significant. This is inconsistent with Agarwal and Jayaraman (1994), Jaggi and Gul (1999) and Filbeck and Gorman (2000) since they report a significant positive free cash flow variable for US firms generally. However, these studies make no distinction between DCs and MCs. The interaction variable on FCFLP is also insignificant, indicating no difference between the effect of FCFLP and leverage between MCs and DCs.

The negative significant of growth variable (GROWTH) for both DCs (z = -4.377) and MCs (z = -13.248) indicates that growth is inversely related to leverage.

This is result is supported by Titman and Wessels (1988), Chung (1993), Barcklay et al. (1995) and Rajan and Zingalis (1995). The results for the interaction variable show no support for MCs having significantly different growth opportunities relationship with debt level relative to DCs.

The support of the bankruptcy cost hypothesis is found for MCs but not DCs. This is consistent with Burgman (1996). For DCs (Model 1) the coefficient is insignificant, for MCs (Model 2) the coefficient is negative and significant ($z = -2.072$). The interaction variable is significant. That is, the higher the bankruptcy costs the lower the leverage for MCs and there is a significant difference in the bankruptcy costs relationship with leverage between DCs and MCs. This is consistent with Burgman (1996) for US DCs and MCs.

The insignificant coefficient on the non-debt tax shield variable for DCs, MCs and the interaction variable fails to allow the rejection of the hypothesis that non-debt tax shields, such as depreciation have no significant impact on both DCs and MCs leverage.

This result is consistent with the findings of Burgman (1996). Furthermore, no support is found to suggest that Australian MCs have a better ability to shelter their income from taxation.

The pecking order theory of Myers (1977) predicts that leverage will be negatively related to profitability. The results provide strong support for this theory with a negative and highly significant coefficient on the profitability variable (PROF) for DCs ($z = -2.374$) and MCs ($z = -2.923$). This suggests that Australian DCs and MCs prefer to avoid costly external financing and will rather take the opportunity to use internal financing. Furthermore, the interaction variable is significantly negative

(z = -2.156) indicating that the relationship of MCs profitability with leverage is significantly lower relative to DCs.

The significant positive coefficient on collateral value of assets variable (CVA) for DCs (z= 2.766) supports the hypothesis of DCs with high collateral value of assets having higher leverage. However, the results do not show similar support for this hypothesis for MCs. Furthermore, no significant coefficient on the interaction variable indicates that MCs do not have significantly different relationship with collateral value of assets and leverage than DCs.

Consistent with the size argument, the size variable in the regressions of DCs have highly significant positive coefficients for both DCs and MCs (z = 4.580 and z = 1.773). This suggests that the greater the firm size the higher the leverage. Further, it is also found that the size relationship with leverage for Australian MCs is not significantly different than DCs.

The diversification coefficient (DIVER) for MCs is negative and significant (z = -6.026) suggesting that greater levels of diversification the lower the leverage. This result is consistent with prior empirical work (Lee and Kwok, 1988; Burgman, 1996; Homaifer et al., 1998).

The insignificant foreign exchange risk coefficient (FX) indicates that Australian MCs are not prone to foreign exchange risk and therefore this is not a significant factor to explain MCs leverage.

The insignificant political risk coefficient (PR) indicates that political risk for Australian MCs also does not explain leverage.

[Insert Table 7 about here]

Table 7 presents the sensitivity analysis of DCs and MCs capital structure determinants after controlling for industry effects. The aim of this regression is to identify any industry influence on capital structure. The results show that the significance of each determinant that was found earlier (Table 6) is similar to the significance of determinants in Table 7 for both DCs (Model 1) and MCs (Model 2). This suggests that the initial findings are not biased by industry influence on capital structure determinants. The significant industry coefficients for DCs (ie., I_BSC: z = -2.802, I_CYC: z = -2.252 and I_TLS = -2.064) indicates that the Australian DCs that belong to basic material, consumer cyclical and telecommunication industries have a significant negative relationship with long term leverage. This means that if the DC belongs to one of these industries they will have significant less leverage relative to other industries.

Australian MCs that belong to basic material, energy and industrial industries have significant positive relationships with leverage (z = 2.199; z = 2.612 and z = 1.733). This means that MCs in these industries will have relatively higher leverage than MCs across industries. The findings of significant industry relationships with leverage support the hypothesis that industries play a significant role on DCs and MCs capital structure determination.

[Insert Table 8 about here]

Table 8 Panel A shows the effect of time on leverage for DCs and MCs across 10 years. Table 8 presents a univariate regression that tests the overall time effect on leverage to investigate the hypothesis of whether time has any significant effect on leverage. The result shows that over time DCs leverage decreases, however,

statistically it is not significant. On the other hand, MCs leverage is statistically significant and negative (z = -3.272). This suggests that overall, time have negative impact on MCs leverage, therefore, gradually MCs debt holding capacity will decline. These findings support the time effect hypothesis for MCs but not for DCs. A further analysis of individual year effects has also been investigated to identify whether time effect has any significant variation in capital structure determinants, which might cause to vary leverage over time.

In order to investigate whether capital structure determinants are time sensitive, individual yearly regression are conducted. This is presented in Table 8 – Panel B (DCs) and Panel C (MCs). It shows that over time the significance of each of the explanatory variables varies across years. For example, the bankruptcy cost (BC) is found to be significant for DCs in 1992 and 1994 and 2001 while it remained insignificant in the other years. Similarly, the bankruptcy costs for MCs is found to be significant from 1992 to 1995 while the following years the impact of bankruptcy costs to explain MCs leverage was not significant. In summary, Table 8 supports the hypothesis that capital structure and its determinants vary over time.

6. Conclusion

This study has considered the significance of the determinants of capital structure on a sample of Australian multinational corporations and Australian domestic corporations over the period 1992 to 2001. The results show that the level of leverage does not differ significantly between multinational and domestic corporations. Using cross-sectional Tobit regression analysis the results show considerable variation in capital structure determinants between multinational and domestic corporations. For both types of organisations growth, profitability and size

are significant determinants of leverage. For domestic corporations collateral value of assets is also a significant determinant of leverage. For multinationals bankruptcy costs and the number of overseas subsidiaries is a significant determinant of leverage. Surprisingly, bankruptcy costs are not significant for domestic corporations. In relation to interaction effects, bankruptcy costs and profitability are significant in explaining multinational leverage relative to domestic leverage.

When industry effects were considered the significance of the original determinants remained constant however, some industries became significant. The industry effect was not consistent across domestic and multinational corporations.

In relation to time variation in leverage and the determinants of capital structure, both varied across domestic and multinationals over the sample period.

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Table 1
Selection Procedure

Table 1 presents the summary of total sample and data selection processes for Australian domestic corporations (DCs) and multinational corporations (MCs). The first column of the table lists the detail description of the data selection process while the second and third columns contain the number of observations for DCs and MCs.

Deleted Sample Description	Number of Observations (DCs)	Number of Observations (MCs)
Initial Sample	1,637	2,614
a. Foreign multinationals	0	-973
b. Financial institutions	-203	-352
c. Insufficient data	-466	-104
Final Sample	**968**	**1,221**

Table 2
The number of DCs and MCs per year in sample

Table 2 provides detail of the number of DCs and MCs in the sample for each year from 1992 to 2001.

Year	DCs	MCs
1992	61	70
1993	64	98
1994	74	109
1995	86	114
1996	104	123
1997	113	134
1998	134	155
1999	120	151
2000	123	140
2001	89	127
Total	**968**	**1,221**

Table 3
Sample Distribution by Dow Jones Global Index Industry Classification

This table provides the Dow Jones Global Index for industry distribution of MCs and DCs including the proportion of the total sample. The acronyms for the different industries are:

BSC= Basic Materials;
CYC= Consumer – Cyclical;
NCY= Consumer – Non Cyclical;
ENE= Energy;
HCR= Healthcare;
IDU= Industrial;
TEC= Information Technology;
TLS= Telecommunications; and
UTI= Utilities

DJGI Industry Classification	DCs	%	MCs	%
BSC	256	26	312	26
CYC	239	25	259	21
NCY	95	10	125	10
ENE	68	7	80	7
HCR	82	8	94	8
IDU	158	16	257	21
TEC	16	2	59	5
TLS	36	4	14	1
UTI	18	2	21	2
Total	968		1221	

Table 4
Descriptive Statistics of Dependent and Independent Variables over 10 years

This table reports descriptive statistics of the sample variables for DCs and MCs. All the financial information was obtained from the OSIRIS database for the period 1989 to 2001.
The variables are:

$$LTD = \frac{(Long\ Term\ Debt)}{(Long\ Term\ Debt + Market\ Value\ of\ Equity)};$$

$$Agency\ Costs\ (\mathrm{AG}) = \frac{Cash\ and\ Marketable\ Securities}{3\ Years\ Average\ of\ Total\ Assets};$$

$$FCFLP = \frac{EBIT + DEP + AMO - TAX - DIV - INT}{10{,}000}$$

where:

EBIT = earnings before interest and tax and abnormal return
DEP = depreciation expense
AMO = amortization reported separately
TAX = total tax paid
DIV = total dividends paid on ordinary and preference shares
INT = net interest expense;

$$GROWTH = \frac{\Delta Total\ Assets_t}{Total\ Assets_t} = \frac{(Total\ Assets_t - Total\ Assets_{t-1})}{Assets_t};$$

$$Bankruptcy\ Costs(BC) = \frac{Standard\ Deviation\ of\ First\ Difference\ in\ EBIT}{Interest\ Expenses};$$

$$Non\ Debt\ Tax\ Shields(NDTS) = \frac{Total\ Annual\ Depreciation\ Expense}{Total\ Assets};$$

$$Profitability(PROF) = \sum_{s=t-3}^{t} \frac{Net\ Income}{Total\ Sales} \Big/ 3;$$

$$SIZE = Ln(Total\ Assets);$$

$$Collateral\ Value\ of\ Assets(CVA) = \frac{Fixed\ Assets}{Total\ Assets};$$

Diversification(DIVER) = number of overseas subsidiaries;

$$Foreign\ Exchange\ Risk(FX) = \frac{Total\ Foreign\ Subsidiaries\ Sales}{Total\ Sales};$$

$$\gamma_c = \sum_{i \in R} \lambda_i P_{c,i} = \frac{\sum_{i \in R} \lambda_i I_{c,i}}{\sum_{i \in R} I_{c,i}}$$

Political risk(PR)=

	DCs					MCs				
Variables	**Mean**	**Median**	**Stdev**	**Max**	**Min**	**Mean**	**Median**	**Stdev**	**Max**	**Min**
LTD	0.367	0.212	0.383	1.000	0.000	0.363	0.219	0.368	1.000	0.000
AG	0.131	0.039	0.230	1.623	0.000	0.101	0.047	0.151	0.565	0.000
BC	7.547	4.042	10.852	13.010	0.879	5.216	3.001	12.383	19.021	0.262
FCFLP	0.012	0.052	0.323	5.173	-3.270	0.030	0.064	0.226	1.623	-2.945
GROWTH	2.896	0.071	2.780	19.134	-0.580	6.959	0.064	11.214	19.134	-0.656
NDTS	0.024	0.021	0.042	0.194	0.836	0.036	0.031	0.034	0.022	0.634
PROF	0.596	0.035	1.205	0.973	-3.247	0.748	0.035	1.013	0.622	-3.302
SIZE	11.969	11.002	1.897	17.439	5.680	12.694	12.678	1.893	18.258	7.208
CVA	0.637	0.664	0.246	1.000	0.000	0.610	0.630	0.195	0.991	0.105
DIVER						12.066	4.000	27.593	220.000	1.000
FX						0.634	0.524	0.293	1.000	0.012
PR						80.598	82.675	8.569	89.334	55.582

Table 5
Hypotheses and expected signs

This table reports the variables and expected signs of the hypotheses. The variables are:

$$LTD = \frac{(Long\ Term\ Debt)}{(Long\ Term\ Debt + Market\ Value\ of\ Equity)};$$

$$Agency\ Costs\ (\mathrm{AG}) = \frac{Cash\ and\ Marketable\ Securities}{3\ Years\ Average\ of\ Total\ Assets};$$

$$FCFLP = \frac{EBIT + DEP + AMO - TAX - DIV - INT}{10{,}000}$$

where:

EBIT = earnings before interest and tax and abnormal return
DEP = depreciation expense
AMO = amortization reported separately
TAX = total tax paid
DIV = total dividends paid on ordinary and preference shares
INT = net interest expense;

$$GROWTH = \frac{\Delta Total\ Assets_t}{Total\ Assets_t} = \frac{(Total\ Assets_t - Total\ Assets_{t-1})}{Assets_t};$$

$$Bankruptcy\ Costs(BC) = \frac{Standard\ Deviation\ of\ First\ Difference\ in\ EBIT}{Interest\ Expenses};$$

$$Non\ Debt\ Tax\ Shields(NDTS) = \frac{Total\ Annual\ Depreciation\ Expense}{Total\ Assets};$$

$$Profitability(PROF) = \sum_{s=t-3}^{t} \frac{Net\ Income}{Total\ Sales} \Big/ 3;$$

$$SIZE = Ln(Total\ Assets);$$

$$Collateral\ Value\ of\ Assets(CVA) = \frac{Fixed\ Assets}{Total\ Assets};$$

Diversification(DIVER) = number of overseas subsidiaries;

$$Foreign\ Exchange\ Risk(FX) = \frac{Total\ Foreign\ Subsidiaries\ Sales}{Total\ Sales};$$

$$\gamma_c = \sum_{i \in R} \lambda_i P_{c,i} = \frac{\sum_{i \in R} \lambda_i I_{c,i}}{\sum_{i \in R} I_{c,i}}$$

Political risk(PR)=

Variable	Hypothesised sign		
	DC	MC	Interaction variables
AG	Negative	Negative	Negative
FCFLP	Positive	Positive	Positive
GROWTH	Negative	Negative	Negative
BC	Negative	Negative	Negative
NDTS	Uncertain	Negative	Negative
PROF	Negative	Negative	Negative
SIZE	Positive	Positive	Positive
CVA	Positive	Positive	Positive
DIVER	n.a.	Uncertain	Uncertain
FX	n.a.	Uncertain	Uncertain
PR	n.a.	Uncertain	Uncertain
D*AG			Negative
D*BC			Uncertain
D*CVA			Uncertain
D*FCFLP			Positive
D*GROWTH			Negative
D*NDTS			Negative
D*PROF			Negative
D*SIZE			Positive

Table 6
Multivariate Tobit Regression for DCs and MCs Capital Structure Determinants

A Tobit model is used to obtain the parameters and z-statistics accordingly for the sample of 968 DCs and 1,221 MCs. The adjusted R - squared indicates the model's goodness of fit. The interaction dummy variable is used to find the significant difference of the common eight variables. For example, D*AG takes the actual value of MCs while it is 0 for the DCs. The other variables are:

$$LTD = \frac{(Long\ Term\ Debt)}{(Long\ Term\ Debt + Market\ Value\ of\ Equity)};$$

$$Agency\ Costs\ (\mathrm{AG}) = \frac{Cash\ and\ Marketable\ Securities}{3\ Years\ Average\ of\ Total\ Assets};$$

$$FCFLP = \frac{EBIT\ +\ DEP\ +\ AMO\ -\ TAX\ -\ DIV\ -\ INT}{10{,}000}$$

where:

EBIT = earnings before interest and tax and abnormal return
DEP = depreciation expense
AMO = amortization reported separately
TAX = total tax paid
DIV = total dividends paid on ordinary and preference shares
INT = net interest expense;

$$GROWTH = \frac{\Delta Total\ Assets_t}{Total\ Assets_t} = \frac{(Total\ Assets_t - Total\ Assets_{t-1})}{Assets_t};$$

$$Bankruptcy\ Costs(BC) = \frac{Standard\ Deviation\ of\ First\ Difference\ in\ EBIT}{Interest\ Expenses};$$

$$Non\ Debt\ Tax\ Shields(NDTS) = \frac{Total\ Annual\ Depreciation\ Expense}{Total\ Assets};$$

$$Profitability(PROF) = \sum_{s=t-3}^{t} \frac{Net\ Income}{Total\ Sales} \Big/ 3;$$

$$SIZE = Ln(Total\ Assets);$$

$$Collateral\ Value\ of\ Assets(CVA) = \frac{Fixed\ Assets}{Total\ Assets};$$

Diversification(DIVER) = number of overseas subsidiaries;

$$Foreign\ Exchange\ Risk(FX) = \frac{Total\ Foreign\ Subsidiaries\ Sales}{Total\ Sales};$$

Political risk(PR)=
$$\gamma_c = \sum_{i \in R} \lambda_i P_{c,i} = \frac{\sum_{i \in R} \lambda_i I_{c,i}}{\sum_{i \in R} I_{c,i}}$$

	DCs-Model 1		MCs-Model 2		Interation-Model 3	
	Coeff	**z-stat**	**Coeff**	**z-stat**	**Coeff**	**z-stat**
C	-0.166	-1.797	0.175	1.506	-0.039	-0.547
AG	-0.004	-0.043	-0.121	-1.359	-0.036	-0.459
BC	0.000	0.290	-0.000	**-2.072**[b]	0.000	0.260
FCFLP	0.034	1.066	0.049	0.958	0.045	1.400
GROWTH	-0.000	**-4.377**[a]	-0.000	**-13.248**[a]	-0.000	**-4.259**[a]
NDTS	0.220	0.532	0.275	0.809	-0.194	-0.467
PROF	-0.001	**-2.374**[b]	-0.002	**-2.923**[a]	-0.000	**-17.861**[a]
CVA	0.182	**2.766**[a]	0.086	1.312	0.146	**2.264**[b]
SIZE	0.033	**4.580**[a]	0.012	**1.773**[c]	0.025	**4.058**[a]
DIVER			-0.002	**-6.026**[a]	-0.002	**-2.177**[b]
FX			-0.035	-0.810	-0.014	-0.334
PR			0.001	0.476	-0.002	**-6.204**[a]
D*AG					-0.061	-0.538
D*FCFLP					-0.002	-0.030
D*GROWTH					-0.000	-0.971
D*BC					-0.000	**-3.522**[a]
D*NDTS					0.407	0.773
D*PROF					-0.001	**-2.156**[b]
D*CVA					-0.041	-0.458
D*SIZE					-0.007	-0.939
Adj R^2	0.181		0.214		0.166	
No. of Obs	968		1221		2829	

a: Significant at the 1% level (two tailed test)
b: Significant at the 5% level (two tailed test)
c: Significant at the 10% level (two tailed test)

Table 7
The Sensitivity Analysis of DCs and MCs Capital Structure Determinants after controlling for Industry

This table represents the sensitivity of Industry level leverage for both MCs and DCs. The acronyms for the industries are: The table provides the Dow Jones Global Index for five countries industry distribution of MCs and DCs including the proportion of the total sample. The acronyms for the industries are: Basic Materials (BSC), Consumer – Cyclical (CYC), Energy (ENE), Consumer Healthcare (HCR), Industrial (IDU), Consumer - Non Cyclical (NCY), Technology (TEC), Telecommunications (TLS), Utilities (UTI).

	DCs- Model 1		MCs-Model 2	
	Coeff	**z-stat**	**Coeff**	**z-stat**
AG	0.056	0.644	-0.151	-1.611
BC	0.000	0.248	0.000	**-2.078**[b]
FCFLP	0.041	1.288	0.039	0.697
GROWTH	0.000	**-3.923**[a]	0.000	**-4.720**[a]
CVA	0.268	**4.085**[a]	0.007	0.095
SIZE	0.029	**3.688**[a]	0.014	**2.203**[b]
NDTS	-0.057	-0.155	0.367	1.052
PROF	0.000	**-15.744**[a]	0.002	**-2.540**[b]
DIVER			-0.001	**-5.331**[a]
FX			0.363	0.021
PR			0.001	0.031
I_BSC	-0.270	**-2.802**[a]	0.265	**2.199**[b]
I_CYC	-0.237	**-2.252**[b]	0.182	1.538
I_ENE	-0.155	-1.229	0.348	**2.612**[a]
I_HCR	-0.214	-1.831	0.206	1.625
I_IDU	-0.038	-0.378	0.209	**1.733**[c]
I_NCY	-0.131	-1.265	0.156	1.333
I_TEC	0.115	0.725	0.158	1.199
I_TLS	-0.271	**-2.064**[b]	0.218	1.318
I_UTI	0.184	1.378	0.079	0.651
No. Obs	968		1221	

a: Significant at the 1% level (two tailed test)
b: Significant at the 5% level (two tailed test)
c: Significant at the 10% level (two tailed test)

Table 8
Time Variation on Capital Structure

Panel A: This panel shows the effect of time on leverage.

	DCs		MCs	
	Coeff	**z-stat**	**Coeff**	**z-stat**
Constant	0.385	**11.613**[a]	0.434	**16.317**[a]
Year	-0.006	-1.221	-0.013	**-3.272**[a]
Adj R^2	0.005		0.001	
Observations	968		1221	

a: Significant at the 1% level (two tailed test)

Panel B: Cross Sectional Time Series Analysis for DCs over 10 Years.

Variable	1992		1993		1994		1995		1996		1997		1998		1999		2000		2001	
	Coeff	Z-stat	Coeff	Z-stat	Coeff	Z-stat	Coeff	Z-stat	Coeff	Z-stat	Coeff	Z-stat	Coeff	Z-stat	Coeff	Z-stat	Coeff	Z-stat	Coeff	Z-stat
C	-0.202	-0.690	-0.309	-0.965	0.031	0.116	0.175	0.621	0.015	0.058	-0.435	-1.428	-0.264	-0.864	-0.088	-0.270	-0.246	-0.840	0.007	0.020
AG	-0.008	-0.028	-0.004	-0.012	0.353	1.240	-0.071	-0.215	0.340	1.310	0.227	0.963	0.008	0.026	-0.227	-0.692	-0.376	**-2.816**[a]	-0.220	-1.393
BC	-0.000	**-2.455**[b]	-0.000	-0.505	-0.000	**-1.847**[c]	-0.000	-1.160	-0.000	-0.270	-0.000	-0.746	-0.000	-0.711	-0.000	-1.331	-0.000	-0.583	-0.000	**-4.622**[a]
CVA	0.397	1.574	0.340	1.348	0.106	0.454	0.081	0.371	0.206	1.019	0.287	1.322	0.120	0.677	0.124	0.595	0.051	0.262	0.172	0.847
FCFLP	0.121	0.638	-0.940	-1.661	0.034	0.919	-0.058	-0.455	1.571	**3.080**[a]	0.365	1.918	-0.090	-0.842	-0.109	-0.426	-0.238	-1.167	-0.015	-0.172
GROWTH	0.000	**-2.583**[a]	0.000	**-3.432**[a]	-0.008	-1.552	0.005	1.128	-0.094	-1.097	-0.047	-0.956	0.050	0.838	-0.081	**-2.101**[b]	-0.058	**-6.185**[a]	-0.085	-1.014
NDTS	2.749	1.700	0.419	0.132	2.212	1.020	2.657	1.453	4.530	**2.129**[b]	2.300	1.566	-0.533	-1.120	0.454	0.451	0.614	0.601	-0.872	-0.764
PROF	0.001	0.782	0.002	**2.211**[b]	0.000	0.598	-0.000	**-5.234**[a]	-0.000	**-7.869**[a]	-0.000	**-6.554**[c]	0.004	**2.313**[b]	0.003	1.827	0.002	1.514	-0.001	-1.122
SIZE	0.035	1.450	0.042	1.526	0.027	1.101	0.020	0.895	0.022	0.954	0.053	**2.274**[b]	0.043	1.878	0.032	1.335	0.048	**2.050**[b]	0.020	**1.997**[b]
Adj R Sqr	-0.037		-0.076		-0.061		-0.043		0.033		0.048		0.022		0.029		0.076		0.003	
No Obs	61		64		74		86		104		113		134		120		123		89	

a, b and c represents significant at the 1%, 5% and 10% significance level (two tailed test)

Panel C: Cross Sectional Time Series Analysis for MCs over 10 Years.

Variables	1992		1993		1994		1995		1996		1997		1998		1999		2000		2001	
	Coeff	Z-stat	Coeff	Z-stat	Coeff	Z-stat	Coeff	Z-stat	Coeff	Z-stat	Coeff	Z-stat	Coeff	Z-stat	Coeff	Z-stat	Coeff	Z-stat	Coeff	Z-stat
C	0.605	1.574	0.795	1.328	0.394	1.169	0.391	0.647	-0.037	-0.108	0.930	1.565	-0.259	-0.615	0.884	1.464	-0.209	-0.780	-0.251	-1.005
AG	-0.006	**-2.501**[b]	-0.708	-1.429	0.240	0.579	0.727	1.824	-0.075	-0.217	-0.038	-0.091	-0.206	-0.322	0.055	0.327	-0.150	-0.576	0.145	0.554
BC	-0.000	**-3.168**[a]	-0.000	**-2.514**[b]	-0.000	**-3.046**[a]	-0.000	**-3.475**[a]	-0.000	-0.643	-0.000	-1.336	-0.000	-0.671	-0.000	-0.196	-0.000	-0.178	-0.000	-1.604
CVA	-0.393	-1.105	-0.042	-0.179	-0.217	-0.876	0.061	0.310	0.120	0.543	-0.097	-0.501	0.127	0.805	0.235	1.169	0.232	1.327	0.384	**2.547**[b]
FCFLP	-0.898	-1.729	-0.322	-0.769	0.067	0.690	-0.155	-0.404	-0.398	-1.520	0.192	**1.976**[b]	0.097	-1.354	0.108	0.516	0.040	0.236	0.069	0.513
GROWTH	-0.022	-0.152	-0.000	**-5.623**[a]	-0.070	-0.507	-0.080	-0.618	0.175	1.108	-0.038	-1.366	-0.058	-1.390	-0.014	-0.661	-0.000	-0.006	-0.035	-0.633
NDTS	-0.932	-0.444	1.584	0.771	0.722	0.376	-0.802	-0.487	0.225	0.120	0.537	0.314	1.760	**2.587**[a]	0.002	0.004	0.595	0.702	-0.473	-0.903
PROF	-0.007	**-3.292**[a]	0.001	0.724	-0.004	**-2.260**[a]	-0.022	**-3.464**[a]	0.015	1.596	-0.002	**-2.252**[a]	0.003	0.276	0.003	1.504	0.003	0.554	0.004	1.633
SIZE	0.021	0.804	0.010	0.477	-0.001	-0.030	0.019	0.906	0.032	1.494	0.029	1.384	0.005	**3.163**[a]	-0.001	-0.058	0.004	0.199	-0.002	-0.146
DIVER	-0.001	-0.329	-0.003	-0.548	0.003	1.204	-0.003	-0.512	-0.000	-0.137	-0.010	-1.692	0.008	0.879	-0.007	-1.025	0.004	**2.158**[b]	0.003	**1.729**[c]
FX	-0.025	-0.139	-0.253	-1.840	-0.030	-0.171	-0.098	-0.646	-0.051	-0.374	-0.113	-0.831	-0.104	-1.326	-0.150	-1.108	0.111	0.894	0.085	0.720
PR	-0.002	**-2.239**[b]	-0.002	**-2.996**[a]	-0.002	**-3.196**[a]	-0.003	**-3.571**[a]	-0.003	-3.556	-0.002	**-2.174**[b]	-0.001	0.231	-0.001	-1.144	0.020	0.033	0.022	0.784
Adjusted R-squared	0.039		-0.012		-0.009		0.007		-0.032		-0.019		-0.013		-0.036		-0.039		-0.030	
Total obs	70		98		109		114		123		134		155		145		140		127	

a, b and c represents significant at the 1%, 5% and 10% significance level (two tailed test