LEVERAGE AND INTERNATIONAL CAPITAL STRUCTURE:

An Extension of the Modigliani and Miller Propositions on Capital Structure for Multinationals

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Abstract. Existing financial theory originated by Modigliani and Miller (M&M) prescribes that the capital structure of a firm does not matter, i.e. the cost of capital is the same irrespective of the way the firm chooses to structure its capital. The M&M propositions have been modified to suggest that inclusion of i) the tax shield and ii) bankruptcy or financial distress costs modify this conclusion to suggest an optimal capital structure does exist. However, financial leverage is too narrow a concept. Hence the study's approach via total leverage. In any case the extension noted above is still inadequate since it fails to allow for other important considerations such as cultural influences on international capital structure. This suggests that the optimal capital structure will vary accordingly. The M&M indifference in the face of the real world appears untenable, in particular as pertains to multinationals. A number of studies have been conducted on the impact of various factors on international capital structure. This thesis presents the results of empirical study of the debt-to-equity structure of 87 firms in 19 industries headquartered in 29 countries. The results tend to agree with the hypothesis that cultural differences are correlated with the significant country grouping and minimal industry influences which are found. Additionally, there appear some country influences based on the underlying cultural patterns of a few specific countries.

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CHAPTER I

INTRODUCTION

1. Aims of the Study

Perhaps one of the themes most discussed at present in financial theory is that of leverage and international capital structure. The assumption frequently made is that important factors influencing a firm's capital structure are its levels of debt, growth and Research and Development (R&D). To the extent that an optimal capital structure exists, management need only finance these proportions optimally to assure an optimal capital structure at minimum capital cost. However, in an international environment this subject becomes much more complicated given that the different substructures of the multinational operating in different markets may require different levels of debt. Management needs to know how to plan for a most optimal financing of the parent multinational, its foreign subsidiaries, or the group as a sum of the parts. The aims of this study are to investigate leverage in the context of international capital structure, indicating defects and filling a gap with existing theory.

Before continuing this introduction with the central theme of the study, it is necessary to provide brief definitions of operating leverage, financial leverage and total leverage. These are as follows:

Operating Leverage
The degree to which a firm relies on fixed costs, the risk being the business risk

Financial Leverage
The extent to which fixed income securities can be relied upon in the capital structure, the risk being the financial risk.

Total Leverage
The effective or potential change in value brought about by operating leverage in the face of financial leverage, the actual gains (or losses) resulting from a combination of the financial and business risks.

2. Central Theme

The central theme of the research is that of leverage as relates to an optimal capital structure for multinationals. The multinational is defined here as a Company that operates in more than one country, i.e. beyond mere export activities, and in a way deemed material to both its revenue volume and profitability. This type of firm was selected for study because it seeks to maximise results on a multinational basis rather than treat international activities as a portfolio of diverse and separate country companies. In this context, geographical expansion perhaps can be seen as a form of financial diversification. Motivations vary; e.g. the domestic market for the firm's products being too restricted, shareholders expecting higher investment returns from overseas activities, management seeking economies of scale and improved earnings from international operations. From observation it would appear that multinationals offer the most rewarding scope for optimal capital structures.

3. Problem Definition

The most immediate problem has been to extend the existing literature on leverage and cultural influences on international capital structure

of firms headquartered in different cultural realms. This problem can be broken down in four distinct parts:

3.1 To specify leverage as total leverage, i.e. in the accounting as well as socio-economic sense so as to include cultural influence. To apply this debt-to-equity ratio, in short the debt ratio, consistent with cross-cultural characteristics of a database of multinational firms.

3.2 To build a significant empirical database of debt ratios in terms of participating firms and industries, as well as of geographical coverage, countries and country groupings. Such a database did not exist elsewhere and therefore had to be built.

3.3 To incorporate factors of R&D and growth into the database for further comparative analysis. To interpret for post-merger or acquisition influences of leverage as may impact levels of R&D in relation to the debt ratios. To identify areas for further research.

3.4 To conduct an examination of differences in debt ratios between companies in different countries and industries, and the effect of cultural influences on capital structure.

4. Scope

The study extends the existing literature dealing with leverage and international capital structure of multinationals headquartered in different cultural realms. In this respect the scope of the study is twofold:

4.1 The literature survey encompassed a full examination of the capital structure propositions and invariances put forward by

economists Modigliani and Miller (M&M), [1958]. These are generally viewed as formal financial theory as exists on the subject. The literature was then analysed for any other aspects relevant to the central theme which firstly seeks to identify existing economic variables related to an optimal but international capital structure. The combination of these variables was then complimented with findings on cultural influences that may affect international capital structure.

4.2 Extensive examinations were conducted of the differences in capital structure between multinationals headquartered in different countries, operating in different industries. Various aspects on this theme have been studied in a number of previous studies. The hypotheses adopted to test differences between and within cultural groupings of countries were first used by Collins and Sekely [1987]. These hypotheses had until then not been addressed directly in previous literature. In this study, as an important improvement on the Collins and Sekely study, they are based on primary data.

5. Limitations

5.1 The study does not attempt to predict success of investors. Nor does it seek to simulate price/earnings ratios, securities valuations of future and current cash flow streams or market size assessments. This encompasses any impact of inflation and nominally denominated debt contracts on the valuation of corporate equity.

Where reference is made to value-maximisation this is intended in the sense of corporate performance at the level of the firm with the purpose to attain an optimal capital structure, i.e. not in the sense of stock market performance with the purpose of securities valuation. The latter is not the subject of this study. Put differently, the study is

primarily concerned with the value of a firm's income as a function of cash flow, not of the forms in which the different parts are packaged and priced on the market.

5.2 For the purposes of this study the use of the generic words "company", "corporation" or "firm" is interchangeable except where the legal meaning is intended.

5.3 The thesis does not as such study the subject of culture. Where the notion of culture is referred to in the context of total leverage, this is done on the basis of geographical areas of financial diversification. Multinational companies sampled conduct their business in these areas subject to the cultural influences on international capital structure. This is reflected by the effective level of leverage by sample firm and the aggregate of all firms compared between cultural realms of defined country groupings.

The cultural variant determines a broad cultural influence on capital structure beyond the country and industry difference. Culture here is not the entire set of a population's perceived norm, behaviour and belief system in a given country. What is meant is primarily material culture as most closely relates to capital structure patterns in that country or group of countries. Thus, the cultural influences reflect societal tendencies. These in turn exhibit differences in fiscal regulations, the legal system and importantly the treatment of property rights as relate to debt and equity.

5.4 The study does not measure R&D but uses published R&D figures. Measurement would be beyond the scope of the study which focuses on leverage. However, the question frequently arises as to what would happen in the case of a merger or acquisition. One assumption often made is that this would increase debt levels and as a consequence there

could be a tendency to economise on R&D. This study surveys for possible influences of leverage, following mergers and acquisitions as may affect levels of R&D in relation to the debt ratios. R&D is defined as the cost of basic research as well as product development expended against profit.

The purpose, as in the foregoing points, is to enable the reader to draw meaningful interpretations and conclusions from the results of the study within these constraints.

6. Work Plan

To achieve the aims of the study the following work plan was adopted.

6.1 Literature Review (Chapter II)

The literature survey encompasses a detailed review. The outline is as follows:

6.1.1 Different types of leverage
6.1.2 Formal theory of M&M propositions
6.1.3 Different aspects of total leverage
6.1.4 Determinants of debt capacity
6.1.5 Cultural influences on international capital structures

An indication of the gaps and defects in the literature sets the framework of the study.

6.2 Methodology (Chapter III)

The chapter sets out the study's analysis including the data collection. It

specifies the research procedure followed including why the particular procedure was followed and indicates problems and solutions as well as any remaining pitfalls.

6.3 Results (Chapter IV)

This chapter essentially constitutes a statement of the processed results of the quantitative and qualitative study.

6.4 Interpretation and Conclusions (Chapter V)

The concluding chapter distinguishes between interpretation and conclusions.

6.5 Recommendations for Future Research (Chapter VI)

This chapter provides evidence of further thought.

7. Importance

The importance of the study can be summarised as follows:

A number of studies have been carried out before on the impact of many different factors on financial structures. Yet no prior study has established a significant relationship between any economic variable and international differences in capital structure. Thus, there must be other influences. This study examines for evidence of cultural influences on international capital structure.

The concern of this study is not with the determinants of aggregate economic investment by the business sector. The thesis takes further Miller's unfinished work on capital structure at the level of the firm. It then examines its findings within an international context.

8. Contribution

The study's contribution is fourfold as is set out below:

8.1 The literature survey answers the question 'what is leverage?'. It defines what constitutes leverage, specifying the concept of total leverage. It brings together from an incoherent universe the various economic and management variables as may determine and stimulate leverage. It categorises the interrelationship of these variables. In doing this it answers the next question, 'what does leverage mean?', i.e. in terms of international capital structure.

8.2 The study validates the underlying assumption of cultural influences on international capital structure. It identifies the significance of industry, country and country grouping that exist and may affect capital structure.

8.3 Where cultural influence is significant among cultural realms, this is reflected in the similarities of capital structure in the multinationals located in geographical regions with similar backgrounds. The debt patterns that emerge from this will help managers determine the nearest or near-perfect situation of what an optimal capital structure could be in an international operating environment.

8.4 This original contribution on the topic of leverage and optimal

capital structures further closes the gap between established theory on the M&M theme and practical requirements as relate to financial planning and capital provisions for multinationals.

9. Summary

The foregoing constitutes a number of interesting research challenges which can be summarised as set out below. The first two items listed can be seen as the main issues to be attended to during this research:

9.1 To close the gap between existing theory on the subject of leverage and practice as prevails in the real world of multinationals. The latter, however, prerequisites the development of a unique data bank and the undertaking of empirical research based on this data bank.

9.2 To examine for any industry or country influences that would explain the differences between various capital structures of multinationals. Only one previous study exists that has researched these variables, that of Collins and Sekely [1983] but only secondary data were used.

9.3 To demonstrate on the basis of primary data, any evidence of a link between optimal capital structure and the cultural influences on international structure.

9.4 To provide as a result, a direction of guidance on the above subject which, as a pattern, is of immediate practical use to the international manager.

The last two items are a consequence of the first two items listed. The

assumption made here is that as multinationals gain in size and importance, the findings of this study will also help international managers to be better equipped to understand how capital structure can differ internationally.

The main research questions therefore can be formulated as follows:

1. How can an optimal capital position be defined and structured? In the event, how can the economic and cultural variables involved best be measured and this consistently so across various industries and countries in which multinationals operate?

2. Do firm-specific decisions result in different capital structures for firms in the same industry and/or country but these differences being less than the differences one finds across all industries or countries? In the event, is there a discernible pattern by industry or country groupings?

3. Is there an indication of direction in the pattern of cultural influences on international capital structure? In the event, does it appear clear and significant?

CHAPTER II

LITERATURE REVIEW

The prime objective in this study is to assess whether there is any relation between the debt ratio of firms and their industry or country association. This requires an analysis of the debt structure, and further, an examination of any industry or country differences as may affect such a structure.

In studying the suitability of existing theory, this required a broadly based critical analysis on the theme, supported by the detail. This work details the literature fully, allowing the methodology and research to flow out of the previous research in the area. At the end of this chapter, having examined the literature, one will be able to appreciate the methodological issues, how the work relates to the main body of the literature and why a particular methodology is decided upon to complete the research.

Meanwhile, the discrepancies between theory and practice appear significant. The truth of this can be seen if one looks at the conditions that prevail. For example, banks now judge a firm more on its ability to manage a given level of debt operationally and generate cash than to create assets. This view has been supported for example by Rybczynski [1989]. Rybczynski observed that banks, lenders and the equity investing institutions were increasingly lending not against assets but against the cash flow generating ability of client operations based on the level of debt that could be acquired (pp. 3-11), i.e. covenanted loans. This view is often taken as Rybczynski said regardless of where the operations that have to produce this cash flow are geographically located. This study focusses on the capital structure of multinationals. We will

therefore come back to this geographical issue as well as related cultural issues later in the text.

To start with, the thesis discusses the three different stages or types of leverage; "operating" (first stage leverage), "financial" (second stage leverage) and "total" (third stage leverage). It is useful at this point to provide a further description of these various stages of leverage and to compare these with existing theory. Comparisons have been made with the theory as described, for example by Solomon and Pringle [1986] (pp. 138-142). It is also important to explain in simple language what the three main concepts behind these stages entail. This is set out as follows:

1 Different Types of Leverage

1.1 Discussion of Operating Leverage

To specify operating leverage, a simple statement explaining this can be made. A high proportion of fixed costs means that a firm's profits are very sensitive (responsive) to variation in sales. This incidentally, is the same effect as that derived from the so-called value chain discussed later.

Operating leverage is an important and necessary concept to (a) appreciate fully the role of financial leverage as explained in the next subsection and (b) understand total leverage as set out thereafter. Total leverage, as will be discussed in detail further in this text, combines the concept of operating leverage with the financial leverage formula.

Operating leverage as stated earlier represents the degree to which a firm relies on its fixed costs. There is of course a certain risk in this in

that the costs must be matched with revenues leaving sufficient operating profits before income tax. One has therefore to bear in mind that any firm has a certain amount of risk inherent to its operations. This is its business risk (not the financial risk) as defined by the uncertainty inherent in projections of the operation's pretax future earnings. Capital intensive firms naturally may tend to have a higher degree of operating leverage than firms with low fixed costs but what is crucial is to measure to what extent costs at any level could be held as fixed, while increasing revenues from operations. The question can be asked as to what the results would be if quantity sold were to rise by e.g. 10%. To understand the concept of operating leverage, a simple numerical example referring to the H J Heinz Company sample is added:

In 1989 the H J Heinz cost of goods sold was $3.5Bln, on worldwide revenues of $5.8Bln. Cost of goods sold thus represented 60 percent on a consolidated basis. The estimated average selling price of certain canned products at one of its foreign subsidiaries is the equivalent of $1.2 per can. Given fluctuations in worldwide prices for raw materials and commodities, variable costs are assumed to be 67%, allowing for 33 cents in the dollar for fixed costs. With variable cost of 80 cents per can, an estimated fixed cost of $345.000 per annum and depreciation of 13%, the break-even level in accounting terms is $390.000/0.40 = 975.000 cans. At this level, operating cash flow equals depreciation of $45.000. Returning to our question as regards operational leverage, we wish to know what the increase in operating cash flow will be if the quantity sold were to rise to e.g. 10 percent above the break-even, ignoring taxes. For this we need to define the degree of operating leverage (DOL). This is a standard formula:

$$DOL = 1 + FC/OCF$$

Note:
FC = Fixed costs. OCF = Operating cash flow. OCF is calculated as 975.000 x 0.40 - 345.000 = $45.000

$$DOL = 1 + \$345.000/\$45.000$$
$$= 8.6$$

Thus, a 10 percent improvement in the number of cans sold will increase operating cash flow significantly, i.e. by 86%. Put differently, if sales rise by 10 percent, quantity of cans sold effectively rises to 975.000 x 1.1 = 1.072.500 cans. Pre-tax cash flow from operations then becomes 1.072.500 x 0.40 -345.000 = $84.000. When compared to the previous cash flow of $45.000, this is 86% more, i.e. $84.000/45.000 = 1.86.

Source: H J Heinz Company, Profit and Loss Statement (Appendix A), General Appendix.

This example immediately indicates the importance of the operating relationships between market size, volume and cash flow as well as the necessity to take into account the capital structure of the firm. However, these complex relationships in e.g. the multi-country, multi-cultural setting of a multinational, would be difficult to quantify without taking into account the cultural determinant. When conducting business on a geographically diversified basis, as the study will show, cultural influences on international capital structure tend to play an overriding role. The intention therefore is to derive at least a sense of direction set by these influences and to allow managers of multinationals to identify some pattern amongst debt-to-equity ratios, geographically and culturally, as may affect their international operations.

To achieve this, the debt-to-equity relation of leverage must be calculated on such a basis that the resulting debt ratio not merely reflects long-term debt funding or the advantage of short-term finance but also those advantages that come with (a) the effective day-to-day management of those multinational operations in their respective environments and (b) their related returns on investment. Such calculation is set out in Section 1.4, subsection 1.4.1, where debt-to-equity under total leverage is applied. In that section Digital Equipment Corporation (DEC) is used as a case sample, illustrating how total leverage is calculated. A comparative sample calculation on the total

leverage position of, for example, Avon Products Inc., then demonstrates differences in interpretation of different total leverage ratios. In the next section however, it is important to first review and understand the workings and influence of financial leverage on total leverage

1.2 Discussion of Financial Leverage

Financial leverage (or second stage leverage), in the UK also referred to as gearing, is the extent to which fixed income securities (debt and possibly preferred stock if convertible) can be relied upon in the capital structure. Financial leverage thus directly reflects the financial risk being taken. This is quite different of course from operating leverage which as was said, is concerned with the business risk. If a company decides to borrow large sums, it can do so expecting to expand its trading or business operations without necessarily increasing its equity. Put differently, it is then effectively undertaking a large amount of trading with relatively little equity. When "trading on equity" as described above, the percentage of debt relative to total capitalisation will increase. This forms the essence of the theory of financial leverage. In the event, corporate managers or business leaders consider taking the risks associated with debt financing which are absent in equity financing. Obviously, the willingness of firms to face financial risk is aided and stimulated in line with opportunities present to take advantage of those tax savings associated with debt financing, as compared with financing with common or preferred stock.

However, from a legal and ownership point of view, the foregoing is not without any downside. When the firm is financing its business exclusively with proprietary capital, the owners have sole rights and thus potential claims on all of the earnings and assets. On the other

hand, from the moment the firm starts borrowing, it is "trading away" to creditors these rights of owners to its earnings and assets. Hence the position of equity holders becomes less important as the business goes further into debt. It can be argued therefore, that when funds are borrowed by a business undertaking, the conditions under which capital is supplied by creditors and received by the equity owners, must be such that its use can be put to mutually advantageous result.

In practice, debt financing or trading on equity will tend to magnify potential gains or losses of the firm. Further, the extent to which a company undertakes debt financing relative to equity depends on the stability of its income. A significant aspect of trading on the equity here remains the leverage factor, i.e. the larger the proportionate change in return to common stock when there is a change in operating income. An example will illustrate this :

Assume two firms earning 12 percent pre-tax on capital consisting of £1.4M net worth in both situations. This would mean the following:

FIRM Y
Balance Sheet

	-0-	Total debt	-0-
	-0-	Net worth	£1.400.000
total Assets	£1.400.000	Total Claims	£1.400.000

FIRM Z
Balance Sheet

	-0-	total debt	-0-
	-0-	Net worth	£1.400.000
total Assets	£1.400.000	Total Claims	£1.400.000

Now, if firm Y in the same example is to purchase £700.000 worth of treasury stock (i.e. shares of its own common stock), replacing capital by e.g. floating a 6 percent bond issue of identical value, the new balance sheet appears as:

FIRM Y
Balance Sheet

	-0-	Total debt	£700.000
	-0-	Net worth	£700.000
Total Assets	£1.400.000		£1.400.000

Assuming the same pre-tax earnings between both companies, i.e. £168.000, the pre-tax earnings assignable to common stock would be:

	FIRM Y	FIRM Z
Total debt (interest 6%)	£700.000	-0-
Capital and retained earnings	£700.000	£1.400.000
Total liabilities and capital	£1.400.000	£1.400.000
Earnings	£168.000	£168.000
Less interest	£42.000	-0-
Total earnings	£126.000	£168.000
Percent earned on total capital	18%	12%

Total earnings have now gone down by one quarter but the percentage return on equity has increased by a half.

For some time, the increased leverage, as illustrated above, allows management to increase the rate of return on equity capital. However, when the increase in the cost of borrowing and the increase in the cost of equity exceeds the expected return from new funds, trading on equity

will no longer be attractive. Again, a practical example will best illustrate this:

Assume firm Y now is to pay 13 percent on borrowed funds instead of 6 percent. As depicted below, the leverage effect is no longer favourable. In fact, the percentage return on equity of the levered firm Y is less than the percentage return on equity of the unlevered firm Z

	FIRM Y	FIRM Z
Total debt (interest 13%)	£700.000	-0-
Capital and retained earnings	£700.000	£1.400.000
Total liabilities and capital	£1.400.000	£1.400.000
Earnings	£168.000	£168.000
Less interest	£91.000	-0-
Total earnings	£77.000	£168.000
Percent earned on equity	11%	12%

Here, leverage does not work to the advantage of the owners of firm Y.

The above shows that the leverage factor can work both ways. When in a negative way, leverage will affect a greater proportionate decrease in return on common stock than the decrease in operating income already being experienced

Hence, it makes little sense to leverage a firm where maximised increases in operating income are still in doubt. Conversely, where operating income is being maximised, the effects of financial leverage tend to lead to a larger proportionate increase in return on common stock than the actual increase in operating income.

Using the DEC example referred to earlier, the application of financial

leverage is shown in Section 1.4, subsection 1.4.2. By using debt and convertibles as financial leverage, the firm concentrates its risk on the shareholders. It can be said in this context that the financial risk resulting from financial leverage is the portion of the shareholders' risk over and above the firm's business risk. On the same basis, it could be argued that as far as strictly financial leverage goes, if willing to take the risk (regardless of the operating leverage situation), a firm might take all of its money as available and yet borrow additional money. What this means, and therefore its relevance, can be understood in the context of a situation where a firm takes advantage of some, hopefully profitable opportunity, but the risk is very high. There would in the event not necessarily be the underlaying foundation of operating leverage to reduce this risk. This exemplifies to some extent the variety of forms leverage can take. However, the additional issue of cultural influences on international capital structure will prove to be a recurrent and in the end overriding theme.

1.3 Discussion of Total Leverage

At the third stage, the concept of total leverage comes into being. Here the two types of leverage (operating, financial) do not merely interrelate. Rather, the notion of total leverage based on "value-added" is created. What value-added means in this context is explained further below. The concept of value-added itself is explained under Different Aspects of Total Leverage, Section 3, subsection 3.1.

Whilst the theory of finance has not developed to the point where optimal levels of operating and financial leverage can be specified simultaneously so as to capture value-added, one can start observing and analysing how these types of leverage interact within the concept of total leverage. Total leverage as proposed, becomes the change in

value brought about by operating leverage in the presence of financial leverage and must be assessed as such. This is done at the level of the firm, i.e. not in isolation from its operations, and geographically by cultural realm. As to the latter, what is being studied here is the capital structure of multinationals. Referring once more to the previous example, Section 1.4, subsection 1.4.1 sets out how total leverage is applied to DEC. This section illustrates how the concept of operating leverage in combination with financial leverage, can lead to a debt-to-equity position under total leverage. Another practical example used previously, Avon Products Inc., is then studied. This sample was selected because it shows some of the balance sheet intricacies that can occur when applying total leverage.

Total leverage (i.e. third stage leverage) thus occurs when the combination of operational and financial leverage results in "value-added". This "value-added" is the amount or measure of "more value" that has been obtained above that of either operational or financial leverage in isolation. This needs further explanation, which will be found in this section and the next two subsections. In practice for example, if financial leverage were applied non-sequentially, this would mean that the firm did not start the process of value-added creation with operating leverage. Put differently, value-added cannot totally be created by the application of operational or financial leverage only.

The above further explains why in this study a debt-to-equity calculation under total leverage is favoured to support the hypotheses (Ch. III Methodology). In creating more value, the result of total leverage invariably is experienced in terms of cash flow in excess of operating requirements. Again, this is how value capital is created. After all, an investment is worth undertaking or pursuing only if it creates value for its owners in line with expectations of value-

maximisation. Ross, Westerfield and Jordan [1991] claimed that in the most general sense, one creates value by identifying an investment that is worth more in the market place than it costs to acquire. How something can be worth more than it costs Ross explained, lays in the fact that it is a case of the whole being worth more than the cost of the parts (a. p. 196) but this, as is well known, is subject to the effective operational realisation of such an opportunity.

It is precisely this opportunity or "value window" of imperfections in the market that is widely regarded as the capital value incentive which keeps businessmen going. Ross [1977] examined these incentives as well as the investment return and risk (pp. 23-40). It is the cumulative increases in capital value which ultimately lead to the additional cash flow that creates value capital. The H J Heinz sample in Section 1 showed how such cash flow is created as a result of operating leverage. However, what this means in terms of value added requires some further clarification. For example, a reduction in operating leverage might tend to lead to an increase in debt levels (i.e. a decrease in owners' worth) simply because a less than optimal use of assets in place necessitates additional funding. In the event, such excess funding arguably is not necessary if the application of total leverage is considered from the start of the financing process. An increase in operating leverage would then result in a lower call for debt (and effectively an increase in owners' worth).

Some may still claim that a firm's capital structure is comprised of all permanent (long-term) financing, generally represented by common stock, preferred stock, retained earnings and long-term debt, thus excluding current liabilities [Prather, 1971, a. p. 445]. However, many companies nowadays rely on lease financing, e.g. service industries. Therefore, current liabilities must be considered for inclusion in determining the debt position relative to owners' equity. For instance,

the Marks & Spencer sample in this study is typical of a modern department store. It tends to lease buildings and fixtures. With most of the current assets in merchandising, the balance sheet (see Appendix B, General Appendix) therefore puts relatively less emphasis on fixed assets. Hence the inclusion of current liabilities into the total leverage calculation has been considered in estimating the soundness of owners' equity position.

1.3.1 The Theory of the Degree of Total Leverage

Taking a more detailed view of the capital structure debate, an assessment was made of the Weston and Brigham study [1987] which advocated that, if not the optimal level, interactions of financial and operating leverage could still be defined technically through analysis of the degree of leverage (a. pp. 229-233). Thus, reference was made to a 'Degree of Total Leverage' (DTL). As the authors pointed out, combining the effects of operating and financial leverage, at least would show that there exists an increased reward and risk factor; it is generally accepted, that leverage tends to magnify profits (as well as potential losses). Under total leverage, these profits (or losses) also magnify as a function and percentage of equity. This reinforces the importance of the degree of total leverage. However, the DTL concept on its own will not define what the level of leverage ought to be. To set an acceptable degree of leverage, Weston then recommended the times-interest-earned method (TIE).

The TIE concept results from the ratio of earnings to interest and taxes. The formula is set as follows

$$TIE = \frac{EBIT}{Interest}$$

Some comments however, need to be made. This approach falls under that of cash coverage ratios and is meant to manage for a reduced exposure. It is in no way a substitute for the debt-to-equity ratio under Total Leverage (Section 1.4) but a worthwhile starting point to understand its concept. In practice, the TIE is determined by the ability of a multinational to measure its annual worldwide interest payments compared to earnings, i.e. earnings before interest and taxes (EBIT). The higher this ratio, the lower the probability that the company will default. The TIE as used for different capital structures can thus be set at different levels (Ibid. b. pp. 595-596). For example, one could have a TIE at 3 times versus an industry average of 5. However, as indicated, the DTL theory and related TIE method fall short of total leverage. The TIE can also be criticised in that it appears firm specific only. For example, the following two TIE calculations drawn from the sample population show extreme values of the ratio :

H. J. Heinz Company TIE =

$$\frac{\$ \ 834.527 \text{ Mln.}}{\$ \ 77.694 \text{ Mln.}} = 10.74$$

Platignum plc TIE =

$$\frac{£ \ (267) \text{ K.}}{£ \ (598) \text{ K.}} = (0.44)$$

Source:
The full balance sheet (Appendix C) and profit and loss statement (Appendix A) of the H. J. Heinz Company and of Platignum plc (Appendices D,E) appear in the General Appendix.

In the above example, obviously the H. J. Heinz Company has little to worry about in terms of its TIE. This can hardly be said however of Platignum plc. Rose and Fraser [1988] referred to TIE as simply a relationship between interest rates and the amount of loanable funds

(pp. 102-103). Beyond the TIE, there did not appear to exist any clear criterion.

Another question which arises is that of an appropriate starting point in measuring the degree of leverage. In this study, the view is taken that this is best defined by first establishing the break-even level between over and under-leverage. Without going into the policy issues of high or low leverage, which naturally surround the subject of optimisation, the so called principle of static theory of capital structure can nevertheless be applied. What this means is well explained by Ross, Westerfield and Jordan in their latest review on corporate finance. Ross et al [1991] stated that over-leverage will occur when the firm operates beyond the static point of optimal capital structure. This principle is defined as:

> "The theory that a firm borrows up to the point where the tax benefit from an extra dollar in debt is exactly equal to the cost that comes from the increased probability of financial distress" (Ibid. b. p. 490)

The quotation from Ross surely refers to financial leverage and equilibrium of capital structure. Having said this, there is no reason why the theory can not be extended to total leverage. The next sub-section discusses total leverage in this regard.

1.3.2 Total Leverage as Optimised

From the discussion so far it has gradually evolved that financial leverage appears largely a matter of capital structure policy. Operating leverage on the other hand is a measure of the firm's actual operating performance on its debt contracts as well as on the total shareholders'

equity entrusted. This is an important point which must be kept in mind as it is linked into the empirical analysis later (Ch. III Methodology, Ch. IV Results). Meanwhile, it can be said that the optimal degree of leverage, or rather total leverage, is the optimised combination of financial and operating leverage, the difference being the aforementioned value-added (Section 1.3, subsection 1.3.1) in the form of value capital. This perception of an optimal capital structure is commented upon below and further in the survey.

The next step is to gain a better understanding of what value-added means since this stands as a cardinal difference between total leverage and the DTL theory. The latter, discussed before, makes no mention of value-added. Such an understanding must start with the principle of value-maximisation. This principle as one knows it demands a strong focus on the day-to-day running of operations and related risk taking in terms of the firm's business economics. Such ties in with the use of the debt-to-equity ratio under Total Leverage as mentioned before. Importantly, much of this also has to do with how not only operational but discretionary investments are made within the realm of financial risk taking. Kensinger and Martin [1989] took a similar view. As they put it, if the company's role is to run existing operations efficiently in order to increase assets under its management, it will have to compete for alluring opportunities offered in the market place for capital (pp. 20 - 22). The assets to be increased however can be assets in place, for example a building, or discretionary assets, e.g. specific discretionary investments in marketing, advertising or R&D. Commons [1985] came a step closer to total leverage in this way, when defining leverage as:

> "A corporation's use of borrowed capital to increase earnings on its equity. Leverage proves advantageous if the company can earn more on the borrowed funds than the interest it is paying for them" (p. 146)

Leverage on this basis is the value-adding use of relatively fixed-cost sources of funds, principally debt, in order to increase returns to the firm's owners and debt capacity. A practical example of how value can be added, using this principle, is that of the multinational taking advantage of its potential for size effect in the presence of leverage. This is a proper consideration, for example if a high debt growth strategy where the object and the aim is to value-maximise. If applied on the basis of total leverage, the results will tend to have a further positive impact under conditions of growth and size effect, characteristic to the multinational and because of the efficiencies derived thereof.

An important aspect in the attainment of total leverage is therefore to define how the debt is to be treated. Collins and Sekely [1988] treated leverage as total debt to total assets at book value and calculated as one minus the rate of shareholders' equity to total assets (a. p. 90). With the inclusion of total equity, this technically is a correct approach to total leverage, as is explained in more detail (Section 1.4). However, also important for the purposes of this study is to understand that total equity, more so than debt, ties into different fiscal regulations and property rights in different countries and cultural realms. These in turn correspond directly with the operating realities multinationals face.

A comparative review with the work of Ross indicated this procedure to be technically correct (Ross et al [1991], Ibid c. p. 452) both in the accounting and socio-economic sense [Ibid, d. p. 25]. The fact that Collins underutilised the formula's potential by using secondary data only, is another issue. This will be discussed further (Ch III), when studying the methodology used. In contrast, Choi [1983] proxied the debt ratio as an expression of debt to assets only, that is the debt-to-equity of financial leverage. Using financial leverage, Choi arrived at

the debt-to-equity by dividing the total debt at book value by total assets at book value (pp. 113-131, p. 396). This approach is not sufficiently comprehensive or complete for the purpose of measuring total leverage as is evident from the next section.

1.4 The Debt-to-Equity Relationships of Leverage

There exist essentially three ways of expressing the debt-to-equity relationship of leverage:

1.4.1 Debt-to-Equity under Total Leverage
1.4.2 Debt-to Equity under Financial Leverage
1.4.3 Debt-to Equity as Capitalisation

These are reviewed in detail as follows. Practical comparisons have been made with existing financial theory, especially as set out by Ross, Westerfield and Jordan [1991] (Ibid e. p. 5, p. 25, pp. 56-57, pp. 368-381) and earlier work by Prather [1971] (Ibid b.. pp. 445-459). Other materials consulted on the subject include the works of Sharpe and Alexander [1985] on investment theory and those of Tunick and Saxe [1969] on fundamental accounting.

1.4.1 Debt-to-Equity applied under Total Leverage

This study emphasises leverage at the level of the firm, looking at the application of debt both in the operational and financial sense. Hence, it uses the debt-to-equity ratio under the total leverage approach as follows:

$$\text{Debt-to-equity (under total leverage)} = \frac{\text{Total Liabilities}}{\text{Total Assets + Total Shareholders' Equity}}$$

Here shareholders' equity equals total equity, i.e. total shareholders' funds encompassing common stock and retained earnings plus preferred stock, convertibles including hybrids and reserves (Ross et al [1991] Ibid f. p. 56, p. 377, Solomon and Pringle [1986] p. 741). The numerator is calculated as Total Assets minus Total Shareholders' Equity. An equivalent numerator of total liabilities would be current liabilities plus long-term debt (depicted in Ch. III, Methodology, Fig 2, Balance sheet Model). Hybrids are discussed separately (Ch.III, Section 4.4.3 Role of Convertibles and Warrants).

As a practical example, when applied to Digital Equipment Corporation (DEC) this gives the following result:

$$\frac{\$2.632.106}{\$10.667.779 + 8.035.673} = 0.1407 \text{ i.e. } 14.1\%$$

Source: DEC Balance Sheet Statement (Appendix F), General Appendix

Confirmation received from the respondent as to the result obtained can be found in the General Appendix. To help understand easily how the results can be calculated, a simple aggregated balance sheet sheet of DEC is included:

Digital Equipment Corporation
Consolidated Balance sheet
July 1, 1989
(Aggregated)

Assets		
Current Assets		$ 6.895.008
Property, Plant and Equipment, at cost and other assets, net		3.772.771
Total assets		$10.667.779
Liabilities and Shareholders' Equity		
Current Liabilities		$ 2.394.039
Net deferred Federal and foreign income tax credits and long-term debt	$ 102.048 136.019	
		283.067
Total Liabilities		$ 2.632.106
Shareholders' Equity		
Preferred stock	$ -	
Common stock	130.008	
Additional paid-in capital	2.469.711	
Retained earnings	6.366.418	
Currency translation adjustments	-	
Treasury stock, at cost	(930.464)	
Reserve for employee stock ownership plan debt retirement	-	
Total Shareholders' Equity		$8.035.673
Total Liabilities and Shareholders' Equity		$10.667.779

Extract: Full DEC Balance Sheet Statement
Source: Appendix F, General Appendix

In contrast to DEC, a sample such as Avon Products Inc. for example, using the same method, shows a significantly higher total leverage of 80.4% based on:

$$\frac{\$1.869.7}{\$2.326.3} = 0.8037 \text{ i.e. } 80.4\%$$

Source: Avon Products Inc, Balance Sheet Statement (Appendix G), General Appendix.

The above example indicates that Avon's total leverage compares negatively to that of DEC. The Appendix shows the full balance sheet of Avon Products Inc.

In this context, debt-to-equity as total leverage reduces over reliance on debt, putting equal importance on returns on equity from operations (Prather [1971] c. pp. 446-447). When overall results are poor as in this example of Avon, this is translated into a higher total leverage factor. At the same time, it emphasises the important distinction between debt and equity. Debt after all is not an ownership interest in the firm. Creditors in the main do not carry voting power. Also, the cost to serve the debt is a tax deductible business expense (unpaid debt being the firm's liability).

The use of hybrid securities further demonstrates that it is difficult to distinguish between debt and equity where companies attempt to create a debt security that is in fact equity. This aim then is to obtain the tax benefits of debt as well as the bankruptcy benefit of equity (equity being a residual ownership interest). However, this should not be undertaken at the expense of equity returns from operations which clearly must outweigh the advantages of excessive debt, especially when unfunded. As an important side note, it can be said that there exists no universally agreed upon distinction between short-term and

long-term debt, albeit funding generally meaning long term. In the event, long term debt may have a maturity of three to five or ten years, as opposed to maturities of one year. The meaning of funding can further be applied to intermediate debt of over one year and less than three years (Ross et al [1991] Ibid h. p. 368). In the end it should be argued therefore, as this study does , that when the debt relation is not stated on the basis of total equity, such debt when considered at the level of the firm may in fact be overstated.

The section following explains this study's reluctance to apply debt-to-equity under financial leverage, especially where multinationals are concerned. Much of this has also to do with the role of preferred stock, foreign laws and international taxation

1.4.2 Debt-to-Equity applied under Financial Leverage

In contrast to total leverage, under financial leverage, the ratio becomes

$$\text{Debt-to-equity (under financial leverage)} = \frac{\text{Total Assets - Net Worth}}{\text{Total Assets}}$$

Shareholders' equity in this case is limited to common equity plus retained earnings, or net worth. Preferred stock is not included - preferred stock is a form of equity, both from a legal and tax stand point. Strictly defined, it is stock with dividend priority over common stock, normally with a fixed dividend rate, albeit often without voting rights. Some may argue that preferred stock is debt as a sort of equity bond. However, corporate investors, almost universally, pay a premium for preferred stock as an asset because of the significant tax

exclusion on dividends. For example in the United States, the exemption may be as high as seventy percent. In the same case, yields from preferred stock held not as an asset will be fully taxable as if it were interest received. Also, from the firm's point of view, unpaid dividends in case of bankruptcy are not payable as they are not considered a debt. This further underscores this study's preference for the use of debt-to-equity as total leverage, discussed earlier.

Returning to DEC, using the same example applied earlier under total leverage, financial leverage is calculated as follows:

$$\frac{\$10.667.000 - \$8.035.673}{\$10.667.779} = 0.2467 \text{ i.e. } 24.7\%$$

Source: DEC Balance Sheet Statement (Appendix F), General Appendix

Note:
The aggregated balance sheet, listed in the previous subsection 1.4.1 is used. As there are no preferential shares, net worth here equates to total shareholders' equity.

The absence of preferential shares in the capital structure of DEC is unusual but reflects its capital distribution as is. To give an example that shows the relationship of financial leverage and net worth in a more comprehensive way, another example, that of the Proctor and Gamble Company (P&G) is used to calculate the same measure. The aggregated balance sheet is set out below:

The Proctor and Gamble Company
Consolidated Balance Sheet
June 30, 1989
(Aggregated)

Assets		
Current Assets		$ 6.578
Property, Plant and Equipment, at cost and other assets, net		9.773
Total assets		$ 16.351
Liabilities and Shareholders' Equity		
Current Liabilities		$ 4.656
Net deferred Federal and foreign income tax credits and long-term debt	$ 1.782 3.698	
		5.480
Total Liabilities		$ 10.136
Shareholders' Equity		
Preferred stock	$ 1.000	
Common stock	162	
Additional paid-in capital	529	
Retained earnings	5.587	
Currency translation adjustments	(63)	
Treasury stock, at cost	-	
Reserve for employee stock ownership plan debt retirement	(1.000)	
Total Shareholders' Equity		$ 6.215
Total Liabilities and Shareholders' Equity		$16.351

Extract: Full P&G Balance Sheet Statement
Source: Appendix H, General Appendix

Hence the financial leverage measure is:

$$\frac{\$11.136}{\$16.351} = 0.681 \text{ i.e. } 68.1\%$$

Source: P&G, Balance Sheet Statement (Appendix H), General Appendix.

Note:
The full balance sheet of P&G can be examined in the General Appendix.
The aggregated balance sheet is used for this example. As will be noticed, the preferential shares have been excluded. this was not the case when calculating operating leverage.

1.4.3 Debt-to-Equity applied as Capitalisation and Ratio Comparison

As concerns debt-to-equity as capitalisation, this formula reflects the long-term debt position from a security analysis rather than operating point of view. It is therefore an inappropriate measurement for the purposes of the study. Financial analysts frequently calculate this ratio using only long-term debt. Some refer therefore to the debt ratio. This has caused confusion. Most people mean different things by the term debt ratio (Ross et al [1991] Ibid i. p. 57). In this study, when using the term debt ratio, reference is made to the debt-to-equity ratio under total leverage. This is quite different from the debt-to-equity ratio as capitalisation stated below:

$$\text{Debt-to-equity (as capitalisation)} = \frac{\text{Long Term Debt}}{\text{Long Term Debt + Total Equity}} = \frac{\text{Long Term Debt}}{\text{Total Capitalisation}}$$

Going back to the main comparison on DEC, capitalisation is calculated as follows:

$$\frac{\$136.019}{\$136.019 + \$8.035.673} = 0.0167 \text{ i.e. } 1.7\%$$

Source: DEC, Balance Sheet Statement (Appendix F), General Appendix

To make a quick comparison, in the next example we look at (P&G), calculated on the basis of (a) total leverage, (b) financial leverage and (c) leverage based on P&G's capitalisation. Including DEC, a comparison would then look as follows:

	DEC	P&G
(a) Total Leverage	14.1	42.0 (1)
(b) Financial Leverage	24.7	68.1
(c) Leverage based on Capitalisation	1.7	37.3

Source: P&G Balance Sheet Statement (Appendix H), General Appendix

Note:

(1) An adjustment made to the P&G balance sheet under (a), adding back in the reserve for employee stock ownership plan debt retirement, results in total leverage of 42.0 instead of 44.9. Convertible Class A preferred stock is also included. Conversely, under financial leverage, in determining net worth (subsection 1.4.2) these items were excluded.

The foregoing indicates leverage as total leverage or as leverage based on capitalisation to provide more conservative leverage ratios than that based on solely financial leverage. In these examples, P&G, a fast moving consumer goods company, shows higher ratios than DEC, a manufacturer of computer equipment.

The above calculation following debt-to-equity as capitalisation is not

appropriate for the objective of this study. The next section shows that this observation on debt-to-equity as capitalisation (as well as that on debt-to-equity under financial leverage) is maintained when evaluating the formal theory on capital structure.

Before going into the review of existing formal theory on capital structure [In Modigliani and Miller (M&M), leading economic theorists on the subject between 1958-88] it is important to be reminded of the concepts that are being emphasised in this study. These are the debt ratios, geography and cultural influences (within identified cultural realms), and R&D investment as relates to leverage.

To close this section, the Table following provides an overview of the various subjects discussed, related data and references by Appendix, by subsection, comparing various ratios determined in the examples:

Overview - Ratio Comparison

Detail Appendix	Company	Subject	Data	Financial Statement	Section	Section Title
A	Heinz	OL	8.6	P&L	1.1	Discussion of Operating Leverage
B	M&S	OL	N/A	BS	1.3	Discussion of Total Leverage
C	Heinz	TIE	20	BS	1.3.1	*The Theory of the Degree of Total Levereage*
D	Platignum	TIE	(12)	P&L		The Theory of the Degree of Total Levereage
E	Platignum	TIE	(12)	BS		The Theory of the Degree of Total Levereage
F	DEC	TL	14.1	BS	1.4.1	Debt-to-Equity applied under Total Leverage
G	Avon	TL	80.4	BS		Debt-to-Equity applied under Total Leverage
F	DEC	FL	24.7	BS	1.4.2	Debt-to-Equity applied under Financial Leverage
H	P&G	FL	68.1	BS		Debt-to-Equity applied under Financial Leverage
F	DEC	CAP	1.7	BS	1.4.3	Debt-to-Equity applied as Capitalisation
H	P&G	CAP	37.3	BS		Debt-to-Equity applied as Capitalisation

Note:
OC = Operating Leverage; TL = Total Leverage; FL= Financial Leverage;
TIE = Times Interest Earned; CAP = Capitalisation

2 The Formal Theory of Leverage and Capital Structure

2.1 Formal M&M Theory

The theme of Modigliani and Miller in their original article consisted of two propositions. Put in a language that an intelligent layman can understand these propositions state that:

Firstly, the capital structure of a firm is irrelevant as long as the firm's investment decisions are given. This arises because an individual shareholder can indulge in "home-made" arbitrage, (i.e. borrowing and purchase of stock) to obtain the level of leverage he wishes. Home-made arbitrage referred to above relates directly to the formal theory on home-made leverage. In this respect, Ashton [1986] extended the debate on the use of personal versus corporate leverage. However, through new, high leverage limited-liability securities, firms may enhance value by offering risk and return combinations that fully-liable investors are not feasible of obtaining on their own. As relates to the real world pertaining to multinationals, it is unlikely that such magnitude of finance could any longer be raised by individuals on the basis of home-made leverage. Hence, home-made leverage, in the view of this study, remains largely a theoretical concept.

Secondly, the expected return on common stock of a levered firm increases in proportion to the debt-to-equity ratio expressed in market value, or alternatively, book value. Here, the assumptions lying behind the original M&M Propositions are important in that they include:

(a) The absence of taxes
(b) The existence of a perfect capital market which includes the ability to borrow and lend unlimited amounts at the same (i.e. risk free) rate of interest.

(c) The absence of distress costs which vary with the degree of leverage.

Clearly, these assumptions do not represent conditions in the real world. Miller introduced corporate taxes in a second article (In The Commission on Money and Credit [1963], pp. 381-470) and considered personal taxes (In Journal of Finance [1967], pp. 261-275). As it is understood, the presence of a tax shield is given by:

$$(1 - TPE)\ (1 - TC)\ /\ (1 - TP)$$

Where:

T	= Tax rate
PE	= Personal tax rate on equity income
C	= Corporate tax rate
p	= personal tax rate on interest

Provided (1 - TP) is greater than (1 - TC) (1 - TPE), the logical conclusion is to finance the firm by 100% debt. The restraint is given by the existence of distress costs provided they rise with the debt-to-equity ratio. On this basis, the value of a firm according to the modified M&M thesis can be summarised as:

Value if all equity financed + PV of Tax Shield - PV of distress costs

PV = Present Value

The literature search in this chapter develops from the original M&M article to this modification and in effect links into this modified proposition.

A note also needs to be made about M&M Proposition I with taxes, and M&M Proposition II with taxes, WACC, and no distress cost. This is set

out in the two subsections below.

2.1.a M&M Proposition I with Taxes:

The interest tax shield is the tax saving attained by a firm from interest expense just like the unlevered cost of capital is the cost of capital of a firm that has no debt. The value of the firm increases as total debt increases because of the interest tax shield; this is the basis of M&M Proposition I with taxes.

2.1.b M&M Proposition II with Taxes, WACC and no Distress Cost:

The conclusion that the best capital structure is 100% debt, given Proposition I with taxes, also can be seen by examining the WACC. The weighted average logically will tend to be substantially lower than the cost of capital for the firm with no debt, so debt financing is highly advantageous. This average declines as the debt-to-equity ratio grows. The more debt the firm uses, the lower the weighted average cost. This relationship between the cost of equity, the after-tax cost of debt and the weighted average cost of capital as it may affect capital structure, constitutes M&M Proposition II with taxes, WACC, and no distress cost.

These notes reflect on established M&M theory; they do not reflect any criticism, argument or opinions as are further debated below

2.2 Discussion of M&M Proposition I

Under M&M Proposition I as Modigliani and Miller [1958] argued, the value of the firm is independent of the capital structure (it is determined by its real assets) (pp. 261-297). Miller [1988] aspired the ideal world to be "frictionless" (Ibid a. p. 112). However this cannot be

at any condition as was also postulated in the initial M&M propositions. It is the more interesting to note therefore that in reviewing the original propositions after thirty years, Miller still defined Proposition I as holding the value of a firm to be independent of its capital structure. This has since given rise to the so called invariance theory or Proposition II (in that principally nothing had changed or needed to be changed). In this respect, the purpose of the literature review in part has been to identify ways and means of looking beyond what otherwise in the opinion of this study would be a rather limited perception of the possibilities of wealth creation. As a result, much more can be said about the formal M&M Proposition I in this respect. However, in the end as can be seen, the assumptions in any event do not represent conditions in the real world. This holds true also in the case of Miller's modified propositions published later, even as these include reference to corporate and personal taxes. That this remains the case is simply because the assumptions do not correspond with the practicalities of the world of multinationals. These assumptions pertain more to the imperfections of a national economic market in the macro-economic sense and how these may affect a firm's capital structure than the real world at the micro-economic, that is the firm-specific level of the multinational. The multinational, geographically diversified, is subject rather to cultural influences as may impact its international capital structure. Also, the interpretation of its R&D policy as a result may be different in this respect.

Even if there is merit in the M&M theory, if showing what doesn't matter by implication also shows what does, as Miller put it (b. p. 100), the assumptions simply do not hold. These, as said were too macro-economic. What is meant by this was best expressed by Stiglitz [1988]. Stiglitz's view on the M&M work is that of a systematic exploration of market irrationalities enhancing one's understanding of hitherto unexplained quandaries (p. 126). The meaning of this has been

reviewed in more detail below under Proposition II, in particular the roles of debt, equity and taxation as relate to capital structure. If anything, these at least are important factors that relate directly to the debt-to-equity approach under total leverage referred to earlier.

2.3 Discussion of M&M Proposition II

In M&M's second line of argument, i.e. M&M Proposition II, Miller in fact implies that the cost of capital to a firm, whether incurred in debt or equity averages out to be the same no matter what combination of financing sources were actually chosen. Equivalently if capital structure always consists of some form of debt and equity, the firm's cost of equity increases when the expected return on equity increases. However the cost of leveraging is offset in that interest on debt is tax deductible whereas interest on equity is not. Looked at this way, the point most relevant to understanding the M&M formulations in the current business environment is that the financial structure of the firm does not matter as much as its ability to "leverage" growth; meaning to create more growth within the totality of its existing means, both optimally as well as financially. Having said this, the "ability to leverage growth" does not lessen the importance of capital structure. Rather, it stresses the opportunity to attain an optimal capital structure under Total Leverage. This perception however, is not included in the Proposition II theory which by all accounts limits itself to strictly the mechanics of debt, equity and taxation as relate to capital structure.

Keeping the issue of culture aside for a moment, the ability to attain total leverage beyond Proposition II can be achieved (a) with the support of the firm's financial backers and the cash flow capabilities derived from the firm's operations, and (b) in combination with the relatively low cost of money and benign government policies on debt financing that generally prevail. Having said this, one will no doubt

bear in mind that financial markets from time to time may constrain such government policies.

The above observations technically may appear as a side note in the sense of pure theory to date, but they are important in terms of the objectives of this study. For example, Guisinger [1988] pointed to the adverse impact government intervention could have on investment profitability, were the leverage opportunities as highlighted above not to apply (pp. 280-295). Jensen [1989], went as far as saying that as long as the equilibrium was held (meaning no bankruptcy contraction or financial distress), what mattered was to find the right architecture to support growth through maximum loading of debt (a. p. 61). However, it must be said in this regard that the cost of capital is always to equate with some minimum required corporate earnings rate. Otherwise it might just not be worthwhile to be or to remain in business. Only from Jensen's point of view does it not matter what the debt-to-equity under total leverage is. As Miller himself has since conceded, total value (meaning value capital as discussed before) might well be enhanced increasing the proportion of debt, thus suggesting that the debt ratio after all was not indeterminate (Ibid. c. p. 102). This is the case if one includes distress costs - as indicated by the earlier quotation from Ross.

To Miller, the debt-to-equity was merely an implication of equilibrium in perfect capital markets (Ibid. d. p. 99, Ibid e. p. 103). Again, this is not practical. As far as multinationals are concerned, not all of these are headquartered or operate strictly in countries and regions where capital markets are sufficiently developed for this to be applicable.

Next, Miller's second defence of Proposition II, expressed most vocally by Jensen, must also be contested. Under conditions of perfect capital markets, Jensen argued, the value of all assets should be seen as a function of their payments or expected payouts using risk adjusted

probabilities (Jensen, referred to in Introductions to Modern No-arbitrage as provided by Varian [1987] (a. pp. 55-72)). By no-arbitrage theory, one is referring to the M&M argument that individual agents can engage in home made arbitrage so that the market will ensure that two firms different only in capital structure must have the same value. Hence equilibrium requires a condition that such arbitrage is not possible. In theory at least, as also Dybvig said [1987], it would be feasible therefore to replace one company's cash flow by that of another (pp. 100-106). This in turn would depend on the expected probability of success of certain industry categorisations using risk-based Marshallian classifications on which such probabilities are based. What is meant by "Marshallian" is to group firms by industries, a practice originally conceptualised by Marshall [1927] and as a modified version still in wide use today. However, the problem with this, as the study will demonstrate, is that the value attached to industry classifications has become highly debatable.

Miller subsequently attempted to make Jensen's theory work by adding the perspective that details of functions at the firm level (R&D, production, sales) be included. Leaning on industry classification, the test of this theory perhaps became too macro-economic and hence too abstract to have any real impact at the level of the firm (Ibid e. p. 103). Miller by now stated the wish to transform his perception into cash flow. However, equilibrium presupposes the presence of operating leverage as relates directly to the firm's business risk. Also, operating leverage specifically is not adequately addressed in Miller's theory. Further, whilst as far as multinationals are concerned the cultural influences on international capital structure are most important in this, again, the M&M theory pays minimal attention to the international variant. The literature survey therefore reviews these issues further. It does so by studying in more detail (a) the different aspects of total leverage, (b) the economic determinants of debt capacity,

and (c) the cultural influences of international capital structure. This review of different aspects starts with the topic of value-added in operating leverage, examined below.

3 Different Aspects of Total Leverage

3.1 Value-added in Operating Leverage

The value-added concept of operating leverage as discussed earlier, it must be pointed out should not be confused with investor return. When a yield is obtainable but strictly derived from financial leverage, under the latter criterion, danger in fact may be imminent. Whilst not providing an immediate answer to the problem as posed, Argenti [1976] nevertheless appeared correct in his forewarning that:

> "High gearing and economic downturn are the classic nutcrackers of failures" (p. 136)

Whilst the capital structure that produces the highest firm value at the lowest cost of capital to its investors under high gearing may indeed seem to be the most optimal one, without the benefit of total leverage such structure is due to fall short of actual value-maximisation. The ultimate result i.e. value capital, is the monetary value or value-added beyond the value that could have been obtained on the basis of either operating or financial leverage only. It is the combination of increased efficiencies in the utilisation of assets and the careful and effective application of financial leverage that can significantly increase results from operations.

3.2 Value-chain Effect of Integrated Operating and Financial Leverage

The value chain represents the business process of the firm, usually moving from one department to another, whereby the monetary contribution to profit or value-added may differ from one function of the business to the next. For example, warehousing and distribution follow onto production but their contributions to profit differ. Too much unnecessary inventory prior to client sales for example, would not add value in this chain of events.

The impression which seems generally held about the value-chain is that conceptually it is applied in what would be regarded as economically good times, thus further augmenting the prospects and results of the firm. The fact is that the value-chain effect of integrated operating and financial leverage can be mobilised in prosperous as well as declining economic periods. To use an example, in a depressed economic climate, some may argue that value-added would at best not be much more than the necessary cash flow to prevent depletion of a firm's working capital. However, this is better than having the working capital eroded or falling away. Value-added under this circumstance can still be obtained by improving quality and lowering cost. Having said this, the value-chain can effectively add more value on a compounded basis through its incremental processes if based on total leverage. That is, efficiency and value-added achieved in one department in the chain of operating events will have their natural multiplier effect on subsequent departments, increasing results. By way of illustration:

A well published business case which also appeared in the Economist [1991] quoted companies subjected to high debt repayments to be highly stimulated in reducing delivery times of goods and improving operating earnings almost immediately. A particular case referred to was that of Sealed Air, a worldwide packaging firm (pp. 94-

95). Bringing under-performing companies out of their relative complacency by injecting fresh capital together with the discipline of debt, a method reportedly applied with much success at Sealed Air, was suggested as a way forward. Yet, even in this example, value-added clearly is achieved by enhanced quality and lowered cost in the face of leverage. Without this, results would not be sustainable.

In this respect, under the M&M theorem, the clear lack of emphasis or oversight regarding operating leverage has resulted in a less than adequate focus on the issue of optimal capital structure. Perhaps too much emphasis was left on high leverage strategies in the purely financial leverage sense. Naturally, it is easy to adopt an over-censorious attitude towards any unfounded high debt theory. To be sure, what is not intended is to criticise the M&M tax-adjusted leverage proposition which offsets the costs of debt finance (see Section 2.1). Instead, of concern is the absence in formal M&M theory of the value capital effect, reflected in total leverage. An argument can be made that if this concern was not justified, the optimal capital structure would be all debt.

The above statement regarding all debt is of course only valid in the absence of distress and other costs. From the foregoing it should also be clear that where reference is being made in this study to a high debt strategy, such is strictly under conditions of total leverage. Even then, the resulting high debt cost structures are not entirely without hazards. For example, restrictive covenants in loan agreements may still result in a foreclosure on the firm before valuable initiatives on the part of the firm itself can be implemented. This in any event is a relatively well known exposure as a potential cost of debt finance. Also, it would be difficult to see how a less than reasonable debt exposure could outweigh the advantages of interest writeoffs under current tax laws.

However, there are additional reasons why an integrated approach appears sensible. Put in financial terms, a major issue in creating a value-chain effect revolves around the question of how much risk should be taken in assuming debt for operational requirements. On this basis, no one should dispute that in business reasonable risks must be taken. This is what "leveraging" means. Cooper and Fraser [1990] confirmed "leveraging", in terms of financial leverage at least, to mean the following:

> "Leveraging is the use of low-interest borrowed funds to acquire high-interest assets, allowing the investor to increase the expected rate of return, but only with a commensurate increase in risk" (p. 364)

In terms of operating leverage, there naturally have been various occurrences of significant change, paradox to the established formal theory, now under criticism. For example, following detailed analysis of 12 large US multinationals, Donaldson [1984] found managers of multinationals not necessarily driven any longer by the maximisation of their firm's value (a. p. 3). Rather, their interests most frequently had become one of maximising corporate wealth, as opposed to shareholders' wealth. Corporate wealth then was defined as the aggregate purchasing power available to the firm for strategic purposes during any given planning period (Ibid. b. p. 22). Similar observations have since been made by Mahimi [1988] who also studied such decision-making patterns relating to multinationals. These managers, Mahimi found, did not negate maximisation of shareholders' wealth; they merely approached it from a different, integrated basis.

What the foregoing describes is yet another example that the M&M theory did not adjust on a timely basis in step with developments which have taken place in the real world of multinationals. In

retrospect, much of Miller's focus on the resolve of the disequilibrium problem in the opinion of this study, is still born out of M&M's failure to address more forcibly this issue of operating leverage at the level of the firm. Equilibrium under the established M&M theorem thus far has remained illusive. What matters should not be voluntary re-capitalisation for purposes of tax benefits, alternatively in defence of an unwelcome takeover or as a form of self takeover. Yet, often this appears as what is emphasised under formal M&M theory. Rather, at issue is the attainment of an optimal capitalisation which makes the idea of voluntary re-capitalisation redundant. Therefore, what matters is a design for leverage-increasing capitalisation which preempts the need for leverage-increasing re-capitalisations. The value capital concept can play an important role in this. This is embodied in the total leverage approach which appears consistent with the requirement of multinationals for adequate debt capacity.

The next section reviews further the economic determinants of leverage's underlaying debt capacity. The survey later in the text occupies itself with the cultural determinant in the context of cultural influences on international capital structure.

4. Economic Determinants of Debt Capacity

The foregoing sections discussed the merits of a capital structure policy based on total leverage to achieve the desirable chain effects of value-added from operations and create value capital. These effects are frequently based on synergetic improvements derived from financial leverage with the additional benefits of operating leverage but still treated as a separate issue. This study proposes a more integrated approach. However, such prerequisites that the necessary debt capacity is in place. The link of debt capacity to this study is explained in further

detail below. However, as indicated earlier, evidence will show that the capital structure issue cannot be totally divorced from geography and cultural influences, one of the main concepts in this study.

First, in the economic sense at least, it is important to appreciate that while a capital restructuring may take place under financial leverage whenever a company decides to substitute one capital structure for another, such is by no means a measurement of business risk. In order to value-maximise shareholders' wealth, the firm has to maximise present value of its expected cash flows subject to balance sheet constraints. It is these constraints that constitute the debt capacity. Bower [1983] made a similar observation. As Bower said, the debt capacity of the firm to reflect the timing, certainty, and magnitude of its cash generating capacity while determining limitations on debt-to-equity (pp. 83-90).

The above in a way sums up the effects of debt capacity but does not define it. Debt capacity in this study is defined specifically as the ability to borrow. For value-maximisation, good financial planning is critical. Powell [1986], when studying high growth companies was sufficiently perceptive to forewarn that the planning of financing requirements induced by growth should not be overlooked (p. 265). Without value-added and the value-chain effects, this would be difficult to realise. The assumption made for this example therefore concerns a firm with a capital structure based on debt-to-equity under total leverage. Even so, it can be argued that assuming a given firm does borrow up to its debt capacity, the growth rate that can be achieved under equilibrium will still be relative to this, meaning that it has its limitations. The resulting growth rate therefore becomes the firm's sustainable growth rate. It is the growth rate the firm can maintain given its debt capacity, return on equity (ROE) and retention ratio. Put differently, that is to what extent the firm can grow without changing its debt ratio.

Whilst the above debt ratio maintains an equilibrium, for growth to change, the firm will be compelled, bar some exceptional capacity (e.g. access to expertise to turn around the company's fortunes), either to sell equity or seek external financing.

Apart from the financial-economic considerations in the technical sense, the study takes the position that at the practical level most firms understand intuitively that it takes money to grow. Multinationals are no exception to this. Also, culturally, this will hold true in most countries. However, a distinction can be made between the funding of short term versus long term assets. At some point, any reasonable growth in revenues is going to call for increased assets in the form of accounts receivable, inventory, or fixed plant. Such in turn requires money to pay for these assets. The growth component arises from an excess of the rate of return on investments over the cost of capital but typically does not always take into account the inevitable time lags underlaying reinvestments in these assets. Hence a differentiation is made here between short and long term assets. Bower, as aforementioned, does point at the importance of timing in considerations of capital structure but this may need even more emphasis within the complexities of a multinational environment. Naturally, at the practical level, most people tend to be well aware that not having the funds available or not having the growth when needed can easily bring the firm into a situation of distress. The need for growth states these intuitive truths so explicitly that one is reminded quickly of the need for an equilibrium of growth and profitability. Prudence in timing thus remains all important.

A fundamental challenge continuously facing investors and companies alike therefore, is how the multinational's considerable debt capacity and total leverage can be brought into unison. The objectives of this study are not to resolve this much wider issue. It is

mentioned only to set the opportunity for debt capacity into its proper context. Within this, the study takes into account those aspects that enable the multinational to position itself most optimally in terms of capital structure. In this respect, the study acknowledges that cultural influences and international capital considerations must be distinguished. As said, this has not been sufficiently addressed in formal M&M theory.

The main concepts of this study as indicated from the outset remain those of the debt ratios, geographical and cultural influences and R&D investment as relates to leverage. The issue as concerns debt capacity, aside from geography and culture, in the first place relates to the economic variables. It is in this regard that the survey has identified three specific economic determinants of debt capacity for further review. These are:

4.1 Capital Structure
4.2 Cost of Capital
4.3 R&D from Leverage

Each of these determinants is discussed in the subsections following. This is undertaken before addressing the international variant which confronts multinationals operating in different geographical regions of the world as it addresses the overriding issue of the cultural influences on international capital structure.

The above three economic determinants as highlighted below are linked to the qualitative analysis of the empirical study. From this, the importance of cultural influences on international capital structure then emerges. For example, subsection 4.1 following, links capital structure to geography and cultural influences. Subsection 4.2 further details the link of cost of capital and the debt-to-equity relation in this

respect. The last subsection, 4.3, points at the link of R&D levels as derived from leverage within the same setting of cultural realms.

4.1 Capital Structure

This part of the review discusses in further detail what a correct capital structure should entail. For example, as Stiglitz and Weiss observed [1983], firms may be credit-rationed or equity-rationed (pp. 912-927). Prather [1971] talked of the optimum size (p. 467) in the financing of business (Ibid d. p. 448) denoting an optimal capital structure. Capital structure in this way can be seen as an appropriate mix of debt and equity maintained by the firm.

This inevitably opens the question of what the best way to raise cash could be in order to fund fixed assets and what an optimal mixture of long term debt and equity holdings ought to be. It is the firm that must decide sooner or later on the specific mixture of long term debt and equity it will need to fund its operations. The debt-to-equity positions of multinationals as a result, bar geographical and cultural differences, tend to be firm-specific.

This needs to be put into further context. For example, Duffie [1986], made the interesting observation that as long as leverage and active corporate allocations to financial policies were being satisfied, prospects for innovative and creative finance would present themselves. Hecht [1986] confirmed that where the cost of debt is tax deductible, the remaining equity indeed attracts high leverage. This is especially the case in the event earnings potential in equity is high (p. 38). Thus, composition of debt-to-equity, hence capital structure, does matter. As Robbins and Stobaugh [1972] already observed, the international mobility and movement of capital (pp. 354-357) is another balancing

factor. Money simply tends to seek the better investment returns from operations, even if it has to search on a worldwide basis. This presents another interesting aspect on the same theme of geographical diversification. Such can be observed from the link between the debt ratio based on total leverage, its geography, and ultimately the cultural influences as affect the multinational's international capital structure.

The ensuing question as to whether adequate funding is available to not only fund these capital structures but to do so on a sustainable basis, should not be an issue. Not only investors but also principals of companies appear continuously on the lookout for opportunities to invest in what they perceive as attractive firms. International investors, corporate financiers and some entrepreneurs by the same token naturally will follow the performances of firms internationally and therefore increasingly invest in multinationals as opportunities present themselves.

4.2 Cost of Capital

According to Ross et al in their recent study [1991], the capital structure that maximises the value of the firm should also be the one that minimises the cost of capital (Ibid j. p. 491). Earlier, Shapiro [1978] already noticed the relation between financial structure and the cost of capital, as concerns multinationals (pp. 211-266). When dealing with multinationals, it is also the case that the subject of the cost of capital cannot be entirely segregated from that of inflation because of the possible impact on the expected corporate earnings rate. International trends in financing are already such that they are increasingly having an impact not only on the firm's access to funding but also the returns it could expect. Because the relative currency values will vary, the exchange rate itself must be taken into account. This is discussed in detail in Chapter III, subsection 4.3.2. Notwithstanding the increased

mobility of capital worldwide mentioned before, some countries that have a different inflationary trend and balance of payment outlook may well offer lower levels of capital costs (the actual cost of money being the difference between the inflation and interest rates). Also Harvey-Jones [1993] observed that the cost of capital and financing customs of a country can differ enormously, citing Germany, Korea, Japan and the US (a. p. 49). It can be said therefore that variation in cost of capital and expected corporate earnings rates is born out of the difference of the financial market system between different countries or country groupings. For example, UK institutions expect roughly double dividend payout compared to Japanese. There is also a strong expectancy for these to happen within forecast and with regularity. At first glance, the foregoing may appear to some as a cultural factor rather than one of the economic determinants of a firm's debt capacity.

Having said this, one must bear in mind that, regardless of location and culture, firms in the main still have to deal with shareholders and bondholders. The interests and time horizons of these shareholders and bondholders as relate to leverage options may not be the same. As the financing mix naturally becomes adjusted from time to time this frequently results in the uncompensated transfer of wealth between bondholders and shareholders. Ironically, in the real world, resulting litigation demonstrates that capital structure of debt and equity matters a great deal after all. Meyers [1977] in fact suggested close monitoring of bond financing transactions and their costs was necessary (a. pp. 147-175, Ibid. b. p. 207). Much of this has to do with time horizons and their perceived risks. Durand [1952] even dismissed the longer term view altogether when assessing riskier capital structures (pp. 215-247). The capital market still appears to react to short term profit potential as it did before. Here the predominant view is that capital markets do not discount dysfunctional consequences that might accrue from decisions based on short term horizons. However, not everyone agrees. The

question as to whether capital markets are myopic according to Marsh remains debatable [In Short-Termism on Trial, 1990]. Taggart in his observations takes a moderate view, albeit leaning towards the longer term nature of debt. In summing up his survey on corporate debt, Taggart [1986] concludes that in view of the volatility of the composition of total fund sources, measured over a period of 15 years, it would be premature to assume any long-run trend towards riskier capital structures (pp. 35 - 42). At the same time, Taggart stressed the long-term cyclical nature of debt ratio patterns. Thus, except for the higher risk/higher reward capitalisations, changes if surveyed across all firms, take place only slowly and over considerable periods of time. This is further commented upon later in this survey (Section 5. Cultural Influences on International Capital Structure).

The foregoing would seem to imply that in the main, the emphasis on profitability by the capital market assumes the underlying finance mix to be firm-specific at any point in time. Specifically, the cost of capital in relation to this is less of an issue if one assumes that managers and treasurers of multinationals have the whereabouts to find the most optimal financing and funding for their respective finance mix. However, to be complete, there are further costs of capital to be considered. Jensen and Meckling [1976] identified agency costs (costs of management) as being of distinct relevance when evaluating corporate investment considerations. The costs incurred by shareholders in ensuring that managerial decisions conform to the interests of those same shareholders, they must be measurable (pp. 305 - 360). Buser and Hess [1986] implied that the cyclical behaviour of the debt ratio (referred to by Taggart) be linked to tax induced levels of leverage, debt capacity as well as "debt weight" cost of capital incurred by the management necessary to run the firm. This "debt weight" cost as generally known is the agency cost of management representing shareholders or owners by weighting the firm's debt. Such costs in fact encompass the agency costs

of managerial decision-making, that is other than loss of deferral of interest tax-shields due to prospective contraction in the form of bankruptcy and present value of such prospective contraction costs. Buser found that:

> "The empirical evidence on the cyclical behaviour indirectly confirms the prediction of theories that model interior choices of debt-equity ratios are choices that arise from the trade off between the net positive tax-shield value versus other "debt weight" costs of debt" (pp. 335 - 356)

More as matter of principle than practice, Miller [1967] (in "Debt and Taxes") suggested a role for offsetting these types of costs of debt in determining optimal leverage choices (pp. 261-275). Stiglitz [1988] further provided models for such costs to be incorporated. An observation of these models did not remove the suspicion of inadequacy and contributed to the decision made later in the research not to resort to econometric models for purposes of the aims set in the study.

This may well function as a reminder of Miller's theoretical, primarily macro-economic propositions which saw equilibrium as the resultant of perfect capital markets. As Solomon [1963] already cautioned, theory and precise models may lead to an illusion of a degree of precision and completeness that simply does not exist in the real world of business (p. 273).

4.3 Leverage for R&D

The importance of possible influences of leverage on a firm's merger or acquisition activities as may affect levels of R&D in relation to the

debt ratio has been mentioned at the beginning of this review (Ch. I, p. 3). The impact of leverage on R&D (referred to as R&D from leverage) is a pivotal issue which must be understood so that proper interpretations may be drawn from the results of the study.

The background question as often arises is whether a higher level of debt resulting from a merger or acquisition might result in a lower level of R&D investment. An immediate answer could be that, essentially, highly leveraged acquisitions have been suspect. The implication was that after the cost of funding, not enough would be left to spend on R&D or alternatively that R&D would become a function to be economised, at least in the short term. However, the results from this review seem to point to the contrary. For example, a major survey of 800 R&D intensive companies in the US between 1984 - 1987, representing 95% of total private sector R&D, indicated an increase in R&D parallel to intensive acquisition activities undertaken during the same period ([1984, 1985, 1986 and 1987] R&D Scoreboards). In addition and separate from this, data released by the Securities and Exchange Commission (SEC) [1985] also measured the effect of leverage on R&D. Similarly, as the SEC study revealed, increases in institutional holdings did not decrease R&D. As acquisition activities increased, total spending on R&D remained competitive, the increase being independent. Having studied the same SEC data, Jensen [1988] concluded:

> "I know of no evidence that supports the arguments that takeovers reduce R&D expenditure even though this is a prominent argument among many of those who favour restrictions on takeovers" (Ibid c. p. 27)

Furthermore, Hall B. [1987] having studied manufacturing firms in the US in this context (Survey [1976 - 1985]) states that acquired or non-

acquired firms in the same industry do not behave in a markedly different manner. In her study, acquired firms did not have higher R&D expenditure prior to acquisition while non-acquired firms did not have higher or lower R&D versus those acquired. R&D expenditure in Hall's study, similar to that of the previous studies mentioned, was measured by the percentage of R&D to revenues. The same criterion therefore is applied later when integrating the results of this study. Hall based her findings on approximately 600 acquisitions, concluding that:

> "Firms involved in mergers showed no difference in their pre -and post merger R&D performance over those not so involved" (in Jensen, 1989)

In fact Narapareddy [1987] went as far as to say that he saw a link between R&D intensity (fixed capital + working capital/R&D) and capital intensity (fixed capital + working capital/sales). Griliches [in Boskin, 1988] even suggested incorporation of R&D into some form of growth accounting (a. pp. 14-15; [1979] b. pp. 92-116) and to treat it as another type of capital (c. In Williams [1973], pp. 59-95). Others like Terleckzjy [1974] claimed to perceive (but did not prove) a stronger correlation between new R&D investments where new funds were applied, versus ongoing financing of R&D investments already in place. Put differently, new R&D investments in new technology would yield better increases than that of capital of existing R&D investment. No evidence was found. Boskin [1988] attempted to clarify a similar thought through his so called Embodiment Theory stating that:

> "It is much too expensive to embody new technology in old capital by converting it - embodiment like learning creates a positive correlation between the investment and growth rates" (pp. 76-77).

However, the literature does not appear unanimous about underlying influences that would support this perception or how R&D should be leveraged. Also timing, again, seems to be an important factor. As Schmookler already said (in "Invention and Economic Growth" [1966]), the direction R&D takes in the short run depends largely upon profit potential. On this basis, technological change in the short run mainly occurs as an unplanned process in the unrelated pursuit of many independent firms. Yet Mesthene's view (in "Technological Change" [1970]) was that technological change, also in the long run, depends largely upon the state of scientific knowledge i.e. basic R&D. Such develops haphazardly Mesthene said, that is through the accretion of many small items of knowledge from many independent sources. Thus, with the literature continuing to disagree, the incentives had to be other ones.

To Varian, it was the market for corporate control, i.e. takeovers, that serves as an incentive device for firms to perform in the shareholders' interest (Ibid. b. pp. 8 - 15). The relation between leverage and R&D would seem to play an important role in this. If working efficiently as Rybczynski said [1989], the market for corporate control itself will help to accelerate the phasing out of activities no longer viable due to lack of competitive advantage or simply bad performance. One can speak in this instance of the efficiency of leverage as affects value-maximisation. However, in the context of leverage for R&D, the question then quickly becomes whether e.g. a Japanese firm with a high debt-to-equity and high R&D is necessarily more efficient. This is difficult to answer. A comprehensive study conducted by the Organisation for Economic Co-operation and Development (OECD [1984]) documented how differences in funding and capitalisation versus R&D costs can make comparisons difficult. For example, some R&D funding occurs off-balance sheet on a project basis. Differences in accounting and balance sheet interpretation are another and complex matter. Also, as is well

known, R&D may be expended and written off against the profit and loss account or capitalised on the balance sheet. In this study, these issues are further dealt with in Chapter III. Methodology.

5 Cultural Influences on International Capital Structure

This section relates to the second and third research questions which deal with the critical issue as to whether there exist industry or country influences that would explain the differences between capital structures of multinationals and whether or not there is an indication of direction of such pattern.

Operating in different geographical areas of the world as a result of financial diversification is a serious challenge to the variations in overall debt capacity of the multinational. Amongst all variables examined in this study, the one on cultural influence carried most of the surprise element. It is fair to say that at the outset of this research, its importance may have been underestimated. The awareness of the existence of cultural influences on capital structure has brought a new dimension to the interdependence argument of economic and cultural variables. Cultural influences as experienced by multinationals result from financial diversification on the basis of geographical expansion and thus the debt capacity factor. As Lessard [1978] observed, there are world, country and industry relationships in equity returns which imply risk reduction through international diversification (pp. 32-38). Senbet [1979] further saw an equilibrium between international capital markets and multinationals (pp. 445-480). In addition, the combination of geographical financial diversification and the firm's debt capacity impacts the aforementioned time concept, i.e the timing of financing and investment decisions and thus the debt ratio relations and cash flow. Therefore, geography and debt capacity can be seen as linked to

produce well timed cash flows, in turn providing debt financing. Examples are given further below. Preempting Jensen in this respect, it were Gentry, Newbold and Whitford [1987] who stated that it was the level of speed of each cash inflow and outflow component that reflect the operating investment and financing decisions of the firm (pp. 595 - 605).

The above was a step in the right direction but the variable of cultural influence is still absent amongst the various theoretical considerations this entails. Having said this, international transactions, policies issued or decisions taken by multinationals are rarely entirely free of cultural influence. For example, in contrast to Jensen, when Tsumuri R. [1983] observed that the Japanese always place investment decisions before financing decisions there was no doubt an implication of cultural influence (pp. 43-50). This is explained in fact by Japan's late development of its stock market. Trading volumes in equity on the Tokyo stock market compared to other major stock exchanges in the world remain relatively thin. The supply of debt financing on the other hand has been rather abundant compared to other financial markets. For example, Japanese firms are known to frequently use debt finance to fund sub-contractors. In this way, short to medium term accounts receivable are rolled over regularly, eventually adopting features of equity.

Ignoring these type of observations as relate to cultural influences on international capital structure, would make comparisons difficult and given the growing interdependence of global business, probably less than accurate. The situation described derives from different historical and socioeconomic evolvement across main areas of world markets.

As a method to measure leverage relationships in this sense, Broek [1973] perceived the world as homogeneous groupings of cultural

realms. These realms differentiate from other groupings based on significant differences in composition, and their integrated traits. Of those studies on capital structure surveyed, only Collins and Sekely (in their 1983 exercise) attempted to explain the reasons behind the country effect of culture on leverage (pp. 45 -51), [Publication 1988] (b. p. 88). The study by Collins and Sekely [1983] seems to be important and is therefore worth an explanation in the sense of what variables were used and in what way. This explanation is set out in the remainder of this chapter and further into the next chapter on methodology. The premise of these authors has been that any movement towards optimal capital structure reduces the cost of capital and increases the value of the firms. However, they found the topic becoming more complex when moving from consideration of domestic to multinational firms, concluding that capital structure differs internationally.

Earlier studies as are detailed further in this survey (Section 5.1. The Cultural Determinant) found differences of country and industry in capital structure to be significant, e.g. Stonehill and Stitzel [1969], albeit not in all cases, e.g. the studies of Remmers et al [1974], pp. 23 - 32, Toy et al [1974], pp. 875 - 886, Errunza [1979], pp. 72 - 77, Aggarwal [1981], pp. 75 - 88. Here the significance was not in every case examined. Others found no significant difference by industry or country-specific economic variables but did find significance of cultural influences, as in the case of Ball and McCulloch [1982]. Collins and Sekely however, had examined several economic variables (size, tax rate, inflation) but found no significant relation to capital structure.

In the subsequent study by Collins and Sekely, referred to earlier (1983), a breakthrough was achieved when significant differences were found in capital structures of firms headquartered in different countries and less evidence for significance of industry. A total of 411 companies in 9 industries in 9 countries were studied. In their most comprehensive

review, Collins and Sekely [1988] presented the combined results of 677 firms in 9 industries in 23 countries. These results reflect on the capital structure and debt capacity of the firm and can be summarised as follows: (a) there appear significant differences in capital structures for firms headquartered in different countries, but less evidence is found as to the significance of industry, (b) on this basis, high debt appears more of a phenomenon in the Mediterranean countries and countries of the Indian Peninsula, and (c) medium debt seems more typical for Western companies (Ibid c. pp. 91-96).

In view of what has been said in the foregoing paragraphs, it need scarcely be emphasised that any debt ratios in the sense of total leverage must be related to cultural influence which comes with geographical diversification. Collins and Sekely found that disciplines (other than size, tax rate or inflation) such as cultural factors had to be considered. They asserted that minimising cultural differences, as financial theory tends to do, might be a serious mistake. To make their point they quoted Ball and McCulloch who had said that:

> "The study of foreign cultures is of primary importance to those in international business because cultural differences exert a pervasive influence on all business functions" (p. 88)

The views as have emerged through the entirety of this literature review are no different. In the empirical study, as in that of Collins and Sekely, there remain three areas of topical interest that are critical in the definition of cultural influences on international capital structure. These are:

5.1. The cultural determinant
5.2. Significance of industry and country influences

5.3. Significance of country group influences

The theory as exists on each if these areas is reviewed in the subsections following before entering the actual analysis stage.

5.1 The Cultural Determinant

The cultural determinant can be defined as the sum of the cultural elements that play an important role in the totality of cultural influences. These cultural influences affect international capital structure. Cultural aspects of debt do influence capital structure in a given geographical area. Importantly, the material culture that is most closely related to capital structure tendencies of a given market includes different fiscal and legal aspects that give rise to differences in property rights. Immediately, one is reminded that the debt-to-equity position under total leverage is the preferable type of debt ratio to be used. In the main, most countries tend to be balance sheet oriented. A total leverage approach in the debt-to-equity calculation is responsive to this. Different capital market phenomena, each tend to have their own historical and socio-economic explanation. As indicated earlier, Collins and Sekely felt that specific areas most likely to influence capital structure included:

> "different legal and tax systems which then give rise to property rights across cultures" (d p. 89)

Having said this, as these authors acknowledged, if this cultural influence exists it should be reflected in the similarities of organisations situated in countries having similar cultural backgrounds.

Given the previous studies that indicated cultural factors to be

important determinants of capital structure, this study attempts to establish if some underlying relationship among country groupings, matching world markets, can be shown to influence capital structure and help explain capital structure differences. Earlier work for example, in this respect supports the contention that firms headquartered in the same country have more similar capital structures than those firms headquartered across countries (Collins and Sekely 1983), and that firms within an industry have more similar capital structure than firms across industries (Scott 1973).

In this study, the same variables are used as in that performed by Collins and Sekely, i.e. those of the debt structure of firms studied on the significance of industry and country effects in determining capital structure, and the basis of country differences. However, whereas those authors used secondary data, (resorting to Moodey's, commented upon in Ch. III, Methodology) this is an empirical study using only primary data.

Interestingly, Kogut and Singh [1988] having studied the effect of national culture on the choice of entry mode when doing business internationally, also focus on the cultural distance between countries (p. 411, p. 414). However their study was of a more contextual value. The cultural distance by countries in practice is perhaps best measured directly at the level of the firm where its impact is most immediate. This is reflected in the capital structure. As Harvey-Jones observed:

> "The levels of borrowing and gearing which are acceptable to institutions have always varied enormously between countries" (Ibid b. p. 50)

Harvey-Jones further concludes that history, national preference, vested interests and political factors all tend to hold back our ability to

take advantage of the opportunities that modern technology and communications have created for a single, efficient market. Given what has been said so far, it should need little further elaboration that the debt ratio in the sense of total leverage must be related to cultural influence which comes with geographical diversification. Rutterford [1988] stressed this importance of cultural interpretation by geographical area. As pointed out by Rutterford, a high tax-to-debt ratio in a given country for example is not necessarily related to a high aggregate leverage ratio (pp. 194-206). Thus, there had to be more to total leverage than the tax incentive. Hofstede [1989] observed that management culture in the geographical areas concerned could range from a relatively low level of risk aversion e.g. Anglo-American countries, to those countries that are medium to strong uncertainty/avoidance oriented e.g. countries of the South East Asia realm.

Given the above, some cultural rather than purely fiscal interpretation of the resulting capital structure may be required. Therefore it was felt that an examination of the variables of debt structure, industry and country effects was necessary. Cultural differences could then be correlated. The so-called Kruskal-Wallis Methodology shows how this measurement was built up (Ch. III. Methodology).

5.2 Significance of Industry and Country Influences

The literature still indicates differing views on the significance of industry and country influences in the determination of capital structure. In a first examination of this kind no significant industry effect was found for firms of the same industry but who have their head office in different countries (Stonehill and Stitzel 1969, a. pp. 91 - 96). These authors, having examined economic variables such as size, tax rate, inflation, by country, found no significant relation to capital

structure (Ibid. b. pp 618 - 619). Next, Scott's study (1973) contended that firms within an industry are more similar than those across industries. Later, other studies, as previously noted, showed industry as well as country effects to be significant but as in the case of Scott, none of these explained the reason behind the country effect (Remmers et al, Toy et al, Errunza, Aggarwal). Having said this, whilst the concept of firm-specificness is not free of ambiguity, that of industry lacks precision.

Therefore, the question here is probably more whether it is still sensible to classify firms that produce quite diverse products which are distributed on a multinational or global basis and to then refer to these as industry? The word industry just may be too imprecise. Not everyone will agree with this view. For example, Bowen, Daley and Hubert [1982] claimed to have evidence on the existence and determinance of inter-industry difference in leverage (pp. 10-20). Thus, some importance was attached to the use of industry comparisons. To resolve the industry issue, rather than replacing industry classifications with cash flows, as some may have viewed it, an argument can be made to do so within the proposed total leverage approach. As this study will show, this approach afterall provides more commonality for balance sheet comparisons of multinationals, taking into account the cultural influences on capital structure.

As to specific country influences, in the latest Collins and Sekely study, significant differences were found in the capital structures for firms headquartered in different countries. Whilst the researchers suggest cultural difference as the factor influencing the capital decision, it was only after the most recent study that the cultural factor could be demonstrated as an important determinant of capital structure. No attempt had been made in their earlier study to measure the cultural influence. Stonehill and Stitzel earlier did suggest significance of cultural influences but in fact did not measure or explain this

phenomenon either. The contention following the last Collins and Sekely study is that firms headquartered in the same country have more similar capital structures than those headquartered across countries.

Established financial theory as aforementioned, still minimises the significance of cultural differences. The M&M propositions and invariances as seen exclude the international variable altogether. This is a serious shortcoming given that cultural differences can have influence on policy decision. The author of this thesis, as did Collins and Sekely in their paper, accepts that a capital structure results from firm-specific policy decisions. There is also agreement on the view that these are mostly based on management's assessment of risk relative to the benefit of applying fixed-cost debt financing. The firm-specific decisions taken by management utilising this basis naturally make for different capital structures for firms in the same country or industry. Yet such differences are bound to be less than the differences that exist across all countries or all industries. Therefore, cultural influences on international capital structure do appear critical.

5.3 Significance of Country Group Influences

To date, none of the studies conducted has evidenced significances of relationship between economic variables and the international differences that exist in capital structure. Given this and based on the more recent conclusions of Collins and Sekely that the cultural factor is an important determinant of capital structure within a country, this research further examined whether some underlying relationship among countries could be established. Such a pattern of country groupings or cultural realms influencing capital structure, goes beyond that of simple economic variables. Capital structure differences on this basis lead to the necessity of having to explain what is meant by the

relation between debt and culture.

Interesting patterns for management can be derived from this so as to identify the use of debt based on firm-specific debt ratios by major regions of world markets. The results in turn can be linked to the application of leverage to corresponding regional markets for products, goods or services. In this way the firm's financial resources are optimised. However, what is important is to keep in mind that debt relationships are of a longer cyclical nature than generally perceived. For example, the use of debt by companies in the US (Survey Taggart [1986]) whilst reaching 45% of fund sources in 1984 on the whole has been declining since 1974. As Taggart explained [Ibid 1986], when the data were adjusted for inflation (in 1984), debt proportions did not appear unusually high by historical standards. However, the levels of the debt ratios may well vary considerably from country to country and between or within country groupings, given the cultural influences on international capital structure. Therefore, the assumption being made at this stage is that knowledge and understanding of debt patterns can be critical to effective financial planning for multinationals.

The variability of firm-specific debt ratios by cultural realm (not their aggregate cycles of debt relationships which as said are slow) then become the subject for further examination. However, this requires capital structure patterns, where consistent, to be analysed for industry, country or country group effect. This exercise links the theory and the above assumption to the empirical analysis.

6. Summary

This survey fits the central theme of leverage and optimal capital structure for multinationals. It answers to the question 'what is leverage?', defining what constitutes total leverage in this context. It brings together from an incoherent universe the various economic variables as may determine and stimulate leverage, as well as the determinant of cultural influences on international capital structure. It then categorises and explains the interrelationship of these variables and answers the question what leverage means in terms of international capital structure. In doing so it helps close the gap between existing theory and the real world of multinational companies.

This structured review suggests that the optimal capital structure should be one where its debt-to-equity relation is based on total leverage and one where debt patterns of cultural realms have been considered in financial planning and the provision of capital. The study explains the concept of total leverage and directly related to this, the importance of equity and cultural realms. It then explains why a debt-to-equity position under total leverage is preferable to one based on financial leverage only. This allows for the multinational firm to apply leverage fully and to arrange its capital structure most optimally in line with which geographical area of the world it wishes to operate in at any given point in time. However, the existing literature on the subject remains discordant and flawed with defects. The level of detail provided on selected important studies shows this gap. The defects can be summarised as follows:

(a) Financial theory, even in its most recent modified form suggests the absence of an optimal capital structure under total leverage. Financial leverage is too narrow a concept.

(b) Extensions to the theory are inadequate in that they fail to allow for other considerations such as the cultural influences on international capital structure.

The survey confirms these gaps in the existing literature. This study indicates the need for a total leverage approach as opposed to that restricted to financial leverage. This takes into account the multinational's total equity and the cultural influences on international capital structure which need to be measured. The chapters following concentrate on this specific matter.

CHAPTER III

METHODOLOGY

1. Introduction

This chapter is mainly concerned with the data, the role of the questionnaires and how the data bank was acquired. It demonstrates in this manner how the study differs from that of Collins and Sekely referred to in the previous chapter, even though the same methodology is being applied. In the opinion of this study, the sole use of secondary data by Collins and Sekely [1988] (a. p. 90) as a basis from which to extrapolate meaningful, remains debatable; the nuances and complexities of the real world of multinationals necessitates the use of primary data. For this reason, this study initiated the use of such data.

The objective of this study as reviewed in the literature review, is to assess the relation between the debt ratio of multinationals and their industry or country association. The basis on which the capital structure is being examined is that of the debt-to-equity relationship under conditions of total leverage, as explained before. What is new is the development and use of a primary database. The study investigates the extent to which disclosure requirements of the London Stock Exchange as related to annual reports are complied with or exceeded. This includes voluntary disclosures made by foreign firms. The conception and development of this database was a formidable task as discussed later in this chapter. The more significant requirement relating to foreign company's annual reports has been the compliance sought with professional accounting standards i.e. (a) Statements of Standard Accounting Practice (SSAPs) issued by the UK professional accounting bodies and (b) the equivalent standard as conforms to the

practice in the United States i.e. as issued by the United States Securities and Exchange Commission (SEC) and the Financial Accounting Standards Board (FASB).

Whilst only a certain proportion of the sample population in this study must comply with US requirements, it is believed that the strong disclosure system of the US can exert reporting pressure on (a) multinational firms whose securities are internationally traded even though there is no direct requirement to comply, and (b) privately held firms who either seek international status or funding. Also Choi [1973] found competitive market pressures and pressures to raise capital were ensuring continuation of the trends towards extensions in disclosure.

Compilation of the database required extensive use of questionnaires, samples of which are provided in the General Appendix. As indicated in the literature review, it was felt that the use of secondary data was inadequate. This explains why an empirical study was necessary. As is further commented upon, this constitutes a major difference between this study and that of Collins and Sekely.

The resulting database allows for a more thorough treatment of leverage in all its aspects at a level of much greater detail, providing for a deeper analysis and interpretation. It positions the relation between these variables and their relative ranking so as to establish discernible patterns from which such interpretations can be derived.

The proposed examination of debt ratios to analyse industry/country relationships (which Collins referred to as industry/country cells) for consistency will shed further light on the issue. The examination is to test in this respect (a) the industry rankings among countries and (b) the country rankings among industries. Where such patterns of consistency can be identified in capital structure by industries,

countries, or furthermore, country groupings, these may then provide clues for further analysis of cultural influences on international capital structure.

This chapter prepares the data for such examination. It is broken down into six specific sections:

(a) Hypothesis and Test Format
(b) Construction of the Data Bank
(c) Statistics on Capital Structure
(d) Statistics on R&D, Growth
(e) Classification of Cultural Realms
(f) Sources of Information

These sections describe the research procedure, problems encountered and solutions. The chapter fully substantiates the difficulty encountered in setting up the database. For example, it must be kept in mind, again, that not all firms in the sample are publicly held and that some are located in developing countries. Therefore, in addition to the standard questionnaires, specially structured questionnaires had to be used on a consistent basis, individually completed by firm. Even so, due to observed inaccuracies and proneness to cultural misinterpretation, these needed further verification.

The following procedure was used to establish the necessary data on any of the sample multinationals. (For the purposes of this study, the definition of a multinational is given in Chapter I, Section 3).

Firstly, information was initially derived from published accounts where available. However, this often proved either incomplete and/or unsatisfactory. Therefore, structured questionnaires as aforementioned were designed and completed. Additional information and/or

clarification was obtained by way of supplementary interviews with key staff and scrutiny of company reports. Much of the background knowledge of the companies being researched was obtained in this manner. The procedure followed is detailed in Section 3, Construction of the Data Bank and Section 7, Sources of Information. Any other general source where useful was accessed for additional information, e.g. the Financial Times, the Economist, Forbes, and Standard & Poor's Register of Corporations (including geographically Standard & Poor's indexed companies in countries other than the United States).

The procedure outlined above permitted the construction of a unique databank. This is explained in detail in section 3 of this chapter - Construction of the Databank. Considerable attention was given to the qualification of the data; all of the primary data have been subject to accounting verification. This is important as it is these data that are utilised in the formal non-parametric method of analysis specified in this study (Chapter IV). Hence, the study is unique from previous studies. Using Moodey's as a single source of secondary data (as was the case in the most recent comparative study by Collins and Sekely [1988]), would not have been considered sufficiently reliable. Thus, in this study, only empirical data were used. These were verified against the following standard:

> (a) Standards for treasury management of company exposure that may lead to inflation and exchange rate adjustments under specific accounting rules.
> (b) Standards of uniformity, balance sheet preparation and roles of convertibles and warrants that may lead to further accounting adjustments or as set the way for a better interpretation of the data.

It is felt that the strict use of carefully examined empirical data

constitutes additional value and a contribution beyond the otherwise exemplary research by Collins and Sekely. This difference of database will be a a major recurring factor throughout the examination.

2. Hypothesis and Test Format

2.1 Standards

Further to the above, it was necessary to establish standards of comparison and means of measuring to try to examine how capital structures are being arrived at and on what basis. Here generally accepted accounting principles (under GAAP) were adhered to. How defined these standards and measurements in fact are, is also a matter of practical importance. If only because of lack of study, shareholders and management tend to constantly pass judgment although commonly quite ill-founded. Whilst there will always remain a need to distinguish between actual and optimal capital structures, this is largely a matter of performance interpretation as to how management has deployed or not the capital that was or could have been made available.

Having said this, it was felt that using the US equivalent if SSAPs under GAAP was probably the most stringent standard. This is set by the FASB, the main accounting standard-setting body. The SEC is responsible for ensuring adequate accounting and reporting standards for those firms whose shares are publicly traded in the US. In this respect, the London Stock Exchange requirements as aforementioned are an appropriate benchmark.

However, the London Stock Exchange has no requirement for disclosures on Research and Development (R&D). Section 5.4 Ch.I defines R&D as the cost of basic research as well as product

development expended against profit. The Company Act 1985 requires UK companies to indicate R&D activities but not their expenditures and investment in R&D. In comparison, in the United States, the SEC insists on filing and disclosure of amounts expended. Yet when looked at on a worldwide basis, in practice, the issue remains complex. For example, the guidelines of the Organisation for Economic Cooperation and Development (OECD) which suggests disclosure of R&D expenses, are not compulsory. Also Gray, Campbell and Shaw [1984] found little evidence of disclosing R&D or accounting policy for R&D. Similar to the experience of these researchers, this study found R&D spending a sensitive issue. An example is given in subsection 3.2.2 Method 2: Quantitative Questionnaire, related to the Pentel company. Few companies are willing to voluntarily provide information on their R&D. Nevertheless, voluntary disclosures can be judged against the London Stock Exchange requirements as a benchmark. There is every reason for this. First, London continues to be one of the major international centres in the world. Further, the exchange's accounting and disclosure obligations are stringent. In this respect, when Meek and Gray [1988] conducted a similar survey, they found that, with the exception of the United States, none of the world's stock exchanges involved added in any substance to the disclosure requirements faced by their sample companies. This observation also applies in this study.

The above also holds true as to voluntary disclosures that pertain further to the debt ratio. The obvious choice of variable on which to focus remains the debt ratio, since all theoretical determinants are formulated in terms of more or less leverage. Thus, in terms of data collection, other participative incentives such as the sharing of collective data had to be introduced. As indicated earlier, this approach is supported in the theory which suggests that in markets with rational expectations there will be managerial and owner incentives to disclose information which will enhance future benefits for the multinational

[Kelly; 1983, McKinnon; 1984, Watts and Zimmerman; 1986, Gray and Roberts;1988]. This subject is discussed further form a pragmatic point in subsection 4.4.2 Balance Sheet, which details the participative incentive mentioned above, giving various examples.

A last word about the debt ratio and R&D as concerns standards; in this study's view, the underlying capital structure relationship of, for example, debt-to-equity and R&D, should be such that no further scope for profitable change exists. At the same time it is accepted that this relationship always assumes fluctuations in the possibilities for growth and in the case of a multinational operation, within each country and between the countries or regions where geographical financial diversification takes place. Having said this, from the point of constructing the databank, this was not without difficulty. Considering the sensitivity of this type of information (in that it can benefit competitors), initially it appeared unlikely that very much would be revealed in the annual reports to be examined. Much of the answer would lay in what standard was to be applied, as is commented upon below.

Nothing has been said so far about what can be considered standard practice by multinationals pertaining to segment data. Gray, Campbell and Shaw [1984] noted the overall level of segmental reporting disclosure to be low and reporting on the firm's line of business more prevalent than geographic reporting. Cairns, Lafferty and Mantle [1984] who surveyed 250 annual reports of large worldwide companies across 33 countries found much inconsistency and variability as to how segment data were presented. Later, Gray and Robert [1988] observed that information about revenue and profits, when line of business and geography is defined by specific product or country, becomes highly sensitive to potential voluntary disclosure. However, if broadly defined by product business or country grouping, this was less the case,

management perceiving relatively high net disclosure benefits.

In this study, the expectation has been for annual reports to contain,at least broadly designated, (a) business segmentation, and (b) geographic information on revenues and profits. This requirement was applied in the original selection of companies to be contacted (Section 7, subsection 7.1 further in this text). Standard practice as concerns the Stock Exchange obliges disclosure of (a) breakdown by continent when revenues outside the UK reach 50% or more of the total and (b) geographical analysis of trading profits when area ratio of profit to revenues is substantially out of line with the norm. Requirements in the United states under regulations of the Securities and Exchange Commission (SEC) are broadly similar. At the time of the Gray, Campbell, Shaw study [1984], only 20% of the companies studied showed full segment information by line of business and/or geography, another 20% having restricted segment data. Hence a potential sample fallout of 60 to 80% was observed. In this study, five years later [1989], 60% of the initial sample was found in compliance with either broad or narrow segment data; an improvement in comparison to 1984.

An example amongst the research sample is the Coca Cola Company (Coke):

Coke (Appendix I) in its notes to the balance sheet ("Lines of Business") provides a breakdown between (a) its principal activity in the soft drinks industry, (b) other products in the Foods Business Sector (citrus, fruit drinks), and (c) corporate (investment) activities. In addition , the company provides a simple breakdown between its domestic and international business in the core area as under (a) above. Although not readily provided, calculation of these data available shows that in 1989, the sample year, 81.6% of consolidated operating revenues came from this core business. Further, geographical distribution was 28.6% domestic, 53.0% international. In terms of operating income, international proved even more important, i.e. 76.0%

versus domestic 19.6%. In addition, the analysis reveals corporate investment to reduce net income by (13.5)%. The Foods Business Sector only contributed 4.4%.

Note:
The above example underlines the importance of segment information. However, not all information may be as useful; e.g. Coke further provides data by geographic region (Appendix I "Operations in Geographic Areas") but these do not follow established cultural realms (e.g. Coke's "Pacific and Canada" area has no value in this sense). These cultural realms are discussed in subsection 2.4.2.

2.2 Criteria

The above criteria, springing from analysis, helped in formulating the right questions: for example, does geographical diversification as a form of financial diversification appear a more likely option than domestic multi-product diversification? Neither of these variations necessarily implies a more efficient approach. Geographical diversification may depend on how debt-to-equity ratios vary by geographical region in terms of financing needs, and how this corresponds with demand in regional world markets for goods or services. In the event, would a high debt growth strategy then be the way for expansion? These questions can be responded to as a result of this research. A more detailed question as surveyed (Ch. II) was what would happen in the case of business combinations, a take-over or acquisition; will there be a reduction in R&D expenditure, or an increase? Do levels of R&D spending at the company usually deteriorate after it has been taken over, and the debt increase, or does this concern not apply? In short, what is the impact of capital structure infusions on R&D? These research questions reinforced earlier observations made during the literature survey. Yet, not all of these questions as relates to the use of cross section data can be answered fully, even with the given database. Having said this, useful qualitative interpretations can be derived.

In any event, the above kind of criteria and questions were mainly concerned with preparing the data for examination. In addition, as indicated earlier, the resulting data bank had to be of sufficient depth to respond to further and critical questions arising from this. For example, is it possible to compare the capital performances of firms, the same firms in their respective industries, in different countries, with any degree of statistical validity and accuracy? Is it possible to establish by use of traditional criteria the appositeness of the questions which seem right in theory, to get a sense of proportion about such things? For example, about the influences of culture between geographical regions and the impact of this on the debt ratios of multinational corporations headquartered in any of such regions? These were the more complex questions. This research will start answering these questions in this and the following chapter. The criteria encompass determining what sort of companies needed to be contacted. This is further commented upon in Section 7 of this chapter.

2.3 Hypothesis Test

The foregoing explains why the hypothesis test for differences in debt ratios as impact the capital structure of multinationals can be seen as fourfold. The test reflects this. It examines four corresponding ratios as follows:

Debt Ratios:

1 Between industries among the test countries
2 Between the countries themselves
3 Between country groups or cultural realms
4 Within cultural realms

The format adapted for the testing itself, as indicated earlier, consists of

a cross-section of empirical data. This is further explained in the next section.

2.4 Cross-sectional Data

2.4.1 Cross-section versus Time Series

The decision to use a cross-section of data rather than time series was crucial and one would expect to be asked to defend this choice. Aside from the difficulty of obtaining data in the real world of multinationals, there are a number of reasons why this study uses a cross-section of empirical data. To start with, the story told by the debt-to-equity figures is born out of the balance sheet which was specifically selected as a measure of findings at a given point in time.

Upon further examination, this remained the case. Also, there would have been little point in using, for example, a combination of both time and cross section series (technically pooling). This was one of the alternatives considered at one point. However, as this research indicates, structural changes in the constitution of a multinational's core business often have become too variable to be measured over a period of time for meaningful interpretations to be derived. Nor is it any longer that unusual for multinationals to effectively change the nature of their mainstream business within a relatively short period of time. These changes often result from major strategic restructuring and subsequent market repositioning, involving wholesale divestments. This may entail for example, the disposal of an entire division or alternatively multiple acquisitions in order to form a completely new product business group. Company samples in the study that can be referred to in this way, include Guinness plc (from "diversified food and drinks group" back to predominantly a brewer and distiller), and

Mitsubishi Corporation (from heavy steel, manufacturing and construction, to electronics, banking). Whilst Guinness returned to its origins, Mitsubishi's business transformed away from it. Whilst the financial structure needed to carry out the change could be measured, the business directly related to it would no longer be comparable.

Further reference is made to this issue in Section 4.2, Historical Costs; subsection 4.2.1, Book versus Market Values. This section explains why intrinsic value at the level of the firm at a point in time based on a cross-section of data, is preferable over that of market values based on time series. That this is the case is in part due to the judgmental bias of the market itself and the need for comparable data (both from quoted and privately held firms). Other than the inherent variability of a multinational's core business activities, the spread, size and differences in geography and culture as evidenced in this study, provide sufficient information to substantiate why, for example, a ten year time series would not have been appropriate. No prior empirical studies exist on this basis.

2.4.2 Cultural Realms

The country groups mentioned in the literature to which the data were applied are based on countries identified as having similar cultural attributes. This may help explain differences in international capital structure between different multinationals headquartered in different regions of the world. Following the Broek Model [1973; 1976] mentioned in the literature, groups of countries were classified by cultural realm. For this particular study, six cultural realms were identified using the Broek Model for the 29 countries used.

The countries grouped in each realm are:

ANGLO-AMERICAN: USA, UK
MEDITERRANEAN EUROPE: Italy, Cyprus, Turkey, Greece, Spain
INDIAN PENINSULAR: India, Pakistan, Sri Lanka, Mauritius
ASIA PACIFIC: Taiwan, Malaysia, Indonesia,Japan, Korea
MIDDLE EAST: Dubai, Oman, Syria, Saudi Arabia, Kuwait, Libya, Lebanon, Jordan, Egypt, Iran
AFRICA: Nigeria, Kenya, Ghana

Section 6 on classifications explains in further detail how these realms were arrived at, enabling this study to construct a suitable data bank. This section also explains how the realms and countries were weighted. Section 7 then discusses the initial sample size and why the firms in the sample were chosen.

3. Construction of the Data Bank

The development of a reliable data bank was not without difficulty, mainly due to unreliable data from certain multinationals headquartered in the third world. Independent checks needed to be carried out to verify their accuracy so that those data not acceptable in relation to the criteria as set could then be deleted. This has been both time consuming and cumbersome. Some of the problems encountered have already been quoted in previous sections. Others are quoted further in the text (Subsection 4.4 Accounting Adjustments). With data not readily available from respondents, and data banks on privately held firms in some regions of the world virtually non-existent, a data bank had to be created. The financial statements from Western companies in each instance could be obtained directly as well as with the help of brokerage houses and international security dealers based in

London, such as Merrill Lynch and Paine Webber. These company publications in general needed relatively less adjustment. However, financial statements of third world companies on the contrary were less straightforward. These often required a time consuming process of development with the respondent in order to bring the data required in line with standards. Section 7. Sources of Information, sets out all sources accessed in this study.

In all of the cases, the study has engaged the assistance of either the Company's management and/or intermediaries such as stock brokers, private owner-families and their representatives in the UK, members of their family and their advisers. Much help was also received from a wide network of national government agencies and international organisations, e.g. the US Manufacturers Association, Washington DC, The High Commission of Pakistan in London, The World Bank representative office in London, the OECD, Paris, and The Atlantic and Pacific Exchange, Rotterdam, and the Tinbergen Institute (Netherlands Research Institute and Graduate School for General and Business Economics), Rotterdam.

3.1 Procedure

This has been an important section. A conscious attempt was made to clearly enunciate any strengths or weaknesses of the data base in the main body of the thesis. The procedure followed in the construction of the data bank is specified below:

(a) initial use was made of financial statements. Respondent firms were classified by their respective cultural realms, initially by headquarters location. The procedure has been to extract data from balance sheets and then to ask for confirmation from the

firms.

(b) The above had to be followed up with a questionnaire which sought elaboration/additional information on a quantitative basis. The response received gave rise to amendments of the original data and sample size. As is referred to, a number of firms had to be removed from the sample as a consequence.

(c) This was then followed through with a further questionnaire for additional quantitative and qualitative information. This chapter's summary highlights a number of case samples before and after adjustment.

Note:
The General Appendix shows the debt-to-equity data by individual firm of the sample population.

The next section states explicitly the relationship between the above three methods used, what additional information was obtained by the two questionnaires and why it was necessary to do this.

3.2 Role of the Questionnaires

The pivotal role of the questionnaires in this study cannot be over emphasised. In this light, the aforementioned procedure can be captured as follows;

(a) Method 1: financial statements
(b) Method 2: quantitative questionnaire
(c) Method 3: qualitative questionnaire

The next figure provides an overview of the procedure applied and

type of data used, detail of which is the main subject in this section.

Fig. 1 Procedural Review of the Research

Response Data	Type of Data Used	H. Test Applied
Questionnaires:		
1989 Quarter 1, Quantitative (Feb.)	Primary	Non-parametric
1990 Quarter 2, Qualitative (Aug.)	Primary	
1991 Returns and confirmations (June)	Primary	
Normative observations based on common pattern of norm	Secondary	

The first questionnaire was sent in February 1989. For purposes of consistency the data pertain to the 1989 operating period, December ending. Alternatively, the period 1989-90 was used in case the multinational's fiscal year did not correspond with the calender year. For example, the consolidated balance sheet of Lucas Industries plc ends at 31 July). Following verification, a transmission letter was dispatched June 1991, asking companies to confirm the debt ratio, R&D and growth percentages, based on standard calculations (as defined in Section 4. Statistics on Capital Structure). Where confirmation was incomplete, further adjustments had to be made. An example of this is

the case of Allied Ghee Industries Ltd, a diversified trading group and large producer of vegetable oils, headquartered in Pakistan. The dialogue with the Assistant to the Chairman, Mr Adnan Jalil, to obtain further information as to the calculation of the debt-to-equity ratio, was interrupted on several occasions due to socio-economic events in the country. The political risk at the time (1989-90) as perceived by the management and shareholders was directly related to possible changes in the value of the debt ratio and other variables that arose because of the circumstance but which were difficult to ascertain, causing delays during the research process. The dialogue as a result effectively took nearly two years. Similar examples can be quoted, indicating the complexity in obtaining primary data.

The methodology followed during the procedure is set out below:

3.2.1 Method 1: Financial Statements

This first method allowed for the pro-forma calculation of debt-to-equity under total leverage, R&D and growth statistics but this was not immediately possible in all of the cases. Many of the respondent firms researched were headquartered in the Middle East and Asia Pacific regions where as indicated earlier, public information can be scarce. This fact was further complicated in that a substantial number of firms in these regions were privately held. The General Appendix exhibits the necessary primary data collection tables. The master sheet and support schedule (Tables 8, 9) set out the information required by company, country where headquartered, and the individual company debt ratios.

3.2.2. Method 2: Quantitative Questionnaire

The second method invited the company to take part in the extended

research portion of the study by sharing quantitative information on capital structure and further data that could determine or stimulate economic variables of leverage such as R&D and growth. Each participating company was regarded as a stakeholder and received written assurances on data confidentiality. Following this principle, the participants are entitled to share in the general findings, reflecting the relative position of their particular company. Nevertheless, obtaining data was not without difficulty. For example, Pentel Co. of Japan proved rather reluctant to provide written communication except through a Japanese intermediary. Being sensitive about its debt, growth and R&D data (it produces unique technology based writing instruments), the company did not permit any printed material to be released. Under the circumstance, the study had to rely much on Ms. Akiko Matsudo, a Japanese citizen in London who had the relevant rapport with Pentel in Japan (Table 8). Similar to the case of Pentel, all questionnaires used during the survey contain a confidentiality clause.

3.2.3. Method 3: Qualitative Questionnaire

The third method sought clarification on the country of nationality, corporate structure/business activity, and cultural realm of the multinational. A further purpose of this extension was to obtain additional information on patterns of financial expenditures on R&D prior to and after mergers and acquisitions. Information on discretionary investments in R&D was obtained in this manner. This second, predominantly qualitative questionnaire was sent during August 1990 in light of the extension sought to the main financial test. The R&D emphasis here was on the profit and loss statement rather than the balance sheet. Contrary to expectation, this examination proved equally testing, if nothing else because many companies maintain different strategic and financial policies about their R&D costs and expenditures, subject to many interpretations. The definition of

R&D given in Chapter I Section 6.4 was maintained as a standard. For reasons of consistency certain companies which insisted on R&D being capitalised instead of expended were deleted from the sample. The writing off of R&D expenditure is seen as the more conservative policy. Part of the strength in the role of these questionnaires and methodological approach has been that it brings together a body of data that does not exist anywhere else. The result is an amalgamation and analysis of this data set. It has been allowed, courtesy of DEC, to disclose in this thesis, as an example, the completed questionnaires and transmittal letter confirming DEC's debt ratio. To balance this North American multinational with an example of a large international group from the Middle East, the study has been allowed, courtesy of Al Gosaibi, to make reference to selective data as relate to the final questionnaire as completed. Copies of the DEC and Al Gosaibi documents as referred to, are provided in the Appendix.

3.3 Statistical Values

In order to provide statistical values from which meaningful interpretations could be derived, predominant use has been made of the primary data. Particular attention was given to safeguard these data from influence of bias, continuously seeking non-bias. In terms of data interpretation this was not immaterial. For example, a conscious effort was made to keep the questionnaire simple and clear in language. To overcome impersonality, as mentioned earlier, foreign firms when necessary were interviewed with the help of intermediaries of their own country (Table 10). In this manner, the value of the data was strengthened.

Further, non-sampling errors to do with misinterpretation of questions posed to respondents, or possibly coding, were reduced. For example,

face-to-face interviews and long distance telephone follow-ups were conducted to ensure that the data used for calculation were checked. The relative debt position of each company under conditions of total leverage could then be analysed.

The data subsequently drawn upon therefore are standardised in line with the criteria set. This was found to be necessary, not only to control the actual research effort but also to ensure integrity in the research. The results provide a common basis of understanding of what is being studied.

4. Statistics on Capital Structure

This research had to start by specifying precisely what data would be used in an ideal world and then specify the restraints imposed because of the absence of a desired data bank. Section 3 describes the constitution of the databank, what procedure was used, the role of the questionnaires in this context, the underlying method used and the statistical values obtained.

As to statistics on capital structure, in an ideal world one might have preferred to use accurate market values if available. Instead, one has had to learn how to use balance sheet data valued at historical costs, simply because of the absence of other data in the different geographical areas in which the study was conducted. This remains the case, particularly in the third world as is commented on in more detail. As the result of the examination will evidence, the use of balance sheet data at historical cost does not detract significantly from the value of the study.

Another issue has been how to define and justify the main criterion for

an examination of capital structure amongst the multinationals that constitute the sample. The terms by which the capital structure performance of multinationals is generally assessed tend to be those conceived in terms of volumes of investment and debt financing reflected in varying levels of debt ratios and rate of geographical expansion, the latter being a function of international as well as home-based factors. Therefore, quantitative statistics on debt ratios were the main criterion dealt with, and then briefly, for purposes of further qualitative interpretation, other criteria such as growth and R&D. The statistics on total leverage in part reflect the potential of the sample multinationals for subsequent value-maximisation at the level of the firm. This basis was used for measurement of the debt-to-equity to determine an optimal capital structure, taking into account cultural influences as may affect such structures in an international environment.

4.1 Measurement of Debt-to-Equity

4.1.1 Basis of Measurement

In order to further help remove the effects of aggregate debt ratios due to distorted accounting principles and practices internationally, the study uses total leverage as the basis of measurement. This is reflected in the formulation as to how debt-to-equity should be calculated as has been specified during the literature survey. Total leverage secondly is applied to reflect the legal concerns over ownership of wealth.The literature explains the link to cultural influences on capital structure. All of the 87 firms in the study's sample were measured on this basis.

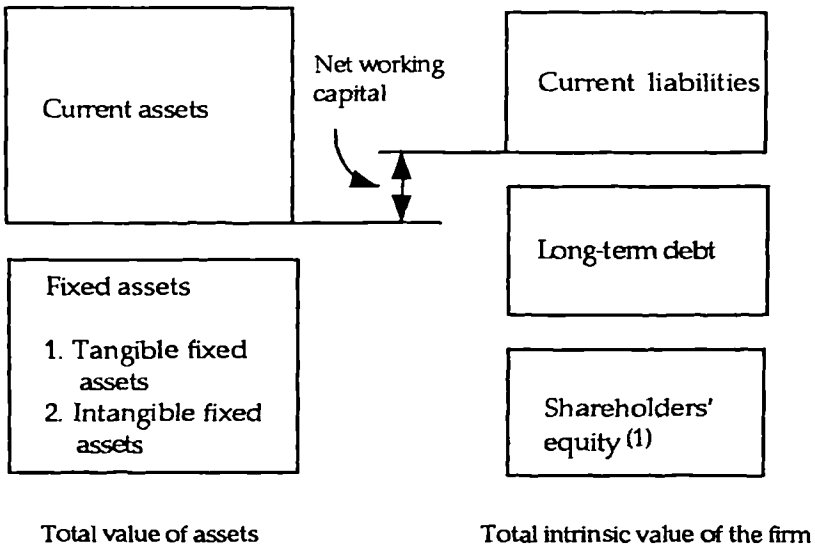
4.1.2 Formulation of Measurement

The most optimal formula, i.e. debt-to-equity (as total leverage) can be linked to the earlier definition of total leverage in the literature. Thus, in defining the treatment of the various items from the balance sheet, total liabilities were measured as total assets - shareholders' equity. As a basic definition, the balance sheet model following (fig. 2) shows how shareholders' equity is the difference between the total value of assets (current and fixed) and the total value of liabilities (current and long-term).

A word needs to be said about the special use of hybrids. The use of hybrid securities was verified in terms of maturity and cost and treated as posted. Thus, options have been ignored unless due to be exercised. Similarly, any derivatives held have been ignored. Hybrids are further commented upon in Section 4.4.3 Role of Convertibles and Warrants, highlighting a number of examples from the sample. Useful interpretations could be deducted from these convertibles and warrants in their form of hybrids. This too is commented upon in Section 4.4.3.

The foundation underlaying the measurement of the debt-to-equity as said, is the balance sheet. The balance sheet model used during the research was as follows:

Fig 2 Balance Sheet Model



Source: Ross, Westerfield and Jordan, 1991, p. 6.
(1) Note: Calculated as Total Shareholders' Equity; see Section 1.4.1

The study's view of the intrinsic value of the firm, using book values, in this respect again is not different from that if it had used market values. The balance sheet principle remains the same. This is further explained in the next subsection 4.2. Historical costs (4.2.1 Book versus Market Values). The intrinsic value of the firm represents the distribution of value amongst the creditors, bondholders and shareholders.

As this model reflects, if the company were to sell all of its assets and use the proceeds to pay off its debt obligations, any residual value remaining would belong to the shareholders. The net working capital position is the difference between the company's current assets and current liabilities. It becomes negative where current liabilities exceed current assets. This is further commented on in chapter IV.

The alternative debt-to-equity formula based on capitalisation, as indicated in the same literature, would have been more useful in the assessment of long term-debt by financial analysts. They might have argued that short-term debt, e.g. accounts payable, is more a reflection on trading practice than the management of debt capacity. However, this study is concerned with a company's debt capacity where multinationals are concerned. This cannot be entirely divorced from trading practices.

4.2 Historical Costs

This section discusses historical costs as relates to the quoted as well as unquoted companies in the sample. In other words, some judgement at the firm-level was used in defining the cost basis of the sample questionnaires. Supplementary interviews were used to verify historical cost data as obtained from, for example, privately held Middle East based multinationals.

4.2.1 Book versus Market Values

Given the need for international comparisons it is critical that the values are the same so that meaningful comparisons can be made. This was achieved. This section explains why book values instead of market values were preferable. The need for comparable data has been the main issue in this. It should be pointed out however, that:

(a) The historical costs were generally already adjusted in the financial statements of respondents. Yet, with different accounting procedures followed by various firms, some adjustment to a common standard had to be carried out. Specific examples are being given in many of the following sections

which specifically treat this issue. It is therefore more accurate to speak of adjusted historical costs, accounting values or better still book values, adjusted where appropriate as current values. This goes some way towards eliminating the problem of comparisons although the problem is not totally solved. This is where some of the difficulties arose in constructing the data bank and which is where the original work for this study took place.

(b) Further, in this study the issue of comparable data has in fact been resolved on the basis that all firms in the sample are measured at the level of the firm i.e. not in terms of market valuation, which would not have been possible geographically. This can easily be understood. For example, some of the countries do not have a stock exchange. Also, the reliability of valuations in the private sector even if obtainable in certain of the developing countries, remains questionable. This in turn prevents effective comparison. In this study, debt and equity values have been treated the same on a total leverage basis, using book values, adjusted where necessary, so the comparison firms are indeed comparable.

In earlier empirical work on M&M, also White [1963] used book values when he measured financial leverage (p. 1259). This is because, in addition to comparability, there exist other advantages to the use of book instead of market values. Gordon and Mailkiel [1981] explained that the advantage of writing off increased costs of borrowing against earnings is soon levelled due to the higher pretax income. This means that whilst leverage at that stage does no longer increase the value of the firm, it does increase the cash flow. This confirms previous observations in the literature survey. As Gordon and Mailkiel [1981] concluded, there is no net effect in terms of valuation due to high earnings that result from leverage (pp. 131-191). Therefore, there

appears no particular reason why the use of market valuation would tell us something about leverage that book values would not. Bhattacharya, [1988] confirmed these and similar observations, also made by Fama [1981], explaining that in any event revised market value reflects discounted value of further future prospects given informative self-selection (a. pp. 135-147). Thus, as market values remain in part subjective, book values seemed preferable after all.

For the reasons stated above, the delimitations of this study exclude any securities valuations of future and current cash flow streams or stock market assessments. For the same reasons, value as calculated naturally does not parallel stock market appreciation. There is no need for this. The study is conducted at the firm level. It is firm-specific in the corporate sense rather than stock market specific in the securities and valuation sense. As seen in the literature survey, it is mostly concerned with the debt capacity of the multinational in this respect.
Some may argue that reliable estimates of the values of debt and equity could have been sought in each individual sample case. As indicated above under point (b), in practice, this would appear highly unfeasible, geographically and technically. Moreover, if what needs to be tested is data on total leverage, who is to say that adjusted book values as described, would be less reliable than their converted equivalent at market prices taken at an identical point in time? There appears to be every reason to prefer book values on this basis given their consistency and comparative lack of judgmental bias. Also, changes in depreciation policy for example, still need to be consistent and supported in order to meet even routine auditing queries This study, as explained, uses book values because they reflect best the intrinsic values at the firm level at a given point in time. Furthermore, under Generally Accepted Accounting Principles (GAAP), there is an explicit preference for the balance sheet to be expressed at book rather than market values and to state adjustments for inflation or exchange rates separately. It can be

said that amongst all existing accounting conventions, GAAP standards (in the UK, SSAPs) tend to be universally acceptable and thus are applicable to all companies in the sample. Additional detail and defence if necessary as to why there exists this preference in this study for the use of nominal value of issued equity plus reserves (rather than stock market valuation) is set out in the General Appendix (Section 1.4 Nominal Values), [Elte, 1994, Bank Mees Pierson].

4.2.2 Quoted Companies under GAAP

The study sample represents a mix of both privately held and quoted companies. This constitutes, as explained, one of the prime reasons for the use of book values. The proportion of the two types of companies in the final sample is as follows:

	No.	%
(a) Privately held	32	37
(b) Publicly held	55	63
Total	87	100

The input data used on public companies were obtained directly from the annual statements. Given the accounting adjustments under GAAP, footnoted in these reports, assets are often booked at adjusted historical costs. For example, Hanson plc's accounts [1989] that were looked at in detail, in fact had been prepared "using the historical cost convention adjusted for revaluations of certain fixed assets". A copy of the firm's accounting policies referring to this accounting convention [Item (b) p. 52] is included in the General Appendix. However, even here, where book value may approach market value, this is not necessarily the case or not in each country. In the event, clarifying statements were necessary and were provided by Hanson. In another example, under US GAAP, revaluations would not be permitted. The "Information for US Investors" section of the English and China Clay Group plc (ECC) [1989], a copy of which is filed in the General

Appendix, indicates this material difference between UK and US versions of GAAP [Item (2), p. 39]. It shows reversed adjustments made for interpretation by US investors (p. 38) as opposed to UK stockholders.

4.2.3 Private Companies under GAAP

As said from the beginning, there are a number of important observations as to why this study has used historical cost data directly from the balance sheet rather than market values. Whilst changes in the capital market and tax systems have removed a certain bias from the structure of privately owned firms and have improved the mobility of capital or access to capital markets, there still exists a predominant culture of secrecy surrounding financial data. As indicated in previous subsections 2.1 Standards, 2.2 Criteria, the study certainly experienced considerable reluctance towards disclosure which could have rendered the examination and conclusions non viable. These observations are confirmed again and in further detail in this chapter when discussing the balance sheet (Section 3.4.2).

4.3 Exposure Adjustments

In this section, the study reviews the exposure adjustments that needed to be made to the sample. It examines the criteria used and the appropriateness of each type of such adjustment. These include adjustments for differential rates of inflation, exchange rates and consolidation and translation rules.

4.3.1 Inflation

Another aspect in the use of book values is that of inflation as a type of exposure. At the level of the firm, this kind of adjustment is to portray

a realistic and thus current value. What is important here to the firm is to preclude any possible market bias entering the data. The effects of inflation are usually expressed in exchange rate variations, at least in so far as may impact the operations of the firm. Understandably, no economist will be happy with this explanation. At the macro-economic level, inflation differentials cannot be expressed in exchange rate variations, especially in the short term. In such context, the economic theory of Purchasing Power Parity indeed has at best only very long run applications. However, at the micro-economic level of the firm, where this study is concerned, the issue of inflation and exchange rates are as much an accounting as treasury management problem. Admittedly, it is a treasury management problem first, keeping the firm tied into the realm of macro-economic theory. However, at the firm level, technically, a distinction must be made here between (a) exposure and (b) accounting adjustments. Therefore, these issues are discussed separately.

In this study, the view taken towards inflation has been that one is concerned with real returns, not nominal returns. The difference between the nominal return and rate of inflation actually experienced therefore may not necessarily lead to a decrease in sustainable earnings or any default in the expected corporate earnings rate of underlying securities. In the absence of uniform accounting standards, differential rates of inflation normally would have been expected to cause some differences. Therefore this study must to some extent share the argument of practising international managers that at the firm level, inflation is often assumed to be reflected through reasonable price adjustments and the corresponding revenue stream. As an example, the Annual Report of H.J. Heinz Company, one of the multinationals in this study's sample, states that: " the impact of inflation on both the company's financial position and results of operations has been minimal and is not expected to adversely affect next year's results"

(General Appendix, H.J. Heinz [1989]).

Finally, how multinationals in this sample were treated for inflation in terms of exchange management, translation and consolidation, so as to make comparison possible, is discussed in more detail in the next three sections. However, it must be kept in mind that the only formal reporting requirement regarding the effects of inflation and changing prices is a brief textual presentation of management's view [SEC 1982, pp. 54764-54790, Deloitte Haskins & Sells 1983]. (See also subsection 4.3.4.c Rule FASB 33, on inflation).

4.3.2 Exchange Rates

The use of exchange rates specifically needs further discussion. Here, exposure management (i.e. not speculation) has developed into a much wider and much more complex subject than that of simply cash management. The subject is highly pertinent to multinationals as obviously, the exchange rate risk is the risk to having international operations in a world where relative currency values vary. In examining the data it was important therefore to look for:

(a) Short-run exposure as relates to contractual agreements to buy and sell goods in the near future at set prices
(b) Long-run exposure in terms of substantial hedging operations, e.g. buying of currencies on forward markets on the assumption of adverse economic trends
(c) Translation exposure, i.e. the conversion into the parent company currency and treatment of gains or losses from foreign currency.

Any of these exposures could have a material impact on the debt ratios of multinationals as is discussed in the sections following.

4.3.3 Differential Rates of Inflation

An average exchange rate was used for the end of the period so as to allow for consistency in the sample. This means that in as far as the income statement is concerned, the exchange rate is the average value (mid point or bid/offer) spread for the period of the income statement (monthly rates) consolidated on the last day of the fiscal period (and adjusted versus any budgetary rate). Balance sheet items on the other hand are valued at the rate ruling at the end of the period. Naturally, in an inflationary economy in which accounts are measured under a system that presumes a constant value of the monetary unit, exchange problems and accounting problems will appear. In the event, long-run inflation may be related to currency devaluation of the country's currency but this correlation will not show in the short term. Proper interpretation of the financial statement by the foreign subsidiary management and the parent group therefore required inflation-adjusted accounts where appropriate, reflecting reasonable revaluations of historic costs. These restatements had to be insisted upon. Otherwise, net worth on the balance sheet or reported net profit on the income statement for example might possibly have been distorted as a consequence of the original asset and expense distortion. The literature takes a similar view (Eiteman and Stonehill [1973, 1989], a. p. 38, b. pp. 618 - 619, Ross et al [1991]).

4.3.4 Consolidation and Translation Rules

The consolidation of accounts and reporting thereof also required a specific exchange rate. For the same reasons as quoted above, an average exchange rate was used as standard. As set out below, this procedure, following GAAP, is also in compliance with FASB8 (Financial Accounting Standards Board Statement No. 8). This US standard, endorsed by the SEC (equivalently ED21 in the UK) has been

in use since the mid seventies to provide a basis for foreign exchange reporting (Beresford in Underwood [1979], pp. 29 - 31, Dufey [1987], pp. 95 - 270, pp. 291 - 390).The procedure followed under FASB8 and further amendments thereto (FASB20, FASB33) are discussed below.

4.3.4. a. Rule FASB8 on Exchange Reporting

Using the FASB8 criterion, recorded foreign currency amounts for consolidation had to be translated at the balance sheet date, e.g. using the current rate for claims related to cash (receivables, payables) and amounts carried at historical cost (property, inventory, goodwill) translated at historical rates. Specifically, the procedure adhered to has been as follows:

1. Monthly Income Statements
Except for depreciation expenses the profit and loss statement is translated at the average rate of exchange of the accounting period.

2. Balance Sheet
Assets of cash and inventories except fixed assets or deferred charges and prepared expenses are translated at the current rate. On the liabilities side, all debt (whether short or long run, hard or local soft currency) is translated at the current rate. Only shareholders' capital or any legally required reserves (equivalent to shareholders' invested capital) is held at historical rates.

For example, in the case of ICI plc, one of the sample multinationals, the company's long standing procedure had already been to categorise

exchange differences into those relating to:

(a) Fixed assets, investments and long-term loans on the one hand and
(b) "items of a trading nature" on the other.

This is in compliance with the procedure followed and as applied to the other samples. The second category, as indicated above, is reported with the ordinary income for the year. The first category is dealt with directly through the balance sheet reserves.

For purposes of applying FASB8, the current rate has been the rate in effect at the balance sheet date and the historical rate the rate in effect at the date the transaction or specific event occurred. As to retained earnings, the rule maintained for unrealised foreign exchange gains has been to offset these against unrealised foreign exchange losses, with any balance held in a suspense account (until realised or absorbed by future unrealised exchange losses).

4.3.4. b. Rule FASB20 on Hedging

Under FASB20 as an amendment to FASB8, hedging activities have been incorporated in the data only where intended to provide a hedge as relates to operations i.e. coverage (at cost) of normal risk-exposure, measurable on an after-tax basis. This has meant, no acceptance of data on speculative hedging for profit. Most of the companies examined, in any event, had adopted a "loss limiting posture". Forward positions were usually taken to reduce any underlying trait or financial exposure. Thus, also foreign exchange was normally regarded as a cost rather than a profit centre. As confirmed later through the financial press, in a number of cases there were grounds to suspect that the level of hedging

activity appeared either (a) disproportionate, e.g. as in the case of Ferranti International plc (misappropriation of funds) or (b) potentially excessive to the normal operations of the business, e.g. Allied-Lyons plc (unauthorised foreign exchange losses). In each of these cases, the sample was removed. Retention of these samples could have impaired consistency in the comparability of debt ratios.

The disproportionate exchange activity of Ferranti, using publicly available information, could be traced back to its large US defence subsidiary, International Systems and Controls. This has since led to the collapse of the group. In the case of Allied Lyons (since renamed Allied Domecq), the unauthorised risk position assumed by the group's treasury, which entailed excessive hedging, resulted in an interim over exposure, eventually corrected.

The advantage of the FASB8/20 criteria as applied in this study is that it provides a uniform and consistent method of consolidation and reporting notwithstanding differences caused by inflation and exchange rates. The latter is further commented upon below.

4.3.4. c. Rule FASB33 on Inflation

There has been considerable argument in the theory about inventories in that these might relate to more than one accounting period. Applying the FASB33 criterion, firms were encouraged to provide supplementary inflation-adjusted statements, allowing for a more accurately estimated level of their sustainable earnings, achieved by replacing historic cost with estimated future replacement cost when calculating profits. Such inventory valuation adjustments then represent the excess of replacement cost over the reported cost. Incidentally, also the resulting price changes come under FASB33.

Theorists have long confirmed this principle procedure (Weston and Brigham [1987], c. pp. 595 - 596, d. pp. 7 - 8, Sharpe and Gordon [1989, 1990]).

4.4 Accounting Adjustments

Quite separate from the exposure adjustments, which as seen above are necessary, the accounting adjustments refer rather to the need for a uniform approach when accounting for all business transactions, (i.e. including compliance with existing conventions, auditing standards, national laws), the balance sheet, and the role of convertibles and warrants. These are explained individually below.

4.4.1 Uniformity

In terms of comparability, the absence of uniformity in accounting standards amongst the cross-cultural environment of multinationals caused further differences. However, by and large, in terms of accounting conventions, these were not firm-specific. They concerned mostly differences to do with accounting conventions and standards of a given country rather than those of a specific multinational originating from or headquartered in that country. At the same time the compilation of financial statements that would be internationally comparable was frequently hindered by lack of uniformity in auditing standards and difficulties in obtaining full disclosure. For example, the formal reporting requirement as to changing price data itself is no longer mandatory: in 1986 the FASB concluded that the costs of reporting were not worth the benefit. In the UK, the equivalent of FASB 33 (SSAP 16) was withdrawn the same year. For example, in Britain, managers of UK multinationals were found to view the disclosure of inflation adjusted profits to be among the top items with the highest cost/lowest benefits [Gray and Roberts 1988]. Therefore, to

make comparisons possible it was found there was a need to differentiate between:

4.4.1. a. Accounting Conventions
4.4.1. b. Auditing Standards
4.4.1. c. National Laws

Each of these subsections is dealt with as follows:

4.4.1. a. Accounting Conventions

As Eiteman and Stonehill [1989] observed, accounting principles vary worldwide in at least seven specific areas; consolidation, goodwill, deferred taxes and long-term leases, discretionary reserves, inflation and adjustments, and exchange translations (pp. 618 - 619). Of these, consolidation, goodwill, inflation, exchange translations and discretionary reserves pertain directly to this study.

Balance sheets amongst the research samples generally have required some adjustment, allowing a firm's total leverage position to become more transparent. For example, in exploring Coke's leverage the case as regards goodwill is as follows:

Elimination of goodwill, $ 232 Mln. (Appendix I); retention would have made comparison with other samples difficult. This also pertains to country-to-country comparisons within and between cultural realms.

Deferred taxes and long-term leases were considered as less critical on the assumption that the debt-to-equity is cyclical over long periods of time (Ch. II, Taggart). However interpretations can easily be biased. Given that practices still vary enormously between countries and to a lesser degree multinationals themselves, any generalisation must be

accompanied by recognition that many exceptions continue to exist. As an example, methods by which asset values and depreciation expenses are determined were not always found to be well explained. For example, in certain cultural realms e.g. Middle East, Africa, notes to financial statements do not appear in the profusion to which US or UK observers have come to expect.

In resolving these differences, internationally active companies from different countries had, in the accounting sense at least, to be treated differently and this for different reasons. For example, firms from the US and Japan tended to provide inflation adjusted financial statements on a fairly consistent basis whilst British firms usually provided additional inflation adjusted statements or footnotes to their reports. This could not be said for example, for firms from the Middle East. Here, clarification had to be sought. Where this proved an unsurmountable problem, for example in one case in Israel, Tako Ltd, and one in Lebanon, Veladaile Ltd, (Table 12, Adjustments), these firms were removed from the sample. In both instances, the firms were unquoted and privately held.

4.4.1. b Auditing Standards

To ensure standards, rules FASB8/20, 33 were enforced for compliance throughout the sample. Where compliance was not observed and no reasonable adjustments/explanations were forthcoming, the observation was excluded. The Appendix incorporates a listing (Tables 10, 12, 15) briefly stating, against those excluded, the reason for their exclusion. In contrast, in four instances, compliance with standards was obtained by respondents of private companies taking appropriate action. This followed identification of and communication about, a number of deficiencies. As a result of respondent compliance, the

companies concerned were then not removed from the sample. These case examples, all privately held firms, are set out individually:

(a) Example 1: sale of assets mixed with operating profits, hindering the ability to judge true earnings potential and thus the potential debt capacity [Remalux Paints Co., Jordan].
(b) Example 2: consolidation concealed earnings of non-consolidated subsidiaries, with same effect as above. [Plastic Co. A.M. Zaghloul, Egypt].
(c) Example 3: understatement of earnings for purposes of minimisation of tax [Reserve Services Ltd, Lebanon].
(d) Example 4: use of reserves to smooth fluctuations in earnings [Yong Lee Rubber Company, Malaysia].

Where changes could not readily be made, cooperation was received in the form of pro-forma adjustments. The problems of consolidation are further elaborated upon in the balance sheet review (Section 4.4.2).

4.4.1. c. National Laws

In this study, national laws have had a further effect on fiscal regulations and property rights. Enforcing GAAP over national accounting systems at times would have been impractical in light of local law. The reason for this is best explained by the fact that GAAP are effectively Anglo-Saxon accounting principles which rely on a convention of agreed rules. Yet these may not have any legal binding as is the case in those countries where accounting rules are tied to the law of the land. In certain sample countries for example, Saudi Arabia or Iran, even religious laws can play a role. Limitations on the cost of debt should be a constant reminder of this.

Examples were not limited to non Anglo-Saxon countries, especially where tax laws are concerned. In this context, the question arises for example, what the debt ratio could be at a national subsidiary level versus that of a group. This study firstly measures the debt ratios of the consolidated positions of groups headquartered in their country of origin. As a reminder, at this stage read the debt ratio as synonymous with the debt-to-equity relation under total leverage. Secondly, where subsidiaries are concerned, it is known that authorities and central banks usually take the view that these must adhere to direct investment standards. This means that there is usually a limit on so called thin capitalisation. Without precise definition, thin capitalisation is generally taken as meaning to apply where a subsidiary has indebtness considered excessive in relation to its equity. An acceptable ratio for tax authorities in many countries is a financial debt-to-equity not exceeding three to one. This can be higher as firm-specific circumstances are often taken into account.

There exists also the point of view on debt as taken by the parent versus that of the national subsidiary. The points of view may not necessarily reconcile. This has been taken into account in this study. For example, an overall debt transfer can be beneficial, permitting the parent to leverage the balance sheets of each of its subsidiaries with a minimum effect on the parent borrowing capacity. However, such may conflict with the desired debt-to-equity of a single specific national entity. An example amongst the sample population is the Walt Disney Company. The debt-to-equity needs evidenced for example by Walt Disney's European subsidiary, Disneyland, have been a notable case. Here the lack of congruence between parent and subsidiary on the issue of debt have been paramount. National laws may be as important a factor as parent-subsidiary perceptions on debt. If not in compliance with the direct investment rules, problems can arise. For example, a UK subsidiary having a long-term loan from an overseas parent could

have the loan considered as part of the subsidiary's fixed capital, the interest cost disallowed and the loan treated instead as a distribution on which advance corporation tax was payable. In the event, the consequences would be grave. Ongoing parent-subsidiary disagreement on debt levels would only worsen the situation.

4.4.2 Balance Sheet

In an empirical study such as this, naturally much attention is given to the balance sheet. That this was not without problems should not come as a surprise. Obtaining data from developing countries has never been an easy task but obtaining financial information from companies in these countries must be ranked among the hardest. Most companies in these parts of the world tend to be privately held and in some instances much convincing was necessary to obtain reliable data based on GAAP criteria. Where these were not being met, the sample was excluded.

However, how reliable can even an audited balance sheet received from a privately held group in Saudi Arabia really be? As is known, the Middle East is a highly cross-cultural region in its own right. Therefore, interpretations can vary widely from country to country. A multinational operating across this region as well as internationally makes for a challenging analysis. The Al Gosaibi Group referred to earlier, can be highlighted as one such sample case. This organisation is a major conglomerate, operating mainly in Kuwait, Bahrain and Saudi Arabia but with worldwide licensing, joint venture and product representation arrangements. The subject of accounts identification for example, needed considerable scrutiny and clarification. Importantly, there was a need for correct interpretation. However, this was encumbered in a number of ways. As set out in the General Appendix, part of the annual report for example had not been translated from Arabic. Also, proper cultural interpretation was a recurring issue. In

this instance, and to overcome cultural issues, a number of personal meetings were held with one of the Al Gosaibi managers in London, Mr A. Rahim A Fakhro.

In contrast, the work required on the balance sheet of DEC, which provides computer systems, is US based, publicly held, and global, was relatively straightforward. Following analysis of the DEC Annual Report it necessitated only further telephone and fax contacts with DEC's Financial Officer in the UK, Mr John Reeve (see General Appendix). No personal meetings were necessary in this way.

Not all cases were either as complex as those of the Al Gosaibi Group or as relatively straightforward as DEC's. Many sample cases were somewhere in the middle of this spectrum. An example is the Evergreen Maritime Corporation. Despite its Anglo-Saxon name, much of what was faxed was in Chinese. There being a number of questions, it took a Chinese speaking Taiwanese intermediary in London, Mr Kuo-Hsiang Kuo to relate to one of Evergreen's senior executives in Taipei in order to verify the correct interpretation of certain response data.

These difficulties were not inconsiderable. They were generally experienced with other multinationals headquartered in either developing or fast emerging countries. Companies in these countries often tended to be closely held and most sensitive to any type of data release. As a result, full disclosure invariably proved to be the greatest obstacle. As indicated earlier, the single most convincing incentive for cooperation was the opportunity for respondents to share at some later date comparative data derived from the collective results. Companies in the event can then apply their own benchmarking. In the main this applied mostly to companies in the Middle East, who on the one hand appear rather sensitive, yet through relative isolation, given the lack of

valid company comparisons, appeared highly motivated to participate. Due to confidentiality, the details related to many of these participants cannot be quoted. The substantial Al Gosaibi Group makes a favourable exception to this. The confidentiality agreement entered, was waived for this purpose.

In the Al Gosaibi case as well as in general, to achieve full disclosure of the balance sheet, extra attention was paid to having holding companies represent their total leverage position. This emphasises once more the importance of the use of questionnaires during this research. It also reminds the reader that data were not merely extrapolated for examination. Judgement also had to be applied before the data extracted from the profit and loss statement and balance sheet information could be formally tied back to an acceptable data bank. The holding type of company has been known to not always provide full disclosure, in part as may relate to the respective accounting system of the country of the parent and or that of the related subsidiary. As Francis [1986] remarked, some debt reporting can be limited to parents only, excluding fully consolidated statements (pp. 393-403). Earlier work of Lewftwich and Wilson [1970] was consulted to ensure that rules on inclusion of capital structures of foreign subsidiaries were obeyed in terms of consolidated results reported (a., b. pp. 79 - 125). Multinationals at times have been known to deviate from this accounting convention. Compliance in fact, was not invariably the case and corrective measures therefore had to be taken. For example, Megabyte Espana S.A. was removed from the sample on this basis. In another example, a meeting with a representative of Khurma Trading Estab. Ltd, Mr Sumer Hasan Khurma, affirmed that business activities in Holland were included in the consolidation. Khurma which has active interests in the Netherlands actually proved to be a legitimate importer/re-exporter of Dutch cut flowers and bulbs in the Middle East. These examples illustrate and reinforce the importance which was

given to supplementary interviews in addition to the questionnaires, in order to obtain directly verifiable information. This also highlights the problems of multinational definition described in Chapter I Section 3.

After all, interpretations even in clear print, can vary substantially, also in the financial-economic and technical sense. This must be emphasised. Whilst traditional balance sheet standards on financing and liquidity were consulted in the process (De Langen and IJselmuiden [1973], p. 66), not all samples could be analysed satisfactorily in this way. For example, in one particular case it was impossible to identify the specific industrial investment activities of a respondent bank holding company. This sample's balance sheet (included in the Appendix), simply did not provide adequate detail under the caption "Other Investments". Disaggregation of this data was not forthcoming. Following confirmation of this observation made from the organisation concerned, the sample, United Commercial Bank Ltd (UCB), Bangladesh, was removed from the data bank. In addition it was noted that UCB did not appear an isolated case amongst this study's sample population. To ensure similar rigidity in segregation of activity and to avoid bias, all other bank holdings with industrial activities were removed. Many of these were Japanese.

4.4.3 Role of Convertibles and Warrants

This subsection sets out the role of convertible securities and warrants in defining debt. These types of instruments tend to blend interest income and equity security, allowing shareholders to convert their loan stock at specific dates. Equivalently, it has enabled several of the multinationals in the sample to extend their financial base and options , as is explained below. In the subsections following, the role of convertibles and warrants is being related to the companies in the

sample.

4.4.3. a. Hybrid Securities

In reviewing annual statements and audited accounts of sample firms, the periodic use of hybrids was noted. Hybrid securities, having features of equity, at times may be treated as debt solely to leverage corporate tax benefits of debt. Whilst differences due to warrants (Sub-section 3.4.3. b below) could be largely ignored for quantitative measurement purposes, some notable cases needed highlighting for qualitative reasons as concerns specific interpretation at the individual firm level. A most striking example is Avon Products Inc. With a debt ratio of 80 versus the US sample average of 43.4, the company was considered highly geared. The advantages accompanying such a situation, and as relate here to the sample, have been both explained and questioned by the theorists. these advantages are reviewed below.

Amongst the academic researchers, Ross et al [1991] asserted that some companies might follow this approach with the intention of maintaining benefits of equity in case of bankruptcy. Technically this can be achieved for example by issuing specific warrants attributed simultaneously to a non-convertible bond, as the case with Avon Products. In the event, the data enter the data bank unaltered as debt. From all publicly available information there did not seem to exist any evidence to suggest that the intention of Avon would have been to avert loss of benefits under the prospects of an imminent bankruptcy. Also the so called 10-K full disclosure report to the US authorities, which is statutory, and filed with the Securities and Exchange Commission (SEC), does not suggest any other interpretation on this subject.

4.4.3. b Warrants

A better appreciation of hybrids was gained by a deeper understanding of the use of warrants. Such will allow certain firms to take a risk exposure of incurring a technical default which can be deferred or passed on directly during adverse years whilst actually benefiting of the interest deductions during financially positive years. Equity can also be impacted albeit in a different way. Under the treatment of total leverage, in the legal sense, equity interest is a residual claim ranked after debt securities such as notes, debentures and bonds due to debt holders. This is the case whether these concern public issues or issues privately placed, equity being subject to valuation and debt having been set at a fixed amount.

Therefore, the use of securities encompassing warrants, as critics have argued, may obscure somewhat the issues of debt and equity. Technically, Hayes and Reiling [1969] were among the first to foresee this phenomenon (pp. 137-150). They were followed by Welham [1975] and Ritchie [1983], confirming the same. However, the formation of optimal capital structures at times may necessitate the use of warrants. The problem associated with warrants was more that of losing sight of the distinguishing qualities of debt and equity.

Returning to the link between total leverage and warrants, in the legal sense, warrants relate to both the issue of ownership and that of value-maximisation. This issue tends to be more firm-specific than the general issues of accounting or economics designed to serve the public at large.The warrant thus, must also be seen in a socio-economic light and respective cultural realm of the multinational concerned. The warrant, apart from this, after all, is a financial instrument to gear up the company's potential performance on the basis of its total leverage capacity. This in fact is the case also in the example given of Avon

Products. It explains to some extent why hybrid convertible securities and warrants usually go together. In addition, the following observations were made:

(a) Observation 1: some of the smaller multinationals in the sample regard the convertible as intermediate leveraging while earnings from fast growth are building up [Example: Economic Insurance Co. Ltd , Greece].

(b) Observation 2: in certain countries, e.g. the US, conversion periods in principle tend to be long (15 to 20 year lives) taking the character of debentures. Provisions were made to enforce early conversion (at the cost of the company). This makes the use of warrants for deferred equities potentially expensive but provides a strong financial stature and options for increased debt capacity to the larger multinational [Example: Proctor & Gamble Company, (P&G) US].

(c) Observation 3: companies in notably cyclical industries like primary commodities or building materials, are another example of uses of warrants [Example: BPB Industries plc, UK].

5. Statistics on R&D and Growth

In selecting data, the R&D/Revenue and the Growth/Revenue ratios were used to bring all respondents onto one common denominator. Where secondary data are concerned, these were used for comparison with the primary data of the descriptive group (detailed in Section 7.3 Primary Data, 7.4 Randomisation, 7.5 Secondary Data). The use of data on R&D need some comment. As was the case for statistics on debt, a cross-section was utilised. In the long run as was stated, "R&D develops

haphazardly through the accretion of small bids, taking an adaptive form" (Survey Mesthene [1970]). Similar to the view taken on debt-to-equity, this study sees R&D as cyclical and over long periods of time. The position of growth and its interrelationship with debt-to-equity and R&D were explained in Section 2. Hypothesis and Test Format.

6. Classifications by Cultural Realm

Given the cultural influence of international capital markets, a most important area for consideration were the geographical areas of financial diversification themselves. These are detailed in the next three subsections. These start with the classification of data, firstly by worldwide realm and strata clusters, secondly by regional realm, and finally, following adjustments made, by cultural realm.

6.1 Worldwide Realms

Aside from ratio analyses encompassing relationships of debt-to-equity, R&D, and growth, leverage relationships were analysed for cultural influences within respective regions of world markets. These and underpinning strata clusters of regional country groupings are contained in Tables 12-13. The main classifications initially identified for further analyses were:

1. The Anglo-American realm
2. The Far Eastern realm
3. The Third World realm

These realms were identified on the basis of distinct cultural models referred to earlier (Section 2. Hypothesis and Test Format). Other

potential realms such as e.g. Northern Europe were not selected for study on the basis that multinationals headquartered in this region, as is generally known, traditionally have tended to seek their expansion primarily in the Americas and the Far East and appear to continue to do so. Examples would have been Philips, Unilever, Royal Dutch Shell, Siemens. Both of these areas, i.e. the Americas and the Far East are included in the study.

In this study's sample, numerically, the majority of large multinationals with the exception of the Japanese, form part of the Anglo-American realm. Here, data was not unduly difficult to obtain. The Far Eastern and Third World realms in contrast proved difficult to penetrate. These needed relatively more analysis, information in certain cases being virtually non-existent. This problem was in part overcome by some degree of earlier developmental research. Anticipating the severity of data accessibility, steps were taken early on, with the start of an observational sub-study [1988].

To reduce bias versus the quantitatively more controllable information in the first two realms, the minimum sample size for the third world realm from the outset was specified as having to be at least one third larger. This has to do simply with the sheer size and number of multinationals in one realm versus that of another. The actual sample size acquired meets this criterion by being almost twice that of either of the two other realms.

6.2 Regional Realms

The population of each of the three distinct realms as studied contains definite cultural strata of countries with naturally differing statistics. Each stratum has a proportionate ratio in terms of number of members

to every other strata. For example, the population type of the Third World realm consists of three cultural strata, each with distinct regional aspects:

1. Middle East and Near Eastern countries
2. Countries of Southern Europe and the Mediterranean
3. African countries

The Far East realm is also made up of three cultural strata:

1. Asia Pacific countries
2. Japan
3. Countries of the Indian Peninsula

The Anglo-American realm, in principle encompasses all Anglo countries and North America. For purposes of this study it consists of two main cultural strata:

1. United States
2. United Kingdom

The Anglo-American region for this purpose excludes Australia, Canada and New Zealand. A number of adjustments had to be made. For example, using the empirical sample, Sri Lankan companies such as Lanka Lloyd and the Jerzina Group of Companies (to comply with the cultural models referred to earlier) were transferred from the Asia Pacific categorisation to that of Countries of the Indian Peninsula (Table 10, Adjustment). Similarly, Mimosa Co. Ltd was classified into this realm given that Mauritius's business community and economic ties are predominantly Indian, despite its obvious proximity to the African mainland.

6.3 Strata Clusters

Given the above, a word needs to be said about the strata clusters that underlay each of the major realms in the world, ultimately by region, as applied in this study. If one looks at the Third World realm as an example, its population consists of strata clusters whose characteristics are similar, yet whose country characteristics are as heterogeneous as those of 19 different countries and 40 individual firms. Thus, the order of unit countries and strata clusters amongst the realms represents a randomisation factor for size effect of country and regional economics. The same applies to the individual firms sampled.

Given the above, the population of each realm was found to be essentially conglomerate in nature. Main realms could be broken down into stratified population subgroups of individual firms and countries, making up the strata clusters. A similar observation can be made of the Far Eastern realm which in this study lists 8 strata and contains 22 firms. In contrast, the Anglo-American realm reflects a more homogeneous situation. On the other hand, in the Far East there is still as much heterogeneity found between, for example, a firm in the Asia Pacific countries versus one from Japan, as there is between firms within the strata cluster of the Asia Pacific countries. Having said this, these differences amongst multinationals appear to become increasingly blurred albeit that this is a gradual process. As will be discussed next, this has contributed to further consolidate Japan and the Asia Pacific countries into one Asia Pacific group and should therefore in part be a reflection of the developments that are taking place in the Asia Pacific region. It also indicates to some degree the evolution that has taken place leading to, once again, the Broek model for cultural realms, referred to in the literature review. The classifications used for this study are patterned towards this. The overall build up and context of the worldwide realms, and how these

have been adjusted to reflect new realities in converging world markets, is included in the figure below. This also shows how the strata fit into the new realms of country groupings and relate the original realms to the same groupings.

Fig. 3 Architectural Relation of Realms

Worldwide Realms	Country Grouping by Region	No. Strata	No. Firms
The Anglo-American Realm	1. United States 2. United Kingdom		
	Subtotal	2	25
The Far Eastern Realm	1. Asia Pacific Countries* 2. Japan 3. Countries of the Indian Peninsula*		
	Subtotal	8	22
The Third World Realm	1. Middle East - and Near Eastern Countries* 2. Countries of Southern Europe and the Mediterranean* 3. African Countries*		
	Subtotal	19	40
	Total	29	87

* strata clusters

6.4 Cultural Realms

Given the worldwide population of multinationals, also when grouped regionally, it was necessary to further consolidate and designate these in some manner. Such was eventually accomplished on the basis of six distinct cultural realms (as listed in Section 2. Hypothesis and Test Format). Leaving the Anglo American realm as is, Japan as said was added to the Asia Pacific group. The other realms concluded upon were Mediterranean Europe; consolidating Southern Europe and certain Mediterranean countries, Africa, The Middle East; following consolidation with the Near East, and the Indian Peninsula.

In addition, reclassifications directly related to a firm's management and cultural issues had to be implemented in line with accounting rules and classification standards. Some examples follow:

Example 1: Noble Air plc, UK. This company was found to have its de facto operating headquarters in a country other than its own, i.e. in Northern Cyprus. In this study the main operating headquarters were an important criterion for geographical classification of the company. The classification in this case became that of Mediterranean Europe.

Example 2: Lonrho plc (London and Rhodesia Corporation), UK. Many critics would argue this to be an African company. Upon further scrutiny, Lonrho was found to be substantially diversified in other parts of the world including North America and Australia. On this basis,and given its London quotation on the main Exchange, it was left classified as British.

Example 3: Hanson plc, US/UK. With this group having its volume of operations more or less equally divided between the US and the UK, it would have been a classic Anglo-American case. However, it had to be

removed from the sample. The group could not be classified for purposes of this study as either British or American, there being no American management representation on the UK main board for the period related to the test data. Yet more than half of the profits were derived from the United States.

7 Sources of Information

A word also needs to be said about how companies in the sample were initially selected, whether there was a sample frame, or if they were selected by chance. This is reviewed in this section

7.1 Companies Contacted

Initially, a total of 278 companies in 51 countries were approached with the invitation to make their interests part of this research. These result from the following standards and criteria used:

(a) The sample had to represent a cross-section of multinationals. Reference is made to Ch. I, Section 2 which defines the multinational as a Company that operates in more than one country, i.e. beyond mere export activities, and in a way deemed material to both its revenue volume and profitability.

(b) Materiality as above was assessed by individual firm, i.e. at the firm-specific level on the basis of segment data. However, the main focus was on line of business and geographic coverage, this being in compliance with standard practice. Reference is made to Ch.III, Section 2, subsection 2.1.

(c) The sample had to reflect cross-cultural characteristics of

multinationals headquartered in certain countries across certain cultural realms and active in certain industries as defined in Ch.I, Section 3, subsections 3.1, 3.2. This, inter alia, encompassed an openness to private companies willing to meet the criteria, i.e. not merely publicly quoted groups already subject to more regulatory scrutiny.

The approach was based on a mixture of contacts as well as published listings. It is doubtful whether all of the information necessary could have been obtained for the time period indicated and within the data architecture specified without such contacts. This is especially the case given the sensitivities as exist surrounding some of the data (as explained further under point 7.3 Primary Data). The data concerned related directly to capital structure, R&D and growth. A subsequent objective of the research was then to test these data independently and to assess the relative position of each respondent surveyed within the appropriate cultural realm. This was carried out on a comparative basis in relation to other cultural realms. A first questionnaire was proposed to the companies contacted. Those interested received an appropriate quantitative questionnaire towards this aim. A second questionnaire, for further quantitative input and qualitative data was then sent six months later. A number of conclusions were derived from this exercise. These and underlying analyses were referred to earlier in this chapter (Sections 3. Construction of the Data Bank, 3.2 Role of the Questionnaires). As specified below, not all of the firms contacted could be retained.

7.2 Companies Retained

After a number of repeat requests for additional information, a total of 135 firms could be retained. Following further analysis, this was

reduced to 90, subsequently 87 firms (Tables 9-10). These firms provided the data required and were representative of the region in which they were headquartered. In this manner, the firms as remaining were selected by chance rather than within a sample frame. If there is any aspect of judgment of convenience attached to the sample in this regard, such emerged purely by necessity and given the environment in which data had to be obtained.

7.3 Primary Data

The descriptive group of primary data emanates from selective sampling as applied to a random network of contacts assumed to have a shared but individual interest to participate. The actual participation which was not gained easily in the end testifies to this.

Notwithstanding the interest and co-operation demonstrated on the part of the respondents, considerable sensitivities were encountered as to the use and protection of data. This of course was the case more so in certain cultural areas than in others but sensitivities invariably tended to be highest where private firms were concerned, regardless of cultural realm. This explains to a large extent the considerable sample reduction.

7.4 Randomisation

The population of primary data in principle is considered to be homogeneous given that multinationals selected, in the socio-economic sense at least, belong to a standard industrial society. Nevertheless, randomisation was applied at the individual firm level in order to prevent bias. The previous subsection describes how a start

was made with 278 companies. The resulting sample, set at N= 87, represents a country population of 29 distinct nations (Table 10). None of the observations of individual firms geographically represented by cluster segmented strata is less than N < 10. In meeting this criterion, a number of necessary adjustments had to be made. The sample had to be extended by one firm as concerns the Indian Peninsula (Sine International Ltd). This further applied to the Mediterranean Europe stratum which was also extended (A. Mouragas Company).

7.5 Comparative Data

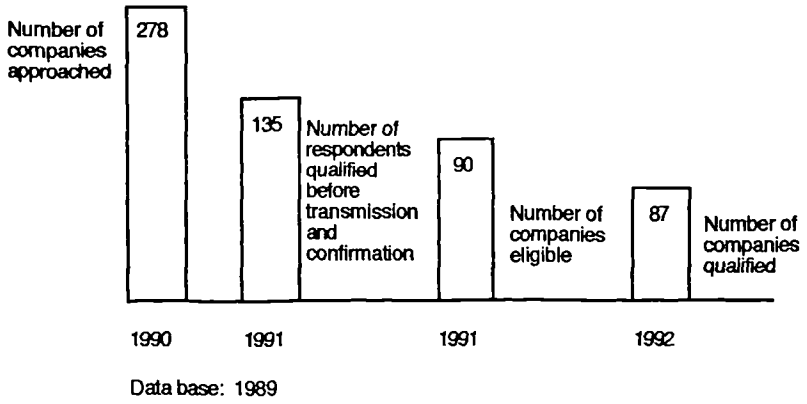
The comparative group, the data being mostly secondary, results from selected randomisation. These data compilations (Tables 14-17) are filed in the Appendix. The largest set of such data in the study amounts to 1000 (The Global 1000) and was used for comparative purposes (Table 14). Some application has also been made of the largest 50 US Global Export Firms (46 after adjustments made due to foreign ownership).

The quality of primary data could be put to good use, for comparative purposes. The relatively isolated (secondary) data from the comparative group were used as a benchmark against which (primary) data on debt-to-equity, R&D and growth from the descriptive group could be observed. Thus, further adjustments had to be made. Subsequently, primary and secondary data comparisons were applied; for example, to the issues of discretionary investments in R&D. These analyses assess what impact if any, mergers and acquisitions could have on the level of leverage and discretionary investments in R&D, The results of these analyses in turn were then used for further interpretation.

8. Summary

The methodology allows the observations of the literature survey to flow into the results, subject to examination and interpretation.

The first question to be asked in relation to the population statistics has been the sample size, N= 87, and its build up (Tables 8-10). An overall result of the questionnaire procedure as relate to the data base development between 1989 and 1992, can be seen below:



The study explains how the sample was adjusted and the make-up of the underlaying sample detail constituted. The development of a primary database in this way took over three years (1989-1992). This did not affect the consistency of the data as it originated from the same time period. As depicted, from the 278 firms in 1990 that trace to the original 1989 database established for this study, no more than 135 appeared qualified by 1991. Once the company confirmations outstanding were cleared later in 1991, of these firms only 90 were found eligible. In 1992, following further accounting adjustments, 87 of the initial respondents could be retained as fully qualified. In the context of a growing globalisation in the activities of multinationals, the significance of the London Stock Exchange disclosure requirements appears to be relatively minimal compared to competitive pressures

associated with the need for international status and raising of capital. As a result, voluntary disclosure amongst the sample has been substantial. This has particular reference to the debt-to-equity and R&D data. At the same time, persistent national characteristics were evident in that consistent patterns of behaviour could be observed in each country. Taken overall, these findings are consistent with the view that multinationals must disclose more than the minimum requirements if they are to compete in international capital markets and the markets for goods and services. As all theoretical determinants of capital structure in this study are formulated in terms of more or less leverage, the debt ratio was the obvious choice of variable to be explained further.

Going back to the earlier examples given in Ch. II, the schedule below shows the debt-to-equity data by individual firm of the population sampled, before and after adjustments:

Raw data calculated as leverage	Adjusted data under total leverage	Company name	Reference to Section explaining reason for change	Reference to Balance Sheet Appendix
24.7	14.1	DEC	1.4.1 1.4.2	F
89.9	80.4	Avon	1.4.2 1.4.3	G
68.1	42.0	P&G	1.4.2 1.4.3	H

The position taken by Collins and Sekely that secondary data would have the advantage of a more consistent accounting treatment remains debatable. The authors themselves must have realised this limitation when they qualified their paradoxical statement by adding that these

accounting inconsistencies were reduced but not eliminated (Collins and Sekely, Methodology).

The hypothesis for differences of capital structure by industries, countries or country groupings ideally requires empirical data of debt ratios by individual firm sampled and in the country where the particular multinational is headquartered. Thus, the development of a unique data bank was mandatory. It did not exist. The main measure for which data had to be obtained were the debt-to-equity position under total leverage and the cultural realms. The following overview exhibits the sample companies discussed in this chapter with reference to the sections which describe the nature of the adjustments:

Ref.	Company Name	Ch.III Section	Section Title
1	Coca Cola	2.1	Standards
		4.4.1.a	Accounting Conventions
2	Guiness	2.4	Cross-sectional Data
3	Mitsubishi	2.4	Cross-sectional Data
4	Lucas Industries	3.2	Role of the Questionnaires
5	Allied Ghee Industries	3.2	Role of the Questionnaires
6	Pentel Co.	3.2.2	Method 2: Quantitative Questionnaire
7	DEC	3.2.3	Method 3: Qualitative Questionnaire
		4.4.2	Balance Sheet
8	Al Gosaibi	3.2.3	Method 3: Qualitative Questionnaire
		4.4.2	Balance Sheet
9	Hanson	4.2.2	Quoted Companies under GAAP
		6.4	Cultural Realms
10	ECC	4.2.2	Quoted Companies under GAAP
11	H.J.Heinz	4.3.1	Inflation
12	ICI	4.3.4.a	Rule FASB8 on Exchange Reporting
13	Allied Lyons	4.3.4.b	Rule FASB20 on Hedging
14	Ferranti International	4.3.4.b	Rule FASB20 on Hedging

15	Tako	4.4.1.a	Accounting Conventions
16	Veladaile	4.4.1.a	Accounting Conventions
17	Remalux Paints	4.4.1.b	Auditing Standards
18	A. M. Zaghloul	4.4.1.b	Auditing Standards
19	Yong Lee Rubber	4.4.1.b	Auditing Standards
20	Walt Disney	4.4.1.c	National Law
21	Evergreen Maritime	4.4.2	Balance Sheet
22	Megabyte	4.4.2	Balance Sheet
23	Khurma Trading	4.4.2	Balance Sheet
24	UCB	4.4.2	Balance Sheet
25	Avon Products	4.4.3.a	Hybrid Securities
26	Economic Insurance	4.4.3.b	Warrants
27	P&G	4.4.3.b	Warrants
28	BPB Industries	4.4.3.b	Warrants
29	Lanka Lloyd	6.2	Regional Realms
30	Jerzina Group	6.2	Regional Realms
31	Mimosa	6.2	Regional Realms
32	Noble Air	6.4	Cultural Realms
33	Lonrho	6.4	Cultural Realms
34	A. Mouragas	7.4	Randomisation

For comparative purposes it was further necessary to obtain data for R&D and growth. The research cited earlier suggests that few firms are likely to voluntarily disclose R&D expenditures. In this study, contrary to expectations, most of the financial information provided by the respondents contained R&D disclosures. However, few firms disaggregated R&D spending by business and geographic region in their disclosure.

The procedure followed in the construction of the data bank includes the analysis of financial statements followed up by quantitative and qualitative questionnaires which seek qualified data/elaboration and additional information. The combination of these three methods has

provided statistical values from which meaningful interpretations can be derived.

This chapter encapsulates the measurement of debt-to-equity under total leverage; historical cost; exposure adjustments related to inflation and exchange rates; accounting adjustments as pertain to accounting-rules/uniformity, the balance sheet under different accounting principles, and the role of convertibles and warrants in defining debt. It details how the problems compare to the ideals, standards and criteria set by this study, how these were overcome, which are left unresolved, and in the latter case the implications for the study.

CHAPTER IV

RESULTS

1. Validation

In this study the relevance of some debt ratio determinants from the recent theory of finance, discussed in the literature review and methodology, is empirically investigated in the multinational business sector. The data focussed on in this study are financial data of 87 multinationals in 19 industries headquartered in 29 countries. The character of the data allows the use of a methodology (that of Kruskal-Wallis) aimed at reducing if not avoiding the biasing effect that other variables not represented might otherwise have had on the outcome, given this omission. Whilst the theoretical determinants of capital structure appear relevant, the influences observed prove that in the real world of multinationals, the hypothesised theoretical effects are less straightforward. Influences on total leverage and optimal capital structure are found to be not the industry specific effects or those of growth and R&D, but those of cultural influences on international capital structure.

This chapter examines the empirical evidence necessary to support or reject any of the related hypotheses. The hypotheses formulated in this chapter (subsections 2.1, 2.2, 2.3) as a priori expectations are tested. These concern differences in the debt ratios respectively between industries and within and between cultural realms, as are set out further below. For this purpose, the rationale and the method of testing are set out fully. To start with, the chapter justifies fully the use of the Kruskal-Wallis test. Initially, there appeared a need for association or

independence so the obvious test would have been the analysis of variance. This requires normal distribution assumptions which were looked for and rejected in some cases, as is commented upon further in the text (Section 1.3 Tests of Significance). Hence the chapter constitutes essentially a statement of the processed results of the quantitative study. These results have been augmented with observations derived from subsequent qualitative research. The combined results thus allow for interpretations from both primary as well as secondary data and, as indicated in earlier chapters, additional information obtained from the questionnaires.

The observed capital structures in this study's sample are not compatible with formal M&M theory as was reviewed in the literature review.This theory postulates capital structure irrelevance and thus optimal capital structure at a 100% level of debt, corporate tax offsetting the loss of debt financing. Therefore an extension to the M&M theory was sought to accommodate an optimal capital structure in particular as pertains to multinationals.

In this light, this examination has deployed the data collected as discussed in the methodology. It ranks the industry/country cells selected from an initial sample of 278 firms in 33 industries headquartered in 51 countries. The elimination of over two thirds of the original sample as seen in the foregoing chapter has largely been due to (a) inadequacies in disclosure standards and (b) distortions in accounting principles and practices internationally.

Since the publications of Modigliani and Miller on the theory of finance [1958, 1963] in their seminal papers, extensions to the theory have been sought by many (see Ch. II, Literature Review), resulting in a less than 100% debt financing in the optimal capital structure. These certainly were steps in the right direction. The criticism is that the tax

benefits of costs of debt financing were not economically significant enough to have material impact on optimal leverage. This gave rise to considering operational characteristics which were assumed to influence these benefits and costs. In this study, the relevance of certain debt ratio determinants from the recent theory of finance encompassing those of an operational nature, is empirically investigated, i.e. a test of the relevance of theoretical determinants is performed. These, as reviewed, are the debt ratio under determining conditions of leverage, growth and investment in R&D.

Organising some of the results initially posed some difficulty due to the many variables involved. Therefore, to distil the essence of what the study has been saying, with no material loss to the message, a comparison had to be made with other studies and paradigms. The McKinsey 7-S paradigm, for example, was found to address perceptions similar to those of this study, in particular as concerns the significance of cultural influences. Peters and Waterman [1988] when introducing the 7-S framework claimed that it would assist in forcing explicit thoughts about hard data, i.e. strategy and structure, as well as soft data, i.e. style, systems, staff, skills and shared values (pp. 8-11); hence the 7-S's. Their method was of interpretative assistance in this research because it naturally directed attention to the more intractable data of cultural influences on international capital structure when sifting and codifying results. Other paradigms identified were less useful. For example, Goodwin's [1977] was limited to its socio-cultural bias; that of Burrell and Morgan [1979] was only socio-organisational and thus restricted in this way.

1.1 Variability in Debt-to-Equity Ratios

In evaluating the results of the data acquisition after adjustments (Table 10), debt ratios of country strata generally seemed in line with what could have been expected. For example, multinationals in Asia Pacific (excluding Japan) had the highest debt-to-equity ratios under total leverage, averaging 84.2. The Near East averaged 66.4. Followed in that order, the Indian Peninsula showed an average debt-to-equity of 59.8 and Japan 59.4. Mediterranean Europe reported 54.5, the Middle East 51.5, and Africa 45.0. All indicated higher levels than either the US or UK where firms had average debt-to-equity levels of 44.2 and 42.3 respectively. The resulting adjusted average debt-to-equity for these nine strata was 54.5. Thus the variability was noticeable. The strata were then organised into six cultural realms. In these realms, as aforementioned, Japan has been included in the overall Asia Pacific region. Also, the Near East, including countries such as Turkey and Iran, was merged with the countries of the Middle East. The UK and US are represented by the Anglo-American realm. In retrospect, this gave no noticeable change to the categories except for Asia Pacific due to the influence of Japan. The average debt-to-equity ratios after these adjustments are set out below:

Cultural Realms:	
Asia Pacific	69.3
Indian Peninsula	59.8
Mediterranean Europe	54.5
Middle East	55.2
African	45.0
Anglo-American	43.4
Average	54.5

The Asia Pacific category can be quoted with or without Japan. In this

presentation, again, Japan is included. The use of the original worldwide realms such as that of the Far East, as first introduced, may be too broad. This would have included e.g. India and Sri Lanka which are characterised instead by customs that are found to be quite different from those prevalent in the Asia Pacific realm. Hence the above categorisation.

In ranking primary data by individual firm (Summary Table 36), the highest debt-to-equity reported was 150.0, associated with the Pt. Tri Atmaja Company, Indonesia. Thus the highest leveraged firm in the sample, it would appear, is Pt. Tri Atmaja Company. As indicated in the previous chapter, a ratio > 100 means that, as in this example, equity obviously was negative. This needs further comment. Negative equity, it can be stated, results from an accumulated profit and loss statement deficit (as was also the case in theses instances). Conversely, the single lowest debt ratio found in the sample was that of S.R. Textiles Ltd, India, with a debt-to-equity of 6.0. The variability of debt ratios is further demonstrated in the debt-to-equity Distribution Histogram (Summary Table 25). However, as concerns international capital structures, variability appears also a matter of cultural influence if not the overriding determinant. This is investigated in the subsections following.

1.2 Variability within and between Cultural Realms

By defining different levels of leverage of multinationals within and between different cultural realms, preliminary conclusions could be formulated. This revealed the uniqueness of various capital structures by cultural realm and clues for further analysis. For example, at the time of the study, certain countries amongst the sample were either in recession or becoming affected in some way. On the face of it,

recessionary conditions would put an unprecedented strain on leverage levels, making interpretations of otherwise valuable statistics more difficult. However, differences of culture between realms were less subject to these relatively short periods of recession than they were for the individual firm or an individual country. Also, the interpretation can be made that in the macro-economic sense, the overall trade cycles between the various realms in which the firms operate, tend to synchronise - albeit with some degree of imperfection as markets are not perfect. The latter was discussed before in the literature survey. However, this remains more of an assumption as no evidence was sought specifically at the macro-economic level. The entirety of this study is devoted to micro-economic analysis at the level of the firm. The cultural realms are to provide only a reasonably representative basis for statistical examination.

In preparation for this examination of the hypothesis, debt ratios were calculated for all 278 firms in 33 industries and 51 countries. Utilising the Kruskal-Wallis test to measure for cultural differences, the debt ratios for 87 firms, 19 industries and 29 countries, ultimately qualified for the database and were adopted.

1.3 Tests of Significance

Tests of significance were required to determine the proportion of cases of certain debt structures amongst the firms in the sample so as to establish an indication of direction of the debt pattern. The significance tests had to be introduced because the sample is fairly small and thus sampling errors potentially can be large. Also, it made sense to test the statistical significance of the hypothesis, it being well-supported by prior knowledge and studies.

The results of these tests are indicated in the next section. These

specifically set out the findings of the examination conducted on the hypothesis. A probability of 0.01 has generally been used as the cut-off point for statistical significance, i.e. for rejecting the null hypothesis and accepting the sample results at their face value (Section 1.2 Significance Levels, in the Appendix, sets out further detail). The tests of significance as conducted sought to confirm or reject the null hypothesis from the evidence of the observed sample data. The rule as stated above was consistently applied. Other values were referred to for interpretative purposes.

Further, the x^2 - distribution (Table 23) was used as the theoretical yardstick. (Section 1.3 Chi-square Goodness-of-Fit Test, in the Appendix, provides detail on this). This test and associated rules established the non-normality of the observed debt-to-equity cases in the sample versus the expected distribution and thus helped determine the Kruskal-Wallis procedure as the most appropriate methodology on which to base the statistical analysis.

1.4 Kruskal-Wallis Ranking Test

Insofar as patterns of relationship needed to be identified and ranked by country, culture and industry, effective use was made of the Kruskal-Wallis hypothesis test. The results of the test as conducted and as explained, justify the study conclusions. The test used the median ranks of the various industry and country debt ratios to test for differences of ranks between the multiple samples; hence "ranking" test. This may of course raise the question why the median was used in the Kruskal-Wallis ranking tests. Clarification regarding selection of the median rank is simple. To be sure, in exchanges with Collins [1994], the author confirmed the rationale of using the median rank. The following specifies the procedure used with respect to the median rank:

1. If the question concerns why to test on medians using the Kruskal-Wallis method, it follows the same argument for using the non-parametric statistic. Without confidence, the assumptions for parametric statistics hold; indeed having found they do not hold, one moves to a less restrictive test. If the underlying distribution is skewed, the median provides a measure more in the population centre than the mean. And, even if the distribution is symmetrical (which it is not), the median is an equally valid measure of central tendency as the two would coincide.

2. If the question concerns how the median was selected, the standard definition was used: the median is the value of the observation with the rank (n+1)/2 where the n items are ranked from 1 to n in ascending order. If n is even, the median was computed as the arithmetic average of the observations with ranks n and n+1.

During this research the question also arose as to why the Kruskal-Wallis test was used in the first place. This chapter, as Collins (who read it) commented, seems to cover well the question raised about the use of the Kruskal-Wallis test. Quoting Collins "it should no doubt have satisfied this question". In his remarks, Collins confirmed that the choice is between the parametric analysis of variance and the non-parametric Kruskal-Wallis test; "once the assumption of normality is rejected, Kruskal-Wallis must be used". The use of the median as a measure of location then follows. More detail of the basis for this test is given in the next section, which sets out the Kruskal-Wallis procedure, and in the Appendix (Section 1.1 Measurements). The Kruskal-Wallis specifically examined the industry/country cells for consistency of country ranking among industries and industry ranking among countries. To the extent that patterns could be found in these

analyses, conclusions were drawn as to the consistency of capital structure approaches undertaken by multinationals in various countries, industries, or cultural realms.

The test therefore can be seen as a correlational-effectiveness measurement of industry and cultural influences on total leverage that result in varying capital structures at the firm level. Due to the differences in size of the industry/country cells and any remaining uncertainty of the underlying distribution, the non-parametric test was necessary to examine for individual differences. The test for differences of ranks between multiple samples fitted this aim.

1.5 Kruskal-Wallis Procedure

As indicated above, the Kruskal-Wallis procedure is used as an effectiveness measure of industrial, country and cultural influences on capital structures amongst multinationals to test the hypothesis. As a non-parametric tool, it allowed for a most fitting means test of the null hypothesis. The procedure followed is stated fully.

In considering the Kruskal-Wallis, a number of works were consulted on its formal theory. Conover [1971] , defined the Kruskal-Wallis test for one way analysis by ranks as a non-parametric procedure used in the experimental situation where K random samples have been obtained, one from each of K possibly different populations. The objective was to test the null hypothesis that all of the populations are the same. Some populations naturally will tend to have greater observed values than other populations. Following Lapin [1985], the sampling distribution of K is approximately a chi-square distribution with m - 1 degrees of freedom, where m is the number of categories (p.

654). To find the critical value, the Appendix Table 23, provided critical values for specific tail areas. The decision rules related to this are set out in the next subsection, 1.6 Kruskal-Wallis Test Statistics. The Wonnacotts, [1985, p. 484] and Leedy, [1989, p. 211] regarded the procedure as an appropriate method to infer meanings from data in discerning clues within these data. Technically, the Kruskal-Wallis can be seen as an extension of the Mann-Whitney U test, for situations in which there are more than two independent samples being compared. Luck and Rubin [1987] defined the Mann-Whitney U test as a procedure to examine hypotheses about the central tendency of ordinally scaled variables from two independent samples (p. 464). The Kruskal-Wallis instead is a rank test for K independent variables. It was W H Kruskal and H Wallis who introduced this test [1952], actually as an extension of the Wilcoxon rank-sum test to the analysis of several samples [Lapin, 1985, p. 652].

An initial observation of the debt ratios in this instance did not suggest that the sampled populations were normally distributed with equal variances. Thus, the use of a one-way Analysis of the Variance (ANOVA) had to be dismissed. The Appendix comments as to why the ANOVA or alternatively the Analysis of the Co-Variance (ANOCOVA) would not have been appropriate to serve as a basis for statistical analysis (Section 1.3 Chi-square Goodness-of-Fit Test). The alternative Kruskal-Wallis was applicable to this study because the debt-to-equity determinant has a continuous distribution, the data are least ordinal and the samples are independent. To use the variance of analysis, the first step was to establish the relative ranking. The Kruskal-Wallis procedure could then determine whether the sums were so different that it was not likely they came from populations with equal medians.The test statistic is defined below.

1.6 Kruskal-Wallis Test Statistic

If the samples actually do come from populations with equal means, then the H statistic calculated as below is distributed as a chi-square variable with K - 1 degrees of freedom, where K = the number of populations under study.

The general formula for the Kruskal-Wallis test is:

$$H = \left[\frac{12}{N(N+1)} \sum_{j=1}^{K} \frac{R_j^2}{n_j} \right] - 3(N+1)$$

Where:
N = total of all observations
K = number of sample groups
Rj = the sum of ranks in the jth sample
nj = the size of the jth sample group

The requirements as exist for the test to be valid [Lapin L., 1982, Daniel W./ Terrel J., 1985, Groelner D. / Shannon P., 1987] are stated briefly as below. On this basis, no limitations were found in the use of this formula, given that the following requirements were met:

(a) the samples are independently selected
(b) the rule-of-thumb that, provided no more than 25 percent of the observations are involved in ties, no correction is required, does apply. The debt ratios tend to be unique. Only one case of ties was observed [debt-to-equity: 71.5. Industry: Food, Drink and Tobacco. Country: Pakistan, (Table 2)].
(c) There is no case of fewer than three groups in combination

with five or fewer observations in each group.

(d) the computed values of H were compared to the tabulated values of x with K - 1 degrees of freedom.

The methodology applied meets each of these requirements. Where H was larger than $x^2_{critical}$, the hypothesis of equal medians was rejected. It was concluded that the populations from which the samples were selected could have different medians. The decision rule was then applied as follows:

$$\text{If } H < x^2_{critical} \text{ accept Ho.}$$

$$\text{If } H > x^2_{critical} \text{ reject Ho.}$$

Where the calculated value was greater than the critical value, as pertains to cultural influences on international capital structure, it was concluded that there was a significant difference between the two groups being compared.

2. Hypothesis

The work examined the capital structure of a number of companies against three hypotheses. The hypotheses being tested are set out formally as follows:

2.1 Differences between Industries - Hypothesis 1:

The First Hypothesis Test is stated as follows:

Ho: multinational companies across various industries have the same financial structure

Note:
The explanation of how this is measured is given in subsection 2.5 Industry Analysis, of this chapter.

2.2 Differences within and between Cultural Realms - Hypothesis 2, Hypothesis 3:

The Second Hypothesis Test is stated as follows:

Ho: multinational companies across various countries have the same financial structure

Note:
The explanation of how this is measured is given respectively in subsections 2.6 Country Analysis and 2.9 Results of the Second Hypothesis Test, of this chapter.

The Third Hypothesis Test is stated as follows:

H1: multinational companies across various cultural realms but possibly different countries, have the same financial structure

Note:
The explanation of how this is measured is given respectively in sections 2.7 Cultural Analysis and 2.8 Results of the Third Hypothesis Test, of this chapter.

The methodology used is the Kruskal-Wallis statistic using a cross-section study from a sample base drawn by the author. The results are that hypothesis 1 and 2 are not rejected but hypothesis 3 was rejected. A summary table of results for the three hypotheses is given in the Appendix. A comparison is made with America's global export

corporations regarding post and pre-merger R&D expenditure.

2.3 Debt Ratios for Selected Industries and Countries

As aforementioned, the averages for 87 industry/country cells were calculated but arranged in order of increasing use of debt (Table 1). These indicated how much debt a given industry and country assumed, i.e. in each individual case and ranked. They were then applied as the basis for further analysis.

2.4 Debt Ratio Ranks for Selected Industries and Countries

Also, the median ranks in debt ratio were computed for 19 industries and 29 countries and arranged in order of increasing use of debt (Table 2). Individual comparisons with the cell rankings were subsequently used as a basis for specific pattern analysis by industry (among the countries) or by country (across the industries). Further comment on Tables 1 and 2 is provided in the Appendix.

The work below reiterates the findings in more detail without seeking to duplicate the explanations. Returning to the hypotheses, three hypotheses are involved as follows:

(a) The financial structure is the same for differing industries.
(b) Multinational companies located in the same cultural realm but possibly different countries have the same financial structure.
(c) The financial structure is the same for multinational companies located in different cultural realms.

The following subsections set out the findings of industry, country and

Debt Ratios for Selected Industries and Countries (arranged in Order of Increasing Use of Debt)

	Computers and Communications	Consumer Non-durables	Energy	Entertainment and Information	Food, Drink and Tobacco	Retailing	Textiles	Business Services and Supplies	Capital Goods	Chemicals	Conglomerates	Consumer Durables	International Construction	Trade	Forest Products and Packaging	Hotels/ travel	Insurance	Materials	Transport	Country Mean
Nigeria															25					25
Ghana					50			30												40
Oman											60			22						41
U.K.		30	42	40.8	41.2	58		58.3	14.5	42	67	122	38.1					17		43
					30				30.8			45.1						14.6		
					39															
Syria					60								25.1							43
U.S.A	14	80		28	54						50									44
	27.9	42			57.9															
Kenya					50			36.5						25		67				45
Italy							46													46
Saudi-Arabia											46									46
India	60						75		50											48
									6											
Taiwan																			50.1	50
Mauritius	50																			50
Kuwait													25	41						50
													85							
Dubai																		55		55
Lebanon									32							80				56
Libya							50							66.7						58
Greece					75		50						60			25	28			59
					50															
Japan	38.3							74	89.9											59
	57.9								88.9											
									7.3											
Jordan				50						32				100						61
Cyprus																			62.7	63
Egypt					67				60											64
Pakistan					70		66							70						65
					41		70													
					70															
Turkey					67				61.4										67.9	66
									67											
Malaysia																		67		67
Korea										70										70
Iran										70										70
Sri Lanka							65												75	70
Spain	80																			80
Indonesia					150															150
Industry mean	46.8	50.6	42	39.6	60.7	58	60.2	49.7	46.1	53.5	55.7	83.5	46.6	54.1	25	57.3	28	38.4	63.7	

Table 1

Debt-Ratio Ranks for Selected Industries and Countries (arranged in Order of Increasing Use of Debt)

	Computers and Communication	Consumer Non-Durables	Energy	Entertainment and Information	Food, Drink and Tobacco	Retailing	Textiles	Business Services and Supplies	Capital Goods	Chemicals	Conglomerates	Consumer Durables	International Construction	Trade	Forest Products and Packaging	Hotels/ travel	Insurance	Materials	Transport	Country Median Rank
Nigeria															9.5					9.5
U.K.		17	31	26	29	50		51	4	31	64.5	86	23					6.5		26
					17				19			33								
					25															
Kuwait										38.7			9.5	27.5						27.5
													82							
Ghana					40			17												28.5
Oman											54			7						30.5
Kenya					40			22						9.5		64.5				31
Syria					54								12							33
Italy							34.5													34.5
Saudi-Arabia											34.5									34.5
U.S.A.	3	80		14.5	45						40									35.5
	13	31			48.5															
Mauritius	40																			40
Greece					77								54			9.5	14.5			40
					40		40													
Jordan				40						20.5				85						40
Taiwan																			45	45
India	54						77		40											47
									1											
Dubai																		47		47
Lebanon									20.5							80				50.3
Libya							40							61						50.5
Cyprus																			58	58
Egypt					64.5				54											59.3
Japan	24							75	84											61.8
	48.5								83											
									2											
Turkey					64.5				57											64.5
									64.5		-									
Malaysia																		64.5		64.5
Sri Lanka							59												77	68
Pakistan					71.5		60							71.5						71.5
					27.5		71.5													
					71.5															
Korea										71.5										71.5
Iran										71.5										71.5
Spain	80																			80
Indonesia					87															87
Industry Median R	40	31	31	26	46.8	50	59	36.5	40	51.3	47	59.5	23	44.3	9.5	64.5	14.5	26.5	63	

Table 2

cultural analyses. Table 3 referred to below (and Tables 4 and 6 further in the text) refer to the calculation in the Kruskal-Wallis test (i.e. $\sum Ri^2$). More detail is given in the Appendix.

2.5 Industry Analysis

2.5. a Findings on Industry Analysis

The Kruskal-Wallis first examined for differences between selected industries in the use of debt. The ranks of all the industries among the test countries and the median rank for each industry are indicated (Table 2). The cut off point for statistical significance was set at 0.05, establishing a 95% confidence level that the observations made are indeed significant. The General Appendix details the significance level used as relates to the sample distribution (Section 1.2 Significance Levels). The differences in median ranks were not found to be significant at the 0.05 level, the influence of industry groupings in the use of debt being minimal. No pattern could be established even at the 0.10 significance level. The results of the Kruskal-Wallis test as conducted on the industry data is shown (Table 3). Most industries, 17 out of 19, had median ranks in the middle two fourths of the total sample. The debt ratios thus did not vary significantly between the industries.

2.5. b Comparative Results of Industry Analysis and the First Hypothesis Test

Similarly, Collins and Sekely in their most recent study [1988] found 8 out of 9 industries to have median ranks in the middle third of the total sample. Differences between industries were not found to be significant at the 0.10 level. These researchers explained their findings as due to the relative decrease in industry differentiation. The data

Results of Kruskal - Wallis Test Differences Between Industries

Industry	
Computers and Communications	295.8
Consumer Non-durables	5.3
Energy	169
Entertainment and Information	884.1
Food, Drink and Tobacco	600.3
Retailing	36
Textiles	782.3
Business Services and Supplies	30.3
Capital Goods	275
Chemicals	85.6
Conglomorates	72.3
Consumer Durables	480.5
International Construction	312.1
Trade	1.5
Forest Products and Packaging	1190.3
Hotels/travel	161.3
Insurance	870.3
Materials	715.6
Transport	1296
Total	8263.3

Kruskal-Wallis Test Statistic = 12.95
Level of significance - significant at the 0.05 level

Note:
Application; Mini Tab

Table 3

used in their test, as seen, date from 1979 when industry differentiation may have been on the decline. This condition appeared to still hold true at the time of their manuscript's revision [1985], subsequent revisions [1986-87] and its completion [1988].

2.5. c Conclusion of Industry Analysis and the First Hypothesis Test

Ten years after the initial Collins and Sekely database was established (this study's database is of 1989), many multinationals indeed seem to have become less industry and more core product differentiated, i.e. their orientation increasingly focused towards mainstream businesses. This condition from all observation continues to prevail at the time of this study's revision [1995]. Yet core products today tend to strongly identify with their specific industry categorisations. They usually are classified much the same. The overriding reason for non-significance of industry groupings therefore must be another one. The analyses following seem to provide some indication why this may be the case. These will concentrate on the remaining two hypotheses to be tested further

2.6 Country Analysis

2.6. a Findings on Country Analysis

The test examined for differences between countries. Looked at on a country by country basis, some of the countries show relatively low debt, for example the UK, and high debt in Japan, but these samples did not influence the country pattern (Table 4). Differences between countries did not appear significant at the 0.05 level. Thus, there was no definite relationship between country and debt as the results indicate. Similarly to industries, the countries were concentrated on

Results of Kruskal - Wallis Test Differences Between Countries

Country	
Nigeria	1190.3
UK	3125.3
Kuwait	56.3
Ghana	480.5
Oman	364.5
Kenya	400
Syria	242
Italy	90.3
Saudi-Arabia	90.3
USA	714.1
Mauritius	16
Greece	140.2
Jordan	60.8
Taiwan	1
India	4
Dubai	9
Lebanon	78.1
Libya	84.5
Cyprus	196
Egypt	465
Japan	459.4
Turkey	1521
Malaysia	420.3
Sri Lanka	1152
Pakistan	1998.4
Korea	756.3
Iran	756.3
Spain	1296
Indonesia	1849
Total	18,016.90

Kruskal-Wallis Test Statistic = 28.24
Level of significance - significant at the 0.05 level

Table 4

the middle two fourths of the sample.

2.6. b Comparative Country Analysis

In contrast, the Sekely and Collins study had experienced clear groupings of differences. Compared to the 165 country/industry cell rankings, 7 countries had overall median rankings in the bottom third, 10 countries in the middle third, and 6 countries in the top third of all rankings. The difference was found to be significant at greater than 0.001 level, indicating a most definite relationship between country and the use of debt. Importantly, the authors justified their findings on the basis that with the exception of Australia and South Africa, all countries with little debt were less developed nations and that with the exception of Pakistan, all countries using high debt levels were industrialised countries. A fairly strong pattern of economic development was correlated with the degree of debt used in various countries.

2.6. c Conclusion on Country Analysis

Again, the time period of the database used for this study [1989] as opposed to that of the above study [1979] may in part explain here the difference found in findings between the two studies. It is probable that much did change during this intermediate decade in terms of financial policies and the decision processes of multinationals related thereto. There can be little doubt that between 1979-89, the methods used in the planning of an optimal capital structure became more advanced but there are many possible reasons for this. For example, the availability of choice in the financing of international capital structure, partly due to new information technology/communication links between capital markets, altered substantially during this period. This appears to have led to a more sophisticated capacity of the firm, in particular the

multinationals. Corporate financial planning and capital markets today tend to reinforce one another.

2.7 Cultural Analysis

2.7. a Findings on Cultural Analysis

The foregoing examination did not proclaim significant differences between industries or countries. Yet differences between cultural realms seem to support the idea for there to be a cultural variance in international capital structures between different country groupings.

Whilst the subject of culture generally and as a belief system falls outside the scope of this study, some reference had to be made to the element of material culture. That is, in as far as it relates to the capital structure tendencies of a country grouping. Here, a link is made with the country grouping's economic structure or if put in a societal manner, that of a specific cultural realm. Different legal and tax systems appeared likely to influence capital structure amongst various cultures. However, if there did exist some broad cultural influence on capital structure beyond the influences of either industry or country, it had to be tested. The premise on this basis was that it could then be determined whether this was to be reflected in the similarities of capital structure of firms situated within certain country groupings having similar cultural backgrounds, or in comparing between such groupings. As shown in the methodology and further discussed in this chapter, appropriate groupings of countries were grouped as cultural realms.

2.7. b Comparative Cultural Analysis

Returning to Collins and Sekely, cultural realms were described as a

type of grouping characterised by their "fundamental unity of composition, arrangement, and integration of significant traits which distinguish them from other realms" (Ibid. e. p. 92). Detailed comparative cultural analysis is provided on this basis further in this chapter, setting out the differences found between cultural realms as part of the hypothesis test.

2.7. c Conclusions on Cultural Analysis

As a result of doing business internationally, it would seem that one is to be increasingly aware of possible differences of financial structures of firms as a group between different continents or major regions corresponding with world markets. Only in a minority of instances it would seem, will this apply to differences between countries and industries. The variance by cultural realm as will be seen, further outweighs any country or industry variance. The debt structure does differ between cultural realms. This is discussed below.

2.7. d Preparation for Further Hypothesis Tests

The differences between the median ranks for cultural groups were tested and further examined. The median ranks were computed for each of the cultural realms (Table 5). Analyses were then conducted between the median ranks of cultural groups and country/industry cells to assess if patterns of difference could be determined. The two remaining hypotheses as follow were used. Specifically, these are the same as those used in the Collins and Sekely study but results and interpretations differ materially as regards the significance of financial structures between cultural realms.

Starting with the cultural realms, the test first seeks the results "between" cultural realms, i.e. listed as the third hypothesis test. From

Debt - Equ. _ Ranks for Selected Cultural Groupings and Indu..ies

Cultural Group	Computers and Communications	Consumer Non - durables	Energy	Entertainment and Information	Food, Drink and Tobacco	Retailing	Textiles	Business Services and Supplies	Capital Goods	Chemicals	Conglomerates	Consumer Durables	International Construction	Trade	Forest Products and Packaging	Hotels/ travel	Insurance	Materials	Transport	Country Median Rank	Group Median Rank
Middle East																					40
Oman											54			7						30.5	
Syria					54								12							33	
Saudi Arabia											34.5									34.5	
Kuwait													9.5	27.5						27.5	
													82								
Lebanon									20.5							80				50.3	
Jordan				40						20.5				85						40	
Iran										71.5										71.5	
Dubai																		47		47	
Asia Pacific																					68
Taiwan																			45	45	
Japan	24							75	84											61.8	
	48.5								83												
									2												
Malaysia																		64.5		64.5	
Korea										71.5										71.5	
Indonesia					87															87	
Mediterranean Europe																					57
Italy							34.5													34.5	
Greece					77		40						54			9.5	14.5			40	
					40																
Cyprus																			58	58	
Turkey					64.5				57										68	64.5	
									64.5												
Spain	80																			80	
Anglo - American																					29
USA	3	80		14.5	45						40									35.5	
	13	31			48.5																
UK		17	31	26	29	50		51	4	31	64.5	86	23					6		26	
					17				19			33						5			
					25																
Africa																					40
Kenya					40			22						9.5		64.5				31	
Libya							40							61						50.5	
Egypt					64.5				54											59.3	
Ghana					40			17												28.5	
Nigeria															9.5					9.5	
Indian Peninsula																					60
India	54						77		40											47	
									1												
Pakistan					71.5		60							71.5						71.5	
					27.5		71.5														
					71.5																
Sri Lanka							59												77	68	
Mauritius	40																			40	
Industry median rank	40	31	31	26	46	50	59	36.5	40	51.3	47	59.5	23	44.3	9.5	64.5	14.5	26.5	63		

Table 5

this, the results of debt ratios "within" cultural realms can be calculated, i.e. the second hypothesis test.

2.8 Results of the Third Hypothesis Test

Using the computation from Table 5, the Kruskal-Wallis test for differences of rank was used on the median ranks of these six cultural groups. Table 6 shows the calculations for this test and allows examination of whether multinationals located in different cultural realms have significantly different leverage structures. The results of the test indicated this difference between the groups. Variance between cultural groups in the use of debt does become significant. At the 0.05 level, the cut off point for statistical significance, the difference is real. On this basis and in the context of the observations made, the null hypothesis of no significant differences between cultural groups had to be rejected.

Put differently, the median ranks of the cultural groupings in Table 5 do support the result from these calculations in Table 6 in that there is a significant difference at the level of 0.025 and greater. The results meet the 95% level of confidence required and are in compliance with the statistical significance rule of 0.05 as applied. The variance between the groups is widespread, i.e. not limited to, for example, one large deviation between one group and all of the other groups. Using the Broek Model (referred to in Ch. III, Section 2. Hypothesis and Test Format), high debt levels were represented by Asia Pacific and the Indian Peninsula. In applying the same model, Mediterranean Europe and the Middle East appeared in the middle of the rankings. The Anglo-American group and Africa showed a relatively low to medium use of leverage. The foregoing confirms earlier observations in the literature review. The results at the same time reflect that within this

Results of the Kruskal - Wallis Test Differences Between Cultural Groups

Cultural Group	
Middle East	15
Asia Pacific	2088
Mediterranean Europe	616.2
Anglo - American	3782.3
Africa	349.5
Indian Peninsula	1719.3
Total	8570.3

Kruskal - Wallis Test Statistic = 13.43
Level of significance - Significant at the 0.05 level.

Table 6

data base, the development and industrialisation of the country does not have a powerful effect on the debt ratios. For example, the Anglo-American group used only little leverage but the Asia Pacific one comparatively speaking used rather a lot.

2.8. a Comparative Results of the Third Hypothesis Test

In comparison to the results of the first hypothesis test in this study, the Collins and Sekely study of cultural realms indicated significance beyond the 0.001 level. The variance between cultural groupings was very widespread. This study further observed that whilst there was a relationship between the level of economic development and debt, it was not a strong one. This was exemplified by the lower than average use of debt in the Anglo-American Group, yet representing some of the most developed and industrialised countries. At the same time the researchers highlighted the Indian Peninsula as heavy users of debt coupled with very low levels of development and industrialisation. Some conclusions can be attached to this as set out below.

2.8. b Conclusion of the Third Hypothesis Test

A decade passed since these comparable data were first collected. In this study, the debt ratio of the Anglo-American group did not materially change. Debt at UK and US multinationals at this point of measurement (1989-90) was at a low to medium level, much as was the case before (1979). However, the Anglo-American realm in comparison to other realms in relative terms is probably less industrialised than it was ten years earlier. Also, it could no longer be said even at the time of this study sample [1989-90] that the Indian Peninsula had very low levels of development and industrialisation. Thus, whilst the findings in some ways appeared the same, in other ways they were not. The economic situation in the real world has become rather different.

Much of this has had to do with major shifts in world economies and the development of certain realms, primarily Asia Pacific and the Indian Peninsula. As a result, interpretations have changed. Today [1995] these interpretations (as relate to the 1989-90 sample period) appear even more credible than they might have then. Another reason has been the changes that took place in multinationals themselves. The increasing practice of these types of firms to source their activities on a worldwide basis have added to the diminishing role of countries and industries and the increasing importance of specific regions. An example of this has been the high debt usage in the Asia Pacific region as was noted also in the study. These regions in particular are increasingly being matched, even today, with geographical target markets for products, goods and services as well as with the individual multinational's debt capacity. This has led to an ever increasing need for reasonably corresponding international capital structures.

2.9 Results of the Second Hypothesis Test

As a result of the second hypothesis test, the null hypothesis of non-significance was accepted. This was obtained from tests of each cultural grouping of countries for differences between the median ranks of the specific country/industry cells that constitute such groups. At the individual group level, the null hypothesis could not be rejected in the case of the Anglo-American and Asia Pacific groups (Table 7). In other cases, the null hypothesis of no difference in ranks could not be accepted. Africa had differences at the 0.01 significance level, the Indian Peninsula at the 0.02 and the Middle East at the 0.05 level. The difference inside the Indian Peninsula came mostly from the variations in India. In the Middle East group, almost all countries experienced large differences inside this cultural realm. A similar phenomenon was observed in the African realm.

Results of the Kruskal - Wallis Test Differences Within Cultural Groups

Cultural Group	Kruskal - Wallis Test Statistic	Level of significance
Middle East	1.89	0.05
Asia Pacific	1.42	N.S.
Mediterranean Europe	6.41	N.S.
Anglo - American	0.02	N.S.
Africa	3.94	0.02
Indian Peninsula	2.34	0.02

NS = not significant

Table 7

2.9. a Comparative Results of the Second Hypothesis Test

There did appear some similarity here with the previous Collins and Sekely findings. These reported differences at the 0.05 and 0.10 levels albeit for different regions and variations within them. This is further commented on below.

2.9. b Conclusion of the Second Hypothesis Test

While some variations may exist within the cultural realms, as is the case in this study as well as previous comparative research, these variations tended to be confined to differences in a few countries only.

3. Comparative Analyses

At this stage, a number of further questions could be asked. It seemed that, beyond the hypothesis tests two additional observations were relevant. One was that of leverage in relation to geographical expansion. The inclusion of this section is more fully justified if one considers the necessity to enforce the earlier observation made that there does not seem to exist a direct relation between debt and geographical diversification. Rather, the D/E appears a matter of headquarters location by country grouping and cultural realm as may influence international capital structure at the level of the individual firm. This on the basis of its consolidated activities as a multinational. The secondary data appear to support this. They do not manifest a relation between the D/E and geographical expansion

The other observation was one of the leverage impact on R&D expenditure under pre or post acquisition conditions. Here the secondary data would seem to support the observation that leverage

brought about by mergers and acquisitions does not appear to adversely affect the level of R&D expenditure.

Finally this section demonstrates the necessity to include interpretative information clues, such as above, for additional investigation in the future (Ch.VI Recommendations for Further Research). As explained below, the scope of this study does not provide for such an extensive further examination.

3.1 Leverage and Geographical Expansion

Here the question may arise as to what the debt-to-equity levels were of multinational companies outside the primary sample and how they averaged out? To others it may also be important to exhibit whether any relation between debt levels and geographical diversification could be observed. For example, did multinationals with comparatively higher overseas sales or export sales have a higher debt-to-equity? These questions have been answered in the qualitative sense, subject to interpretation. They are not measured in the quantitative sense, e.g. applying the Kruskal-Wallis methodology would have been beyond the scope of this study. However, as aforementioned, it is recommended that this be considered in the future (Ch.VI. Recommendations for Further Research).

First reviewed were America's 50 largest global export corporations, [Fortune, July, 1990], reclassified in order of debt assumption [Debt-to-equity per Value Line Data Base Service, Lotus CD Investment, Forbes, January, 1990]. Foreign held US companies that formed part of these US based global export firms were excluded. Two examples are (a) Celanese Corporation; because it is controlled by Hoechst of Germany, and (b) Combustion Engineering; as it is consolidated with the balance sheet of Northern Engineering Industries (NEI), a British quoted company. A

complete list of those excluded can be found in Table 14. These type of adjustments reduced the sample from 50 in total to 46. The same companies were then matched against the 500 largest US industrial companies, [Fortune, April, 1990]. All forty six of the exporters were identified amongst the Fortune 500 group and ranked by overseas sales revenues (i.e. the foreign sales derived from foreign subsidiary operations prior to consolidation). The composite debt table (Table 15) allowed for comparisons with debt levels ranked by firm. Table 14 on growth, ranks overall sales (i.e. domestic plus overseas revenues) listing separately the ranking in overseas sales revenues. It also lists the percentage revenues from export activity (i.e. the foreign sales not derived from foreign subsidiary operations but from the parent by way of direct exports). The results from these comparative analyses conducted on this basis are further commented upon in the next two subsections.

3.1. a Debt-to-Equity versus Overseas Sales

In this comparative analysis (Exhibit 1), the FMC Corporation ranks first in debt assumption. However, even with a negative debt-to-equity of 101.30, it ranked only 10th in overseas sales. In comparison, Boeing ranked 44th in debt assumption with a debt-to-equity of only 4.3 but was first in overseas sales. On the basis of this qualitative observation, there seemed no obvious relation between the level of debt and geographical diversification. The results of high debt and an international expansion policy are by no means automatic in this respect. Having said this, the observation only concerns two examples. However, as indicated earlier, the aim was only to obtain some further information clues. Inferences for complimentary qualitative interpretation can then be derived from this..

Exhibit 1:

Ranking Geographical Diversification (1)

Global Company	Debt Ratio	Total Overseas Sales	Debt Assumption
FMC	101.3	10	01
Boeing	4.3	01	44

(Extract Tables 14, 15)

Note:
Table 16 shows the ranking of FMC, Boeing amongst the Global 1000 ranking.
Table 17 indicates those sample companies excluded as of 1988-89 from this ranking.

3.1. b Debt-to-Equity versus Export Sales

The next question was whether there appeared to be any relation between debt-to-equity and direct export sales, i.e. as opposed to overseas sales derived from foreign subsidiary operations. This was not evident (Exhibit 2 below). For example, in the case of FMC, the company ranked 37th in total sales but only exported 19.7%. Boeing on the other hand ranked third, exporting almost half of its total sales. Yet it managed to do so with considerably less debt than FMC.

Extending this analysis, the study added General Motors (GM) which ranked first in total sales. GM's debt-to-equity of 47.9, although substantially lower than FMC's, still represented much more of a debt assumption than Boeing's 4.3 ratio. Yet, GM was found to export only 7.8% whereas Boeing did export 46.3% of its products. Even total overseas sales, i.e. GM products sold locally overseas plus those exported from the US, made GM rank no further than 41st out of the 46

largest US exporting multinationals. Boeing again occupied the first position.

To be sure, another global automotive manufacturer and direct GM competitor, Ford Motor Co, was then included in the analysis. Once again, the earlier observation seemed confirmed. Ford with a debt-to-equity of 72.6 followed immediately onto FMC in terms of debt, yet only exported 9.5%.

Using the definition of multinationals (Chapter I), in the face of geographical diversification, the following exhibit would indicate that there is no relation necessarily between high debt levels and extensive geographical diversification. In this sample, despite normal debt levels, both Ford and GM remain well outside the top quartile of multinational performers in terms of non-US domestic sales, even when export sales are added to revenues generated overseas.

Exhibit 2:
Ranking Geographical Diversification (2)

Global Company	Debt Ratio	Total Overseas Sales	Debt Assmptns	Total Sales	% Export Sales
FMC	101.3	10	01	37	19.7
Boeing	4.3	01	44	03	46.3
General Motors	47.9	41	07	01	7.8
Ford Motor	42.6	35	02	02	9.5

(Extract Tables 14, 15)

The foregoing tends to support earlier observations that an optimal capital structure is the result of debt levels capacity that, importantly, is also (a) firm-specific, and (b) subject to cultural influences on international capital structure. This is commented upon further (Ch. VI Recommendations for Further Research). This study does not measure debt capacity (which would prerequisite definition of equilibrium at the level of each firm). The study does measure however, as has been indicated, for influences of culture on international capital structure.

3.2 Effects of Merger and Acquisition Leverage on R&D Expenditures

The recurring question of the effect of leverage on R&D following a merger or acquisition (M&A) warranted further analysis. In sorting the R&D percentages between companies within different cultural realms and between major regions in the world, the uniqueness of various R&D patterns could be ascertained (Table 10, Summary Tables 27, 30). However, an effective way of demonstrating the importance of resulting discretionary investments in R&D before and after acquisition events, has been to analyse each firm's comparative position. This is commented upon below.

Of the 87 firms in the primary sample, 37 were found to have been associated with a merger or acquisition during the last five years (Table 18). Of these, 12 firms diversified their core product range (a) vertically, i.e. within the same core business (b) horizontally, i.e. within a related field of activity, or (c) both (Table 19). This is a limited observation but nevertheless provides some indication that, for example, a takeover or acquisition is not by definition followed by a reduction in R&D. This indication is supported by the literature survey. Specifically, only in 5 cases amongst the sample population did the event result in slight

decreases. Another 5 firms reported no change at all. The remaining 15 firms declared their post-M&A periods as not applicable for purposes of this analysis. No significance was observed as to possible changes in R&D spending patterns after the M&A transactions. This appeared to confirm earlier observations seen in the literature survey that M&As do not affect the level of R&D expenditures. The same firms as a result do not tend to become more vulnerable to takeovers than other firms.

4. Summary

The present analyses of capital structure amongst multinationals give rise to several conclusions. Firstly, most of the determinants of financial structure as were presented, appear indeed relevant for the multinational business sector investigated here. Growth levels, of which no significant influences were found, are an exception. It should be noted that growth, as a macro-economic variable (in the same category as interest rates, inflation) in terms of explanation to the debt categories, is limited. Growth, at the level of the firm, is approximated by R&D levels; little debt funded or leveraged investment in R&D expenditures would take place were it not in anticipation of demand and market growth, for which such investments take place. Secondly, however, the influences encountered surrounding the debt ratios on which the tests focussed, are far less straightforward than the hypothesised effects in the theory. Most variables available in the theory influence the debt structure rather than leverage. The effects of theses variables tend to cancel out or are insignificant. Checks on any relationship between the assumed determinants of optimal capital structure (the debt ratio, growth and R&D) did not produce a variable with corresponding patterns. This makes the influences on total leverage and an optimal capital structure with multinationals not only smaller but also more susceptible to the effects of cultural influences.

The Kruskal-Wallis helped provide a better assessment than could be obtained from mere observations to complete the answers being sought. The test supports the hypothesis that:

(a) Multinationals located in different cultural realms have significantly different financial structures.
(b) These differences in financial structures result from cultural influences between major geographical areas of the world.

The test allowed to determine for any significance of cultural influence on alternative finance structures of firms relative to different cultural realms. In carrying out this test, when the results were run by industry, country or within cultural realms, no significant relationship was found. However when geographical groups classified by cultural realm were compared to each other, the results did indicate a significant relationship, rejecting the null hypothesis. The test was run industry wide.

The differences in debt patterns would confirm that multinationals can improve their financial planning on the basis of cultural analysis as relates to a capital structure which falls in the pattern of internationally recognisable capital structures. The cultural influence to some extent at least implies the existence of regionally segmented international capital markets. The assumption is made here that these differences are optimal. In sum, this examination does not proclaim significant differences within country groupings and industries. Yet differences between country groupings support the idea that there exists a variance, culturally, due to differences of international capital structures. The capital structure was measured at the individual firm level.

A comparison could be made where secondary data appeared similar

to the same means in the sample. In this presentation, the purpose was to isolate evidence of levels of leverage and geographical expansion. However, no apparent and direct relation could be established between debt and geographical diversification on this basis. Thus, multinationals do not seem to indicate that their ongoing expansions would be fundamentally based on leveraged growth only. As the study demonstrates, this cannot be achieved in isolation. The secondary analysis further supports these findings.

In another secondary analysis (but using primary data) the problem of pre- and post merger and acquisition conditions was addressed. Multinationals involved in M&As did not indicate adverse effects in their post-merger R&D, over those with limited involvement. Those multinationals not having been involved in M&A activity did not reflect more effective R&D spending patterns versus those involved. There appears no material merger and acquisitions effect on the optimal capital structure of the firms in this respect.

Having stated the processed results of the quantitative study and qualitative observations, Chapter V of the study is reserved for further interpretative discussion leading towards final conclusions. Chapter VI then provides recommendations for further research. As a concluding remark for this chapter it can be noted that quantitative tests of the empirical implications of the established theory of finance as pertains to multinationals are an extensive and promising area of research; it appears as yet largely neglected in tests of this sort and in the literature on both finance and the multinationals.

CHAPTER V

INTERPRETATION AND CONCLUSIONS

This chapter constitutes a brief summary of what has been done. To reinforce the remarks made in Chapter 4, it summarises clearly the empirical results, using this chapter to point out their salient features. This provides a link with the earlier work.

1. Interpretation

1.1 Aims

The study links the results obtained to the aims of the research. The aim essentially was to close the observed gap between formal M&M theory and the real world pertaining to multinationals as concerns leverage and optimal capital structure. This required (a) defining debt-to-equity under total leverage, (b) an examination as to what the economic determinants were and (c) to examine for cultural influences on international capital structure.

At the practical level this meant to assess:

(a) whether there exists between operational, financial, and total leverage, and what this means.
b) whether the debt-to-equity relation under total leverage is the most optimal positioning known to be applied in the real world of multinationals
(c) whether culture as relates to geographical expansion, the latter as a means of financial growth diversification, can be a

significant factor of influence in specifying an optimal capital structure.

(d) whether high debt growth for multinationals under conditions of total leverage can be considered a possible route for optimal policy formulations as pertains to capital structure.

1.2 Results

As indicated in Chapter 4, the data arguably may not tell us anything about optimal capital structure, the theory tending to influence the debt structure rather than leverage. Also, as aforementioned, this makes influences on total leverage and optimal capital structure less significant but opens up multinationals to the possibly significant effects of cultural influences. In fact the results of this study tend to confirm and strengthen the interpretation that:

(a) debt-to-equity under total leverage appears the most appropriate ratio known to represent the capital structure at the firm level for a multinational

(b) cultural differences can be of significant influence to the significant country grouping and minimal industry and country differences.

This is different from earlier research which strengthened the conclusions that:

(a) debt-to-equity under financial leverage is sufficient a ratio to represent the capital structure at the firm level.

(b) there were cultural differences contributing to the significant country and minimal industry and country group differences.

The shift of importance as observed above under (b), i.e. from single countries to countries grouped by cultural realm, may in part reflect the growing sophistication in policy formulations that take place amongst multinationals. These appear to focus on regional country groups that correspond with perceived world markets for goods and services. Thus while cultural groupings did not conclusively prove a cultural impact on financial structure, they do give an indication of influence in that direction. Subject to future research, these developments may further influence multinationals in their ongoing attempts to finance the proportions of debt, R&D and growth optimally whilst ensuring value-maximisation of the resources made available at the operating level. Therefore as concerns point (a), the debt-to-equity under total leverage may well be the more appropriate ratio to reflect the proportions of capital structure within the cultural context of a given multinational headquartered in a certain cultural realm from which it were to operate on a worldwide basis.

1.3 Evidence

As the results of the study already demonstrate, there appears a link between optimal capital structure and the cultural influences on international capital structure.The underlying link between the policies on debt levels as maintained by multinationals and cultural influences on international capital structure support as well as reinforce this.

1.4 Importance

A renewed awareness of potential cultural influences on capital structure will at least serve the purpose of setting a limit to instability. This is important because more firms in the future are likely to become multinational in structure. Much the same as those multinationals surveyed in this study, their mutual competition will be based largely

on this geographical pattern, and because of the strong global focus, across their respective industry sectors. It appears only reasonable therefore to expect that some of the same characteristic international industrial attitudes such as great drive for expansion and R&D, will be infused in their activities.

The latter in this study's evaluation stands a better chance when taking a global form. While this particular study does not focus on strategy, in the context of this research, global growth strategies as indicated would most likely be derived from:

> (a) the economic attraction to distribute R&D costs across a geographically diversified and thus larger market than that of the firm's national market only.
> (b) capitalisation on size economies to reap the advantages of larger scale business operations across the world.
> (c) making best use of firm-specific resources on a global basis by function or business process, e.g. finance, recapitalisation.
> Note: as to (a) above, under the definition used Ch.I, Section 6.4, all R&D is written off against profit and loss instead of being capitalised on the balance sheet.

This may be relevant to further research in future (Ch VI). In practice, most multinationals will probably tend to combine one or more of the above strategies. In the same vein, many of the sample firms can already optimise their activities as if the world were a single market, based on organisational and operating logic.

Further, analysis of pre -and post M&A activities showed, at least in the qualitative sense, that there was no negative effect to be expected from mergers or acquisitions on R&D levels. This subject has already been considered as pertains to the influence of discretionary investment

policy on R&D. A full discussion, no matter how important, would be inappropriate in a final chapter which must reflect the scope and be circumspect in length. Here it is merely to interpret and comment conclusively on specific aspects of leverage which emerged in the study.

In terms of importance, some mention must be made about the relative success in geographical diversification as a form of financial diversification. This has been a useful criterion, also for international comparison, albeit that this issue varies in importance for different firms and between cultural realms. In this situation certain types of firms, as indicated earlier, stand to gain differentially. Access to and changes in the capital market due to cultural influence and the tax system might further remove a certain bias from the financial structure of multinationals; this, it is believed will improve the mobility of capital but differences between major regional realms and geographical groupings remain.

Most important is that the answers this research has brought about in answering the questions posed, in effect provide practical guidance for the international manager, thereby further closing the gap between theory and practice. These managers after all will be better equipped to operate internationally. They will be able to determine what a capital structure in certain parts of the world is likely to be i.e.for those companies headquartered there - not simply operating there. They are therefore likely to understand better why and how capital structure differs internationally.

1.5 Statistics

The examination of statistical criteria in the quantitative sense, generally underlined what in any case is not surprising; the statistical

evidence as commented in the study is on branch information, bearing on the subject. Other evidence includes a theoretical rationale and general belief on the basis of qualitative analysis and judgment. Obviously, each corporate situation in a multinational environment has to a large extent to be treated on its firm-specific merits. This was important and therefore the limitations and ambiguities of the criteria were identified early in the study. The uniqueness of specifications and circumstances of the firm as well as its limitations are equally important in practice but not always easily applied.

The difficulty in creating a data bank and the limitations this posed on statistical application is an example of this. As a result, only non-parametric statistics could be applied. The use of parametric statistics, if this had been possible, arguably could have provided a stronger statistical foundation. This is not to say however that the data bank as obtained has not been sufficient from which to draw a meaningful interpretation and subsequent conclusions. In relation to this, the use of the Kruskal-Wallis procedure has been the most appropriate methodology (Section 2. Conclusions).

1.6 Limitations

In this study, it was imperative to survey the pressures of leverage and its impact on debt, growth and R&D. These economic determinants may either retard or hasten change and adaptation of an optimal capital structure in the complex business of multinationals. The concern therefore has been to try and assess the outcome of this kind of survey according to the previously defined criteria. Access to information at the firm level however, as indicated, also varied. This created limitations in terms of interpretation.

In retrospect, the realm of multinationals consists of various culturally

defined world regions which would appear to have significant effect on leverage. In an extensive study of multinational business one therefore would also have to devote a great deal of attention to the cultural influences of international capital markets, i.e. in addition to the cultural influences on international capital structures, and this, at the level of individual firms in the different countries concerned. Thus, this analysis could be extended further but it is quite impossible to do this in a single chapter of a thesis and within its limited scope.

Further, the entirety of the discussion here has per force almost wholly been confined to the issue of total leverage and optimal capital structure. In the outcome of this study it is recognised that this is a serious omission. This is commented upon further in the text (Ch. VI Recommendations for Further Research).

1.7 Contribution

Does all of the foregoing really mean that the original M&M propositions and their invariance will prevail and that it does not matter what the capital structure is? If not in the real world of multinationals, in theory this may be the case but only to some extent. It would not be true to say that the proposed extension to the literature has therefore added nothing to what was implied in the M&M invariance analysis. It was after all the failure of the latter analysis to cope with total leverage on a multinational scope that led to the evolution of this proposed extension that counters existing invariance theory. This is where the study narrows the gap between existing theory and practice as generally prevails among multinationals.

On the matter of M&M beyond the suggested improvements and extensions for the international manager, one would agree with one's critics that the results do not close the M&M issue altogether, albeit that

it may have shed some light on the issue of total leverage that surrounds it. The problems here are far too complex to be settled by any one empirical study. One trusts there will be agreement that the results show a contribution to the ongoing M&M debate while providing practical relevance to those international practitioners who, in search of an optimal capital structure, wish to apply total leverage at the firm level.

In critical exchanges of this kind in which some of the emphasis is inevitably on technical details, the danger is always to lose perspective easily and to overlook the progress towards agreement that has been made. In terms of substantive findings, it is felt that there should be agreement at least that the study's assessment of cultural influence between country groups on the leverage issue within multinationals has been conducted with due care.

If there is a link between cultural influence and decision-making on the subject of leverage, the cultural variant will affect capital structure to differ between country groupings. This is another important consideration to be taken into account by international managers in an increasingly global environment. Therefore, the influence of culture would warrant future research. An example would be to examine in further detail the effects of property and ownership laws and regulations by country in the arrangements of respective optimal capital structures (see Ch. VI Recommendations for Further Research).

2. Conclusions

2.1 The Issue of Total Leverage

One immediate conclusion of the study is that if multinationals progressively occupy a larger, more important place in the world in their respective markets, they cannot be immune to the issue of total leverage. Where multinationals have had a growing proportion of turnover and profits from foreign operations over the last several decades, it is manifest that notwithstanding the pressures of debt accompanying this, they have acquired positions of strength. Having said this, the chances that certain multinationals will tend to become less vigorous and not retain their position are always there.

2.2 Optimal Capital Structure

The foregoing goes some way in explaining the study's interest in the subject of total leverage and optimal capital structure. Put differently, what has been studied, has in fact been (a) the feasibility of a high debt growth policy under conditions of total leverage for purposes of value-maximisation of operating resources at the firm level, and (b) this, taking advantage of geographical expansion as a form of financial diversification. The assumed route to effect this has then been the efficient application of leverage towards an optimal capital structure. This provides a slightly different perspective on the same subject.

It has further been argued, that the theoretical assumption of perfect capital markets hardly applies to some of the developing countries amongst the primary sample. The results of the research support this argument in that there appear country effects on capital structure which derive at least in part from cultural influence between country groupings or cultural realms. Hence the varying degree of impact of total leverage.

2.3 Total Leverage

Any process that underpins total leverage also needs specification of the firm's know-how, monopolistic advantage, or owner-specific advantage. Thus, the capital structure discussed in the literature becomes applied to a dynamic issue, that is not only to the levels of debt but also to those of the circumstances of firm-specific operational advantages.

The study also encountered other complexities. For example, in the relation of leverage and R&D. The suspicion was that the constant financial creativity required to generate new leverage opportunities and funding in the form of M&As had to lead to a curtailment of discretionary investments in R&D. It was feared that ultimately, negative effects would then occur, mainly due to lack of R&D e.g. a curtailed product development. Yet, in this study, multinationals involved in M&As do not appear affected in their post-transaction performance over those with limited involvement. Firms not acquired did not have significantly higher or lower R&D versus those acquired. In fact, R&D expenditures would seem to increase in parallel with intensive acquisition activities where R&D intensive companies are concerned. No significant and negative effects were observed. The overriding determinant it appears, remains that of cultural influences on international capital structures. The main findings in this respect are as set out below.

2.4 Cultural Influences on International Capital Structures

It has been apparent from this study that the capital structure adopted by companies and the resulting levels of leverage, country, type of industry, and geographical region of the world, are subject to specifically the cultural influences at the level of regional realms in

world markets. The decision-making process at the firm level would appear to fall in step with this.

The analysis conducted, in effect indicates that the total leverage of the firm is not necessarily influenced by the country or industry it is active in. As seen, there is a minimal relation between countries as pertains to the use of leverage. Industry groups rate also as minimal. Only the relation between cultural realms in the use of leverage appears significant. The influencing factors for differing degrees of total leverage at the level of the individual firm can thus be related to culture.

Therefore, it can be stated at least tentatively, that firm-specific decisions may result in different capital structures for firms in the same industry and/or country but these differences are less than the differences one does find across all industries or countries. To firm up these conclusions, as indicated earlier, more similar research needs to be conducted. Having said this, the indication of direction in the pattern of these cultural influences on international capital structures, appears clear and significant.

The database used encompasses both, less developed as well as industrialised countries. In conducting business internationally, obviously one increasingly has to be aware of differences of financial structure between different country groupings. Only in a minority of instances perhaps will this be applicable to differences between individual countries and industries specifically. Thus, this research is of immediate practical use for the international manager. It provides an insight into the likely capital structure of multinational firms headquartered in certain cultural realms of the world. At the same time it provides the international practitioner with an indication of what sort of capital structure would be likely to be optimal if

representative for these same cultural realms. In addition, the cultural realms and corresponding capital structures appear to parallel major world markets for goods and services.

CHAPTER VI

RECOMMENDATIONS FOR FURTHER RESEARCH

This chapter addresses in more detail why culture is important rather than a statistical artifact. The data imply why there is a cultural influence internationally on capital structure and why further research on this topic would be welcome. Behind the data remain two other important considerations as relate to the geographical expansion and capital structure of multinationals. These can be categorised as follows:

1 Leverage, Growth and Size Effect
2 Capital structure and Organisational Fit

As outlined in the next two sections, these issues also reflect the effects of property and ownership laws and regulations by country that arise when arranging respective optimal capital structures under total leverage.

1. Leverage, Growth and Size Effect

The issue of debt naturally flows over into that of growth and size effect, providing opportunities for total leverage. According to Prahalad and Doz [1987]:

> "If an aspect of business is investment-intensive, e.g. R&D, manufacturing, the need to leverage that investment increases the need for global co-ordination and implementation quickly to make large initial investments profitable" (pp. 13 - 90)

No empirical study was identified linking debt , growth and size effect at the level of the firm. However, as Keegan [1986] observed:

> "It is possible to create a global strategy that recognises similarities and takes advantage of opportunities to leverage experience, product R&D, and marketing which also recognises differences whenever this response is not cost effective" (a. p. 3)

This might have indicated a potential loss of flexibility and speed of response that comes with economies of scale against the benefits that it may bring. Any trade-off must be sufficiently attractive.

The above raises other related topical areas that stand to gain from further study. For example, Sullivan [1974] (pp. 7-14), Lyn and Papaisannou [1985], saw a relation between market power and leverage. Kimura [1989] associated worldwide product scope with the motives for direct foreign investment (pp. 295-314). Firms can further optimise their activities as if the world were a single market. As Keegan said:

> "Research will generate profitable growth if the research effort is guided by market forces" (Ibid b. pp.24 - 52)

The factor of size effect in this respect is of particular relevance to the multinational. However, existing argument on the issue begs a resolution. Ohmae [1990] still advocates a borderless world, with Porter [1990] taking a diametrically opposing view. According to Porter [1987], it was a firm's national virtue that in part by association to the country of origin created the opportunity to cross borders (pp. 43 - 59). Today, [1995] neither of these authoritative authors has changed his position on this issue. In this study's view, how management acts on these opposing views has been very much a function of a multinational's

own firm-specific situation at a specific point in time.

This subject needs further attention. As Galai and Masulis [1976] already explained the fiscal savings obtained from geographical diversification relate directly to increased levels of debt due to size effect and global scope. This the authors said therefore could be a rather inexpensive way of raising funds, giving the firm an advantageous leverage while the business is expanding (pp. 53-82). Later, Dow [1989], under such conditions recommended an international interlisting on more than one stock exchange (p. 394). This could be another specialist area for further research. For those who seek to understand this issue of leverage, growth and size effect, in all its economic depth and complexity, Scitovsky [1990] describes the benefits of monopolistic, asymmetric, and non-price competition and why these cannot easily be ignored (pp. 135 - 148).

Some critics no doubt may argue against the research topics as proposed above. They may claim that the price to be paid for growth and size is simply an intolerably high debt. Yet there already exists good evidence to support the view that the debt ratio is not higher with multinationals as compared to those of the domestic firm. Lee and Kwok [1988] conducted empirical tests to investigate whether multinationals are significantly different from domestic companies in this respect (pp. 195-217). Their conclusion was that:

> "Contrary to conventional wisdom, the empirical findings show that multinational corporations tend to have lower debt ratios than their domestic counterparts" (p. 195)

Some explanation is needed to put this conclusion into context; Mathur and Hanagan [1985] in their survey confirmed that barriers due

to partial segmentation of international capital markets are easier overcome by multinationals. These as the authors said possess certain assets, such as financial economies and managerial efficiency, which make them more efficient in overcoming such restrictions and costs (pp. 135-146). Scott and Martin [1971] also stressed the importance of firm size in this respect (a. pp. 67-73). Also, shareholders and investors have experienced multinationals as tending to outperform large domestic groups. The latter has been confirmed on the basis of empirical evidence provided by Sharpe [1985], indicating superior foreign versus domestic investor returns (pp. 703-713). Sharpe [1990] then incorporated Solnik and Nemeth's [1982] time series analysis of 17 countries during 1971-1980 with consistent results (p. 782). Also Ibbotson [1982] having compiled investor returns during the 1960s, 1970s confirmed excess market value of foreign returns versus domestic returns .Similar findings were later reported by ,Kim W. and Lyn [1986] (pp. 119-125) as well as Cheol [1989] (pp. 345-348). Khan [1989] recognised the gains to be derived from international diversification (p. 388).

Such evidence naturally marks international market imperfections, also at the level of the firm. It reflects the real option value, i.e. the opposite of the potential opportunity loss of multinationals. At the firm level, management subsequently is concerned with total variability of the total net cash flow rather than an investor's risk component only. What matters, as Levy and Sarnard [1970] observed early on, is that large firms at the same time will continue to have better access to capital markets (pp. 795-802). This presents a quite formidable argument in favour of the large firm operating internationally and warrants further empirical research.

2. Capital Structure and Organisational Fit

In studying the debt-to-equity ratios in terms of total leverage, the question arises as to what type of organisation is required to fit leveraged growth, size effect and its accompanying capital structure. This too requires further research. On the face of it, given the complexity of factors influencing the corporate organisation, capital structure and growth of the firm, there is little basis on which to argue that a particular type of organisation would necessarily be the best. The capital structure of each firm, it can be said, reflects its unique history and its own particular way of meeting the changing situation. However, apart from the technical and commercial considerations which influence the organisation and size of firms, there is the problem of dealing with the risks of fluctuating demand or growth. In this case, there is no evidence of a single best solution. Marshall already observed that:

> "Consumer demand after all, governs traders demand"
> (Ibid. b. p. 92)

This prompts the question what the optimal organisation for a certain level of debt ought to be. For example, one concern has been that as conglomerates grow, their inherent organisational design might prohibit capturing the full benefits of increased levels of leverage beyond a certain threshold. A review of the work by Marshall, Yavitz and Greenberg [1984] on the incentives for diversification and resulting structure of the conglomerate does not provide a satisfactory answer on this important technicality (pp. 1-23). Boulding [1981], a contingency theorist, expressed the relationship between growth and capital structure as a survival of the fitting rather than the fittest (pp. 197-208). Scott and Martin [1971] expressed this same notion of fit saying that:

"Dynamic equilibrium implies changes and the ability of the system to preserve its internal structure of relationships despite a changing environment"
(Ibid. b. p. 427)

Provided such organisational and environmental fit are present, growth and capital structure conceivably could be held in equilibrium. Looking at the issue from within, Wu [1987]) even saw inter-organisational strategy as a way of increasing the firm's effective level of leverage. As Higgins and Diffenbach [1989] pointed out, any corporate structure has its own payoffs and risks (pp. 133-139). As has been observed throughout the thesis, this is no different in terms of corporate financial structure, specifically as pertains to leverage and the optimal capital structure of multinationals at the firm level.

LIST OF ABBREVIATIONS USED

ANOVA	Analysis of the Variance
ANOCOVA	Analysis of the Co-variance
B/S	Balance Sheet Statement
CAP	Capitalisation
D/E	Debt-to-equity relationship in Leverage
DTL	Degree of Total Leverage
DOL	Degree of Operational Leverage
EBIT	Earnings Before Interest and Taxes
FASB	Financial Accounting Standards Board
FL	Financial Leverage
GAAP	Generally Accepted Accounting Principles
M&A	Mergers and Acquisitions
M&M	Modigliani and Miller
OCF	Operational Cash Flow
OECD	Organisation for Economic Co-operation and Development
OL	Operating Leverage
P&L	Profit and Loss Statement
plc	Public Limited Company
R&D	Research and Development

ROE	Return on Equity
SEC	Securities and Exchange Commission
SSAP's	Statements of Standard Accounting Practice
TIE	Times-Interest Earned
TL	Total Leverage
WACC	Weighted Average Cost of Capital

LIST OF CARDINAL DEFINITIONS AND TECHNICAL NOTES

Accounting Break-even

Dividends

EBIT

Exchange Rates

Gearing

Geographical Diversification

Global

Inflation

Junk Bonds

Leverage

Shareholders' Equity

TIE

WACC

Accounting Break-even

The Accounting Break-even is simply the sales level that results in zero operational net income. It is the most widely used measure of break-even

Dividends

Dividends are payments due to shareholders on a residual claim or where such relate to arbitrage as the process of selling overvalued assets versus undervalued assets - or their equivalent cash flows- in markets related and which are temporarily out of equilibrium.

EBIT

Abbreviation of "Earnings before Interest and Taxes" used in the TIE ratio.

Exchange Rates:

The exchange rates as relate to inflation and the exchange risk is the uncertainty and the return on foreign financial assets due to the unpredictability regarding the rate at which the foreign currency can be exchanged into the investor's own currency.

Note:

In this thesis the exchange rate is referred to in relation to inflation and the historical cost statements of annual reports of the international companies in the primary sample. Conventional accounting standards as relate to the treatment of currency exchange, their translation or their conversion, have been adhered to in the evaluation of consolidated financial statements, encompassing parent as well as subsidiary reporting on a worldwide basis.

Gearing

Gearing is the UK term used to indicate the relationship between equity capital and fixed interest capital, i.e. technically equivalent to the American term of financial leverage. Under this definition, after

deducting interest on debt, profits are available for dividends on the equity. The effect of high gearing makes it more uncertain that dividends can be paid but if the debt is financing profitable business, dividends can grow more than proportionally.

Geographical Diversification

Geographical diversification is interpreted as a form of financial diversification in the context of reduced portfolio risk.

Global

The term "Global" used to refer to global industry structures as reflect:
(a) homogeneous market demand in non-fragmented industries,
(b) heterogeneous market demand in fragmented industries,
(c) the economic imperative for the firm to distribute R&D costs, economies of scale, and firm-specific resources.

Inflation

The percentage change in the purchasing power of a unit of currency over a certain period of time. Equivalently, the rate of change in the price index of a certain period of time.

Note:
As pertains to the study, US and Japanese firms tend to provide supplementary inflation adjusted statements on a consistent basis. On this basis annual reports are stated at historical cost. UK firms do not adhere in full to a historical cost basis for their basic reports but provide additional inflation-adjusted statements or footnotes to their annual reports. The data used therefore are real rather than nominal data. That is, the data have been adjusted for inflation.

Junk Bonds

Junk bonds are high-risk/high-yield bonds in the context of financial leverage, as opposed to low risk investment bonds.

Note

The study does not mention junk bonds as a specialised bond when referring to bond financing as part of capital structuring. The issue of junk bonds is outside the scope of this study.

Leverage

Leverage is referred to as :

(a) the use of relatively fixed-cost sources of funds, achieving an equilibrium by applying low interest borrowed funds relative to the acquisition of high interest assets - or their equivalent cash flows - for an increase in expected rate of return to the firm's shareholders but only with a commensurate increase of risk.

(b) the efficient and effective integrated use of the debt capacity and management capacity of a specific firm.

(c) the whole operation being based on a defined appropriate total leverage position and optimal capital structure by linking financial strategy and business policy, taking into account cultural influences on international capital structure.

Shareholders' Equity

Shareholders' equity initially is treated as the net worth of a business firm, including capital stock and certain net worth reserves, leaving common equity as part of the total net worth that belongs to common shareholders and total shareholders' equity as the worth that includes the preferred shareholders. The latter, aside from capital stock and reserves includes capital (paid-in surplus) and earned surplus (retained earnings).

TIE

The Times Interest Earned ratio (EBIT/interest) is referred to in the context of a measure of long-term solvency pertaining to a company's ability to cover interest obligations.

WACC

The weighted average of the costs of debt and equity referred to in financial theory is the required return of any investment of the firm that must be earned on existing assets to maintain the current value of the firm (100% capital = E/V+ D/V).

Consequently, the formula used as a discount rate where evaluating cash flows from proposed investments or existing operations. The WACC encompasses the weights (debt and equity percentages) and expected returns (costs of debt and equity). The expected returns x weights when added constitute the WACC ,[WACC = (E/V) x Re + (D/V) x Rd], V denoting value, and Re, Rd as the required returns (or costs of) equity and debt.

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1 NOTES TO THE STUDY

1.1 Measurements

In this study, the principal measurement has been that applied to the financial-economic composition of the firm as expressed in its debt ratio under total leverage. In this context, the debt-to-equity and R&D are defined as determinants controllable at the level of the firm, i. e. the two variables that can limit expansion and growth.These therefore are said to be model-interior, also in terms of effective management influence on the functionality of the firm. Growth is seen rather more as model-exterior in character. Many more external factors than internal ones appear to influence growth. Thus, growth is considered to be primarily of a macro-economic nature, i.e. rather than micro-economic at the firm-specific level.

1.2 Significance Levels

Because the observed results might differ from the hypothesis but were based on a sample, tests of significance were needed. The significance level was set at 0.05. By using this test of significance, this gave the probability that any difference between the sample value and the hypothesised value would only be due to a sampling error. The hypothesised value is referred to as the null hypothesis. Where the test showed the difference to be highly improbable, the sample value was found to be statistically significant, i.e. the difference probably being real in case of the differences in debt ratios between cultural realms at the level of 0.025 and greater.

The extract of a Normal distribution as set out below indicates the probability of the sample value being different from the population mean. The significance levels listed are the ones used in the examination. They are also referred to in the comparative analysis. As indicated above, the decision rule was set at the 0.05 significance level.

Exhibit: Significance Levels Used

Distance from μ (S/√n is the estimated standard error)	Significance Level	Probability of sample mean outside stated limit	Level of Confidence
+ 2.0 S/√n	0.05	5 %	95 %
+ 2.24 S/√n	0.025	2.5 %	97.5 %
+2.65 S/√n	0.01	1 %	99 %
+3.35 S/√n	0.001	0.1 %	99.9 %
+3.9 S√n	0.0001	0.01 %	99.99 %

Level of significance = 100 - level of confidence

1.3 Chi-square Goodness-of-Fit Test

The chi-square goodness-of-fit test was used to measure how well the observed data fitted with what would be expected under specified conditions, here the theoretical frequency as the expected frequency in relation to the observed frequency. The following null and alternative hypotheses were established:

Ho: the levels of debt-to-equity, R&D and growth in the sample constitute a normal distribution.
H1: the levels of debt-to-equity, R&D and growth in the sample do not constitute a normal distribution.

The chi-square goodness-of-fit test statistic used was

$$x^2 = \sum \frac{(fo - fe)^2}{fe}$$

where; fo = observed frequency
fe = theoretical expected frequency

The chi-square test statistic is distributed as a chi-square variable with K - 1 degrees of freedom, where K is the number of categories specified in the null hypothesis. The magnitude of the discrepancy between the observed and theoretical frequencies formed the basis of the test. Where the expected frequencies differ from the observed frequencies by a large amount, x^2 will tend to become large. The x^2 values obtained were $x^2 = 12.08$ for growth, $x^2 = 50.91$ for R&D and $x^2 = 3.56$ for debt-to-equity. In applying the decision rule, the Ho was rejected for growth and R&D. Due to the nature and characteristics of the variables it would not be anticipated that the distribution would be normal. For example, the distribution of R&D would be anticipated to be tightly packed at the lower levels of the distribution with a few exceptions in the upper categories. The same can be said about growth. This leaves the distribution skewed to the right.

1.4 Nominal Values

Critics may argue that stock market valuation will differ substantially from the nominal value of issued equity plus reserves (principally also referred to as book value, intrinsic value or book value adjusted to market as seen in the previous chapters). This is obviously the case but it should be no reason to suggest that equity valued at nominal values introduces distortion. At the level of the firm, in the operating sense, the opposite of this observation will tend to occur. The main reason for this is as follows. The criterion used to value for example a private firm (using profit multiples adjusted by industry and that vary by geography) is quite different from that used to express a public perception of value at a point in time at a given stock exchange taking into account a wider set of issues. This has been set out from the beginning of the study in the delimitations (Ch. I). This is why, in the real world of

multinationals, the Chief Executive Officer will not always agree with security analysts as to the value of his firm. Put differently, the performance value at the level of the firm and public perception do not always agree.

Where there could be agreement, although this is not exactly within the scope of this study, is that is that Price/ Earnings indicators on debt-to-equity, as expressed through quoted listings, generally perform better than e.g. yields on medium term treasury bonds. However, this is relative to the risk involved and differs from region to region. For example:

(a) during the period 1984-89, Price/ Earnings in the UK ranged 13.5 - 12.8. In the US this was 11.2 - 14.2.
(b) whereas yields on bonds held around the same level in the UK, i.e. 10.25, in the US these decreased from 11.79 to 7.9 and have not recovered since. In comparison to (a), to date, Price/ Earnings in the UK have soared to 16.3, and 17.3 in the US.
(c) as to dividends, these have seen remarkably little change in the UK, i.e from 4.4 in 1984 to 3.7 in 1994, but in the US decreased from 4.7 to 0.7 for the same period.

Source: Bank Mees Pierson

Within the scope and from the perspective of this study, the observations made in the study point towards significance of cultural influences on multinational capital structure.

Data Collection - Master Sheet

TABLE 8

Sample-time period 1990 Q1/Q2	Q3/Q4	Initial serial number	Full name of Company respondent in country of registration	Name of principal country	Percentage D/E	R&D	Growth
A		01	Allied Ghee Industries Ltd.	Pakistan	70.0	8.0	10.0
A		02	Al-Gosaihbi Group	Saudi Arabia	46.0	14.5	12.0
A		03	Al-Taher Ltd.	Oman	22.0	10.0	10.0
A		04	Ad-Dustoor Ltd.	Jordan	50.0	2.0	5.0
A		05	Artesia Foods Ltd.	Greece	75.0	3.5	3.5
A		06	Pt. Tri. Atmaja	Indonesia	150.0	2.0	10.0
	B	07	Avon Products Co.	U.S.A.	80.0	1.0	0.8
A		08	Axios Food Company Co.	Greece	50.0	5.0	25.0
	B	09	BPB Industries PLC	U.K.	17.0	0.3	7.5
	B	10	British Petroleum PLC	U.K.	42.0	5.9	21.9
	B	11	The Boots Company PLC	U.K.	30.0	1.0	25.0
	B	12	Bufalo A.S.	Turkey	61.4	2.3	34.4
	B	13	The Coca Cola Company	U.S.A.	54.0	5.4	50.0
A		14	Circular Distribution Ltd.	Kenya	50.0	5.0	20.0
A		15	Contact Shoe Company Ges.m.b.H.	Austria	00.0	15.0	40.0
A		16	Cosmos S.A.	Greece	25.0	15.0	25.0
	B	17	Cyprus Airways	Cyprus	62.7	0.15	0.9
	B	18	Davy Corporation PLC	U.K.	38.1	25.4	14.5
	B	19	Daegu Financial and Investment Company-Royal Chemical Industry	Korea	70.0	13.0	15.0
A		20	Ribhi Darwazeh and Sons Company	Kuwait	25.0	8.0	45.0
A		21	Dejla Ltd.	Lybia	50.0	2.0	7.0
	B	22	Digital Equipment Company	U.S.A.	14.0	12.0	11.0
	B	23	ECC Group PLC	U.K.	14.6	1.2	4.8
	B	24	Economic Insurance Co. Ltd.	Greece	28.0	0.0	29.5
A		25	Ets. Fouad-Saccal S.A.	Syria	60.0	10.0	20.0

Note:
At the level of the firm, D/E is defined in Ch. I, Section 3.1, Ch II, Section 1.3. R&D is defined in Ch II, Section 6.4. Growth, the macro-economic variable, is calculated from the P&L.

Sample-time period 1990 Q1/Q2	Q3/Q4	Initial serial number	Full name of Company respondent in country of registration	Name of principal country	Percentage D/E	R&D	Growth
	B	26	Evergreen Marine Corp. Ltd.	Taiwan	50.1	2.0	(0.7)
A		27	Falcon Gulf Ltd. - Alam Group	Dubai	55.0	11.5	25.0
A		28	Fouman Chimie S.A.	Iran	70.0	10.0	35.0
	B	29	Grand Metropolitan PLC	U.K.	30.0	5.8	54.0
	B	30	Guinness PLC	U.K.	39.0	48.3	31.0
A		31	Hamlaan Ltd.	Kuwait	85.0	5.0	30.0
	B	32	Hanson PLC	U.K., U.S.A.	8.1	0.0	(5.0)
	B	33	Hitachi Ltd.	Japan	38.3	0.7	14.7
	B	34	H. J. Heinz Company	U.S.A.	57.9	35.6	4.9
	B	35	Husein Sugar Mills Ltd.	Pakistan	41.0	3.3	68.7
	B	36	Imperial Chemical Industries PLC	U.K.	42.0	5.9	22.0
	B	37	Intertan Inc. - Tandy Corporation	U.S.A.	27.9	8.8	(13.3)
A		38	Industrias Sola Basic Mexico D.F.	Mexico	80.0	10.0	20.0
A		39	Jezima Group of Companies	Sri Lanka	65.0	12.5	30.0
	B	40	Khurma Trading Estab. Ltd.	Jordan	100.0	10.0	20.0
A		41	Kurtas A.S.	Turkey	67.0	25.0	40.0
A		42	Kutas A.S.	Turkey	67.0	30.0	70.0
	B	43	Kuwait Investment Authority - Kuwait Investment Office KIO	Kuwait	41.0	0.5	33.0
A		44	Lanka Lloyd	Sri Lanka	75.0	3.0	10.0
A		45	Lashko Co. Ltd.	Oman	60.0	10.0	25.0
	B	46	Lematic Overseas Ltd.	Lebanon	32.0	35.0	9.0
	B	47	Laura Ashley PLC	U.K.	122.0	2.0	17.5
	B	48	Lonrho PLC	U.K.	67.0	0.7	10.9
	B	49	Lucas Industries PLC	U.K.	14.5	6.0	13.8
	B	50	Marks and Spencer PLC	U.K.	58.0	5.3	9.5
A		51	Megabyte Espana S.A.	Spain	80.0	10.0	30.0

Sample-time period 1990 Q1/Q2	Q3/Q4	Initial serial number	Full name of Company respondent in country of registration	Name of principal country	Percentage D/E	R&D	Growth
	B	52	Marubeni Corporation	Japan	89.9	5.8	27.0
A		53	Mekah Investments Ltd.	Kenya	50.0	3.8	5.2
A		54	Mimosa Co. Ltd.	Mauritius	50.0	4.0	8.0
	B	55	Mitsubishi Corporation	Japan	88.9	15.6	17.0
	B	56	Mitsui Co.	Japan	7.3	14.0	14.0
A		57	Musa Ltd.	Lybia	66.7	9.0	30.0
	B	58	NEC Corp.	Japan	57.9	1.5	7.5
	B	59	Noble Raredon PLC	U.K.	61.9	48.0	21.3
A		60	Pariziana A.S.	Greece	50.0	75.0	9.0
	B	61	Pentel Co.	Japan	74.0	0.4	12.9
A		62	Plastic Co. A.M. Zaghloul	Egypt	60.0	11.5	17.0
	B	63	Platignum PLC	U.K.	45.1	0.5	(20.2)
	B	64	Proctor & Gamble	U.S.A.	42.0	2.9	12.5
A		65	Remalux Paints Co.	Jordan	32.0	0.0	9.0
	B	66	Reuters PLC	U.K.	40.8	5.0	18.3
A		67	Reserve Services Ltd.	Lebanon	80.0	16.0	28.0
A		68	Risdall Group	U.S.A.	50.0	9.0	36.0
	B	69	Rothmans International Inc.	U.K.	41.2	4.0	21.5
	B	70	Rolls Royce PLC	U.K.	30.8	20.6	13.5
A		71	Roomi Enterprises Ltd.	Pakistan	70.0	13.0	15.0
A		72	Sawa Enterprises Ltd.	Kenya	25.0	3.0	8.0
A		73	Sawa - Pema Holdings	Kenya	67.0	4.0	5.0
	B	74	Shaheen Cotton Mills Ltd.	Pakistan	66.0	8.0	00.0
A		75	Shahin Constructions Company	Syria	25.1	00.0	9.1
A		76	Singh Air Conditioning Ltd.	India, Bahrain	50.0	15.0	17.5

Sample-time period 1990 Q1/Q2	Q3/Q4	Initial serial number	Full name of Company respondent in country of registration	Name of principal country	Percentage D/E	R&D	Growth
A		77	Singh Ranbij - Dhiman & Sons Ltd.	India	6.0	25.0	15.0
A		78	Star Paper Industries Ltd	Nigeria	25.0	11.0	17.5
A		79	Sunal A.S.	Turkey	67.0	40.0	30.0
A		80	S+J Associates Ltd.	Pakistan	70.0	10.0	8.0
A		81	S. R. Textiles Ltd.	India	75.0	6.0	25.0
A		82	S+S Associates Ltd.	India	60.0	12.0	20.0
A		83	Tako Ltd.	Israel	60.0	10.0	25.0
A		84	Yong Lee Rubber Company	Malaysia	67.0	30.0	15.0
A		85	Veladaile Ltd.	U.K.	50.0	5.0	20.0
	B	86	The Walt Disney Company	U.S.A.	28.0	25.0	34.0
	B	87	Waverly Cameron PLC	U.K.	58.3	10.0	18.6
A		88	Wegal S.A.	Italy	46.0	3.0	15.0
A		89	Zevet - Boy & Abotsi Ltd	Ghana	30.0	5.0	20.0
A		90	Zevet International Ltd.	Kenya	36.5	17.0	40.0

Master Sheet - Support Schedule

TABLE 9

Sample-time period 1990 Q1/Q2 Q3/Q4

A = 48

B = 42

Name of principal country	Number of companies
1. U.K.	19
2. U.S.A.	11
3. Japan	06
4. Kenya	05
5. Greece	04
6. India	04
7. Pakistan	04
8. Turkey	04
9. Jordan	03
10. Kuwait	02
11. Lebanon	02
12. Lybia	02
13. Oman	02
14. Sri Lanka	02
15. Syria	02
16. Austria	01
17. Bahrain	01
18. Cyprus	01
19. Dubai	01
20. Egypt	01
21. Ghana	01
22. Indonesia	01
23. Iran	01
24. Israel	01
25 Italy	01
26. Korea	01
27. Malaysia	01
28. Mauritius	01
29. Mexico	01
30. Nigeria	01
31. Saudi Arabia	01
32. Spain	01
33. Taiwan	01
	90

TABLE 10

Data Collection - Sample Selection (Classification)
Sample Selection

Serial number	Full name of Company respondent in country of registration	Full name of initial contact person(s)	Percentage D/E	R&D	Growth
	U.S.A.:				
01	Avon Products Co.	Nora Ann Flores	80.0	1.0	0.8
02	The Coca Cola Company	Stutee Gulhati	54.0	5.4	50.0
03	Digital Equipment Company	Michelle Hagan	14.0	12.0	11.0
04	H. J. Heinz Company	Babu C. Sawlani	57.9	35.6	4.9
05	Intertan Inc. - Tandy Corporation	Rahman Tabalo	27.9	8.8	(13.3)
06	Proctor & Gamble Company	Rima Tadros	42.0	2.9	12.5
07	The Walt Disney Company	Amy Geldbach	28.0	25.0	34.0
			43.4	12.9	14.3
	U.K.:				
08	BPB Industries PLC	Usman Rafiq	17.0	0.3	7.5
09	The Boots Company PLC	Amy Geldbach	30.0	1.0	25.0
10	British Petroleum PLC	Panagotia Hatjiioannou	42.0	5.9	21.9
11	Davy Corporation PLC	Khaled Rahman	38.1	25.4	14.5
12	ECC Group PLC	Ahmed Embaby	14.6	1.2	4.8
13	Guinness PLC	Ole Nnana	39.0	48.3	31.0
14	Grand Metropolitan PLC	Assil Al-Said	30.0	5.8	54.0
15	Laura Ashley PLC	Sahar Al-Jibouri	122.0	2.0	17.5
16	Imperial Chemical Industries PLC	Abdu Musa	42.0	5.9	22.0
17	Lonrho PLC	Peter Elind	67.0	0.7	10.9
18	Lucas Industries PLC	Ahmed El-Hennawy	14.5	6.0	13.8

(Continues)

Serial number	Full name of Company respondent in country of registration	Full name of initial contact person(s)	Percentage D/E	R&D	Growth
19	Marks and Spencer PLC	Louis Chari Watson	58.0	5.3	9.5
20	Noble Raredon PLC	Funda Gumush	67.9	48.0	21.3
21	Platignum PLC	Ralf Sichelschmidt	45.1	0.5	(20.2)
22	Reuters PLC	Humeyra Gurel	40.8	5.0	18.3
23	Rothmans International Inc.	Hala Al-Hassan	41.2	4.0	21.5
24	Rolls Royce PLC	Vipul Kotecha	30.8	20.6	13.5
25	Waverly Cameron PLC	Christoph Freund	58.3	10.0	18.6
			44.3	10.8	17.1

Adjustment:
Noble Raredon PLC, British registered, conducts most of its business operations in the Southern European and Mediteranean realm and is reclassified accordingly under same serial number. Risdall Group is added to the North American and Anglo Countries realm from the original master list.

	U.S.A.:				
26	Risdall Group	Ted Risdall	50.0	9.0	36.0

Percentages after adjustments:

U.S.A.	44.2	12.5	17.0
U.K.	42.3	8.7	16.7
North American and Anglo Countries	43.4	9.9	16.8

Serial number	Full name of Company respondent in country of registration	Full name of initial contact person(s)	Percentage D/E	R&D	Growth
	Asia Pacific:				
27	Pt. Tri Atmaja	Ari Arinta	150.0	2.0	10.0
28	Deagu Financial and Investment Company-Royal Chemical Industry	Kwangheui Weon	70.0	13.0	15.0
29	Evergreen Marine Corp. Ltd.	Kuo-Hsiang Kuo	50.1	2.0	(0.7)
30	Jerzina Group of Companies	Firaz Hameed	65.0	12.5	30.0
31	Lanka Lloyd	Mohammed Jisthi	75.0	3.0	10.0
32	Yong Lee Rubber Company	Cun M. Lim	67.0	30.0	15.0
			79.5	10,4	13.2
	Japan:				
33	Hitachi Ltd.	Paul Badawi	38.3	5.8	54.0
34	Marubeni Corporation	Louise Seaman	89.9	0.7	27.0
35	Mitsubishi Corporation	Kwangheui Weon	88.9	15.6	17.0
36	Mitsui Co.	Hasan Ali Makaleh	7.3	14.0	14.0
37	NEC Corp.	Hadi Darwazeh	57.9	1.5	7.5
38	Pentel Co.	Akiko Matsudo	74.0	0.4	12.9
			59.4	6.3	22.1

Adjustment:
The Sri Lankan companies argueably are better classified in terms of cultural realm under the Countries of the Indian Peninsula. The same serial numbers as above are used under that classification.

Percentages after adjustment:

Asia Pacific	84.2	11.7	9.8
Japan	59.4	6.3	22.1
Asia Pacific Countries and Japan	69.3	8.5	17.1

Serial number	Full name of Company respondent in country of registration	Full name of initial contact person(s)	Percentages D/E	R&D	Growth
	Indian Peninsula:				
39	Allied Ghee Industries Ltd.	Adnan Jalil	70.0	8.0	10.0
40	Husein Sugar Mills Ltd.	Sanaa Hussni Zakout	41.0	3.3	68.7
30	Jerzina Group of Companies	Firaz Hameed	65.0	12.5	30.0
31	Lanka Lloyd	Mohammed Jisthi	75.0	3.0	10.0
41	S+J Associates Ltd.	Imtiaz Ghani	70.0	10.0	8.0
42	S. R. Textiles Ltd.	Ramamyah Venkatesh	75.0	6.0	25.0
43	S+S Associates Ltd.	Chadha Sanjay	60.0	12.0	20.0
44	Shaheen Cotton Mills Ltd.	Mohana A. Alsaleh	66.0	8.0	00.0
45	Singh Air Conditioning Ltd.	Bikram J. Singh	50.0	15.0	17.5
46	Singh Ranbij - Dhiman & Sons Ltd.	Amrit Pal Singh	6.0	25.0	15.0
			57.8	10.3	20.4

Adjustment:
Due to the unusually high growth of item No. 40 and the equally unusual no-growth of item 44 we feel compelled to add two more items to the sample size. One, Sine International was not on the original master list and has been added later. Both are companies from Pakistan

47	Roomi Enterprises Ltd.	Nadeem Ahmed Roomi	70.0	13.0	15.0
48	Sine International Ltd.	Arif Hasan Mustafa	70.0	12.0	30.0
			70.0	13.0	23.0
	Countries of the Indian Peninsula		59.8	10.7	20.7

Serial number	Full name of Company respondent in country of registration	Full name of initial contact person(s)	Percentage D/E	R&D	Growth
	Middle East:				
49	Al-Gosaihbi Group	A. Rahim A Fakhro	46.0	8.0	10.0
50	Al-Taher Ltd.	Abdulaziz Al Kahlili	22.0	10.0	10.0
51	Ad-Dustoor Ltd.	Ismail Al-Sharif	50.0	2.0	5.0
52	Ribhi Darwazah and Sons Company	Hadi R. Darwazeh	25.0	8.0	45.0
53	Est. Fouad-Saccal S.A.	Hassan Halwani	60.0	10.0	20.0
54	Falcon Gulf - Alam Group	Rajesh Bhatia	55.0	11.5	25.0
55	Hamlaan Ltd.	Amwad Hamlaan	85.0	5.0	30.0
56	Lashko Co. Ltd.	Ahmed Al-Bulushi	60.0	10.0	25.0
57	Khurma Trading Estab. Ltd.	Samer Hasan Khurma	100.0	10.0	20.0
58	Kuwait Investment Authority - Kuwait Investment Office KIO	Masaud Al-Hinai	41.0	0.5	33.0
59	Lematic Overseas Ltd.	Bilal Hafez	32.0	35.0	9.0
60	Plastic Co. A. M. Zaghloul	Mohamed A. Zaghloul	60.0	11.5	17.0
61	Remalux Paints Co.	Samer A. Majrouh	32.0	00.0	9.0
62	Reserve Services Ltd.	Toni Nakouzi	80.0	16.0	28.0
63	Shahin Constructions Company	Adham Shahin	25.1	00.0	9.1
			51.5	9.2	19.6
	Near East:				
64	Bufalo A.S.	Y. Yoel Bahar	61.4	2.3	34.4
65	Fouman Chimie S.A.	Messrs. Moussava	70.0	10.0	35.0
66	Kurtas A.S.	Filiz Yilmaz	67.0	25.0	40.0
67	Kutas A.S.	Humeyra Gurel	67.0	30.0	70.0
68	Sunal A.S.	Humeyra Gurel	67.0	40.0	30.0
			66.4	21.4	41.8
	Middle East and Near Eastern Countries		55.2	12.2	25.2

Serial number	Full name of Company respondent in country of registration	Full name of initial contact person(s)	Percentage D/E	R&D	Growth
	Mediterranean Europe:				
69	Artesia Foods Ltd.	Emil Gharapatian	75.0	3.5	3.5
70	Axios Food Company Co.	Natasha Triotska	50.0	5.0	25.0
71	Cosmos S.A.	Joannis Dandulakis	25.0	15.0	25.0
72	Cyprus Airways	Zela Mouskas	62.7	0.15	0.9
20	Noble Raredon PLC	Funda Gumush	67.9	48.0	21.3
73	Economic Insurance Co. Ltd.	Ali M. Ouzel	28.0	00.0	29.5
74	A. Marougas	Christina Marouga	60.0	3.5	18.0
75	Pariziana A.S.	Panagotia Hatjiioannou	50.0	75.0	9.0
76	Megabyte Espana S.A.	Yvonne Muller	80.0	10.0	30.0
77	Wegal S.A.	Rosella Gatti	46.0	3.0	15.0
			54.5	16.5	17.7

Adjustment:
Noble Raredon PLC has been reclassified into this realm as it is essentially a Turkish Cypriot company, until recently part of Polly Peck PLC, now under Administration.
A. Marougas has been added to increase the sample size to ten, the minimum sample size for any cultural realm in this study.
A. Marougas was not on the original master list of random samples. The firm was added later.

Countries of Southern Europe and the Mediterranean	54.5	16.5	17.7

Serial number	Full name of Company respondent in country of registration	Full name of initial contact person(s)	Percentage D/E	R&D	Growth
	Africa:				
78	Circular Distributors Ltd.	James Wahome	50.0	5.0	20.0
79	Dejla Ltd.	Ahmed Elwarfalli	50.0	2.0	7.0
80	Mekah Investments Ltd.	James Wahome	50.0	3.8	5.2
81	Mimosa Co. Ltd.	Jean-Pierre Lan	50.0	4.0	8.0
82	Musa Ltd.	Abdu Musa	66.7	9.0	30.0
83	Sawa - Pema Holdings	James Kariuku	67.0	4.0	5.0
84	Sawa Enterprises Ltd.	James Kariuku	25.0	3.0	8.0
85	Star Paper Industries Ltd.	Ole Nnana	25.0	11.0	17.5
86	Zevet - Boy & Abotsi Ltd.	Pierre Kwaku	30.0	5.0	20.0
87	Zevet International Ltd.	Pierre Kwaku	36.5	17.0	40.0
			45.0	6.4	16.0

Adjustment:
Zevet Holdings are located in Israel but all operations are in Africa and thus classified within the African cultural realm. Lonrho PLC has substantial operations in Africa but has since diversified its operations also substantially in other continents such as North America, Australasia. We have therefore left Lonrho classified as a British multinational company.

African Countries:	45.0	6.4	16.0
Adjusted Average:	54.5	10.7	18.9

Sample Selection

Breakdown:	Anglo-American	Far East	Mediterranean/Near East/ Middle East / Africa	N
Worldwide realms	01	01	01	03
Regional realms (01-06)	01	02 03	04 05 06	06
Strata clusters	02	03	03	08
Countries	02	08	20	30
			Sample N›,	30
Subgroups of individual firms	25	22	40	87
			Sample N›,	30

Subrealms of individual firms by country units	U.S	U.K	Asia Pacific	Japan	Indian Peninsula	N
	08	18	06	06	12	
	Middle East	Near East	Medit. Europe	Africa		
	15	05	10	10		90
					Sample N›	30

The sample size adjustment (from 87 to N 90), represents, new weighted adjustments by country units and is not related to the population sample adjustment:

Country unit Sample N›, 05

TABLE 11

Data Collection and Analysis

Reclassification by Industry (Classifications)

Serial number	Classification of Company by business activity	Base of the sample size	Percentage D/E	Percentage R&D	Percentage Growth
	1. Business Services & Supplies:				
25	Waverly Cameron PLC		58.3	10.0	18.6
38	Pentel Co.		74.0	0.4	12.9
86	Zevet - Boy & Abotsi Ltd.		30.0	5.0	20.0
87	Zevet International Ltd.		36.5	17.0	40.0
		04	49.7	8.1	22.8
	2. Capital Goods:				
18	Lucas Industries PLC		14.5	6.0	13.8
24	Rolls Royce PLC		30.8	20.6	13.5
34	Marubeni Corporation		89.9	0.7	27.0
35	Mitsubishi Corporation		88.9	15.6	17.0
36	Mitsui Co.		7.3	14.0	14.0
45	Singh Air Conditioning Ltd.		50.0	15.0	17.5
46	Singh Ranbij - Dhiman & Sons Ltd.		6.0	25.0	15.0
59	Lematic Overseas Ltd.		32.0	35.0	9.0
60	Plastic Co. A. M. Zaghloul		60.0	11.5	17.0
64	Bufalo A.S.		61.4	2.3	34.4
66	Kurtas A.S.		67.0	25.0	40.0
		11	46.2	17.1	19.8
	3. Chemicals:				
16	Imperial Chemical Industries PLC		42.0	5.9	22.0
28	Deagu Financial and Investment Company-Royal Chemical Industry		70.0	13.0	15.0
61	Remalux Paints Co.		32.0	00.0	9.0
65	Fouman Chimie S.A.		70.0	10.0	35.0
		04	53.5	7.2	20.2

Serial number	Classification of Company by business activity	Base of sample size	Percentage D/E	Percentage R&D	Percentage Growth
	4. Conglomerates:				
17	Lonrho PLC		67.0	0.7	10.9
26	Risdall Group		50.0	9.0	36.0
49	Al-Gosaihbi Group		46.0	8.0	10.0
56	Lashko Co. Ltd.		60.0	10.0	25.0
		04	55.7	6.9	20.4
	5. Consumer Durables:				
15	Laura Ashley PLC		122.0	2.0	17.5
21	Platignum PLC		45.1	0.5	(20.2)
		02	83.6	1.2	(2.7)
	6. Intl. Construction:				
11	Davy Corporation PLC		38.1	25.4	14.5
52	Ribhi Darwazah & Sons Company		25.0	8.0	45.0
55	Hamlaan Ltd.		85.0	5.0	30.0
63	Shahin Constructions Company		25.1	00.0	9.1
74	A. Marougas S.A.		60.0	3.5	18.0
		05	46.6	8.3	23.3
	7. Computers & Communications:				
03	Digital Equipment Company		14.0	12.0	11.0
05	Intertan Inc. - Tandy Corporation		27.9	8.8	(13.3)
33	Hitachi Ltd.		38.3	5.8	54.0
37	NEC Corp.		57.9	1.5	7.5
43	S+S Associates Ltd.		60.0	12.0	20.0
76	Megabyte Espana S.A.		80.0	10.0	30.0
81	Mimosa Co. Ltd.		50.0	4.0	8.0
		07	46.9	7.7	16.7

Serial number	Classification of Company by business activity	Base of the sample size	percentage D/E	R&D	Growth
	8. Consumer Non-Durables:				
01	Avon Products Co.		80.0	1.0	0.8
06	Proctor & Gamble Company		42.0	2.9	12.5
09	The Boots Company PLC		30.0	1.0	25.0
		03	50.6	1.6	12.8
	9. Energy:				
10	British Petroleum PLC	01	42.0	5.9	21.9
	10. Entertainment & Information:				
07	The Walt Disney Company		28.0	35.0	34.0
22	Reuters PLC		40.8	5.0	18.3
51	Ad-Dustoor Ltd.		50.0	2.0	5.0
		03	39.6	14.0	19.1
	11. Food, Drink & Tobacco:				
02	The Coca Cola Company		54.0	5.4	50.0
04	H. J. Heinz Company		57.9	35.6	4.9
13	Guinness PLC		39.0	48.3	31.0
14	Grand Metropolitan PLC		30.0	5.8	54.0
23	Rothmans International Inc.		41.2	4.0	21.5
27	Pt. Tri Atmaja		150.0	2.0	10.0
39	Allied Ghee Industries Ltd.		70.0	8.0	10.0
40	Husein Sugar Mills Ltd.		41.0	3.3	68.7
41	S+J Associates Ltd.		70.0	10.0	8.0
53	Ets. Fouad-Saccal S.A.		60.0	10.0	20.0

(continues)

Serial number	Classification of Company by business activity	Base of the sample size	Percentage D/E	R&D	Growth
66	Kutas A.S.		67.0	30.0	70.0
67	Sunal A.S.		67.0	40.0	30.0
69	Artesia Foods Ltd.		75.0	3.5	3.5
70	Axios Food Company Co.		50.0	5.0	25.0
78	Circular Distributors Ltd.		50.0	5.0	20.0
80	Mekah Investments Ltd.		50.0	3.8	5.2
		16	60.7	13.7	26.9
	12. Forest Products & Packaging:				
85	Star Paper Industries Ltd.	01	25.0	11.0	17.5
	13. Hotel, Travel:				
62	Reserve Services Ltd.		80.0	16.0	28.0
71	Cosmos S.A.		25.0	15.0	25.0
83	Sawa - Pema Holdings		67.0	4.0	5.0
		03	57.3	11.7	19.3
	14. Insurance:				
73	Economic Insurance Co. Ltd.	01	28.0	00.0	29.5
	15. Materials:				
08	BPB Industries PLC		17.0	0.3	7.5
12	EEC Group PLC		14.6	1.2	4.8
32	Yong Lee Rubber Company		67.0	30.0	15.0
54	Falcon Gulf - Alam Group		55.0	11.5	25.0
		04	38.4	10.8	13.0

Serial number	Classification of Company by business activity	Base of the sample size	Percentage D/E	R&D	Growth
	16. Retailing:				
19	Marks and Spencer PLC	01	58.0	5.3	9.5
	17. Textiles:				
30	Jerzina Group of Companies		65.0	12.5	30.0
42	S. R. Textiles Ltd.		75.0	6.0	25.0
44	Shaheen Cotton Mills Ltd.		66.0	8.0	00.0
48	Sine International Ltd.		70.0	12.0	30.0
75	Pariziana A.S.		50.0	75.0	9.0
77	Wegal S.A.		46.0	3.0	15.0
79	Dejla Ltd.		50.0	2.0	7.0
		07	60.2	16.9	16.5
	18. Trade:				
47	Roomi Enterprises Ltd.		70.0	13.0	15.0
50	Al-Taher Ltd.		22.0	10.0	10.0
57	Khurma Trading Estab. Ltd.		100.0	10.0	20.0
58	Kuwait Investment Authority - Kuwait Investment Office KIO		41.0	0.5	33.0
82	Musa Ltd.		66.7	9.0	30.0
84	Sawa Enterprises Ltd.	06	25.0	3.0	8.0
			54.1	7.5	19.3

Serial number	Classification of Company by business activity	Base of the sample size	Percentage D/E	Percentage R&D	Percentage Growth
	19. Transport:				
20	Noble Raredon PLC		67.9	48.0	21.3
29	Evergreen Marine Corp. Ltd.		50.1	2.0	(0.7)
31	Lanka Lloyd		75.0	3.0	10.0
72	Cyprus Airways		62.7	1.5	0.9
		04	63.9	13.6	7.8
	Total sample size	87			

Data Collection and Analysis

Classification by Geographical Cultural Realm

TABLE 12

Classification of Company by cultural realm	Base of the sample size	Percentage D/E	R&D	Growth
	90	51.8	10.7	18.5
Sample selection:				
1. North American and Anglo countries	25	43.4	9.9	16.8
2. Asia Pacific countries and Japan	10	69.3	8.5	17.1
3. Countries of the Indian Peninsula	12	59.8	10.7	20.7
4. Middle -and Near Eastern countries	20	55.2	12.2	25.2
5. Countries of Southern Europe and the Mediterranean	10	54.5	16.5	17.7
6. African countries	10	45.0	6.4	16.0
	87			

Adjustment:
Hanson PLC was eliminated from the original master list by consolidation as the Company regards itself to be both a U.K. and U.S.A. entity.

Tako Ltd. (Israel) and Veladaile Ltd., U.K., have been omitted due to lack of adequate further data.

Data Collection and Analysis

TABLE 13

Classification by Cluster of Cultural Realm

Classification of Company by cluster of cultural realms	Base of the sample size	Percentage D/E	R&D	Growth
Worldwide (realms 1 - 6):	90	51.8	10.7	18.5
(a) Far East (cultural realms 2 + 1)	22	70.5	10.3	20.9
(b) Mediterranean/Near -and Middle East/ Africa (cultural realms 5 + 4 + 6)	40	52.5	11.8	21.1
(c) Anglo-American (cultural realm 1)	25	43.4	9.9	16.8
	87			

Adjustments:
The total sample size effectiyely is 87 following adjustments made as indicated on detail breakdown by cultural realm.

2.3 Extracts from Company Annual Reports

2.3.1 H.J. Heinz Company: Management's Discussion and Analysis

The dividend rate in effect at the end of each fiscal year results in a payout ratio of 44.2% in 1990, 43.1% in 1989 and 42.8% in 1988. Common dividends of $178.3 million were paid in 1989 and $154.4 million in 1988.

The impact of inflation on both the company's financial position and results of operations has been minimal and is not expected to adversely affect the 1991 results.

MANAGEMENT'S DISCUSSION AND ANALYSIS
H J Heinz Company and Subsidiaries

Liquidity and Capital Resources

Return on average shareholders' equity improved for the twelfth consecutive year, reaching 27.5%

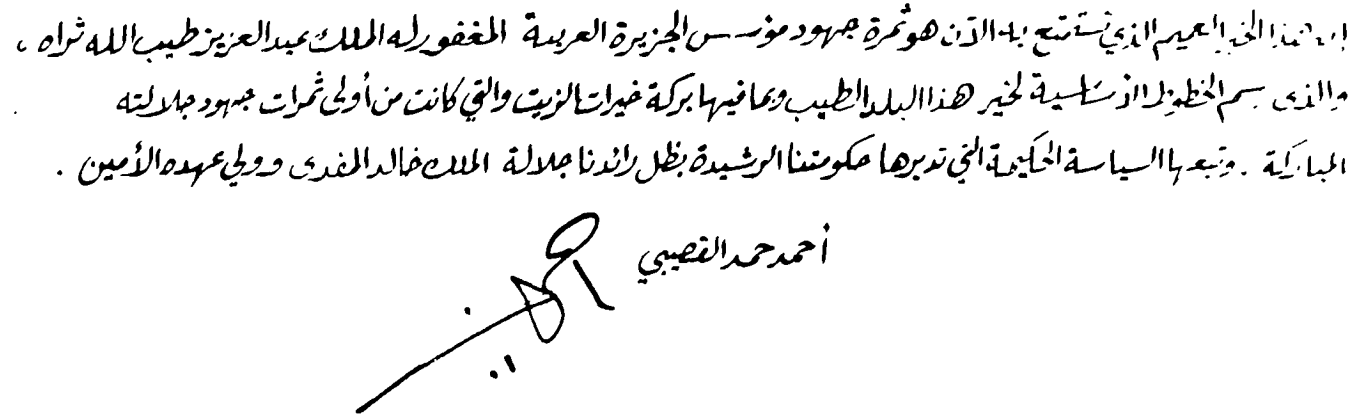
أحمد حمد القصيبي وإخوانه

تأسست مجموعة شركات أحمد حمد القصيبي واخوانه في عام ١٩٤٠ م على يد المرحوم حمد أحمد القصيبي عندما أسس أول شركة تجارية . وبمرور السنين ، تنوعت وتعددت مجالات العمل فكان أن تشكلت هذه المجموعة من الشركات ، فمنها ما اتخذ من حقل التمويل مجالا لعمله ، ومنها ما اختص بالخدمات ، ومنها ما اهتم بالصناعات الكيماوية وما كان هذا النمو في أعمال أحمد حمد القصيبي واخوانه ليتحقق لولا كفاءة الادارة القائمة عليها في دقة وسرعة اتخاذ القرار بتأسيس الشركات الخاصة بها أو المساهمة مع الشركات العالمية في مشاريع مشتركة عندما كانت تتحقق من وجود فرصة سانحة لذلك .

أما اليوم فان اسم القصيبي يقترن دوما بعدد من المشاريع التجارية في ميادين النقل والصناعة والسفر والبنوك والتأمين والتجارة والعقارات والصناعات الكيماوية ، والصرافة ، ولعل السمعة التجارية الممتازة والقاعدة العريضة للمصالح التجارية التي تملكها شركات أحمد حمد القصيبي واخوانه قد جعل لها يداً كبرى في المساهمة في تقدم الاقتصاد الوطني السعودي المتعاظم النمو . كما أن قوة وتنوع أعمال هذه الشركة قد ساهم بالقيام بدور بارز في تنمية الاقتصاد الوطني للمملكة العربية السعودية .

2.3 Extracts from Company Annual Reports

2.3.2 Al Gosaibi Group: Notes to the Balance Sheet on Structure and Ownership



"All this marvelous welfare that we enjoy today, is a result of the great efforts done by the late King Adull-Aziz, the founder of Saudi-Arabia. He had planned the headlines of all major policies; necessary for the prosperity and welfare of this blessed country, including the "Oil Sources" which came as the first result of H.M.'s efforts. Followed by the wise policy managed by our government under the rule of of our leader HM. King Fahed and HRH. the Crown Prince".

Ahmad Hamad Al-Gosaibi

Accounting Policies

(a) Accounting convention
The accounts have been prepared using the historical cost convention adjusted for revaluations of certain fixed assets.

(b) Basis of consolidation
The consolidated accounts incorporate audited accounts of the company and its subsidiaries. The principal operating subsidiaries are listed on pages 60 to 62. They are indirectly wholly owned and, where applicable, the country of incorporation is shown.

(c) Accounting for acquisitions
The results of companies and businesses acquired during the year are dealt with in the consolidated accounts from the date of acquisition (except for businesses disposed of prior to the year end). On acquisition, the purchase consideration and the estimated costs of integrating the businesses acquired are allocated over assessed fair values of net tangible assets, goodwill and other intangibles. Adjustments are also made to bring the accounting policies of businesses acquired into alignment with those of the group. The amounts attributed to goodwill and other intangibles are written off against reserves.

2.3 Extracts from Company Annual Reports

2.3.3 Hanson plc: Accounting Policies and Accounting Convention on Historical Cost

A35

(d) Related companies
The results include the relevant proportion of the profit of related companies based on their latest audited accounts. In the consolidated balance sheet the investments in related companies are shown at the group's share of underlying net assets.

(e) Sales turnover
Sales turnover, which includes excise duty, represents the net amounts charged to customers in respect of services rendered and goods supplied.

(f) Tangible fixed assets
The cost of fixed assets is shown, where applicable, after deduction of government grants. Assets acquired under finance leases are capitalised and outstanding instalments are shown in creditors. No depreciation is provided on freehold land except where mineral reserves are being depleted when amortisation is provided on the basis of tonnage extracted. Depreciation of other fixed assets is calculated to write off their cost or valuation over their expected useful lives.

Information for U.S. Investors

ECC GROUP

SUMMARY OF DIFFERENCES BETWEEN U.K. AND U.S. GENERALLY ACCEPTED ACCOUNTING PRINCIPLES

The consolidated financial statements of the Group are prepared in accordance with U.K. GAAP, which differ in certain significant respects from U.S. GAAP. These differences are described below and the necessary adjustments are shown in the tables set out on page 38.

1. Deferred taxation

There are two principal differences between U.K. GAAP and U.S. GAAP in respect of deferred taxes. First, under U.K. GAAP, deferred tax is only accounted for to the extent that it is probable that tax liabilities or benefits will crystallise: U.S. GAAP requires that full provision is made for all deferred tax liabilities. Secondly, U.K. GAAP requires that deferred tax is provided using the liability method whereby tax is provided at the rates at which timing differences are expected to reverse; under U.S. GAAP (prior to the provisions of FAS 96 being adopted), the deferral method is used whereby deferred tax is provided at the rates applicable to the period when provision is made.

2. Revaluation of properties and revaluation surplus

As permitted under U.K. GAAP, the Group has previously incorporated the results of property revaluations in its consolidated financial statements prepared in all other respects in accordance with the historical cost convention. Such restatements are not permitted under U.S. GAAP.

2.3 Extracts from Company Annual Reports

2.3.4 ECC plc: Notes to the Balance Sheet on UK and US GAAP relating to Historical Cost

Information for U.S. Investors

English China Clays P.L.C. American Depositary Shares (ADSs) are traded on the National Market System of NASDAQ. The ticker symbol is ECLAY. Each ADS is equivalent to three ordinary shares.
The Group prepares its consolidated financial statements in accordance with generally accepted accounting principles ("GAAP") applicable in the United Kingdom. The principles used are explained on page 23 and differ in certain significant respects from those applicable in the United States as explained on page 39.
The following is a summary of the estimated material adjustments to net income and shareholders' equity which would be required if U.S. GAAP had been applied instead of U.K. GAAP.

Effect of estimated material U.S. GAAP adjustments on U.K. GAAP net income	**1989 £M**	*1988 £M*	**1989 $M**	*1988 $M*
Net income as reported in the Group profit and loss account	**96.6**	*92.8*	**156.4**	*150.2*
Preference dividend	**(0.1)**	—	**(0.2)**	—
	96.5	*92.8*	**156.2**	*150.2*
Estimated material U.S. GAAP adjustments:				
Depreciation etc.	**2.4**	*2.1*	**3.9**	*3.4*
Capitalisation of interest	**4.1**	*3.0*	**6.6**	*4.9*
Goodwill amortisation	**(3.0)**	*(2.6)*	**(4.9)**	*(4.2)*
Taxation (including deferred taxation)	**(2.7)**	*(0.1)*	**(4.3)**	*(0.2)*
Estimated net income in accordance with U.S. GAAP	**97.3**	*95.2*	**157.5**	*154.1*
Earnings per ADS in accordance with U.S. GAAP	**137.21p**	*134.84p*	**$2.221**	*$2.183*

ডিসেম্বরের ব্যালেন্স শীট
31ST DECEMBER, 1989

United Commercial Bank Ltd.

1988		সম্পত্তি ও সম্পদসমূহ **PROPERTY AND ASSETS**		
		নগদ তহবিল (নোট-৮) **CASH (Note-8)** (নগদ, বাংলাদেশ ব্যাংকে, সোনালী ব্যাংক এবং বৈদেশিক মুদ্রাসহ) (In hand with Bangladesh Bank & Sonali Bank including		
80,19,44,480		Foreign Currency Notes)		92,15,32,573
		অন্যান্য ব্যাংকে জমা **BALANCE WITH OTHER BANKS**		
		বাংলাদেশে		
	2,96,75,671	In Bangladesh	13,74,31,893	
		বাংলাদেশের বাহিরে		
10,22,83,816	7,26,08,145	Outside Bangladesh	9,15,59,553	22,89,91,446
		তলবী ও স্বল্প নোটিশে পরিশোধযোগ্য টাকা **MONEY AT CALL & SHORT NOTICE**		32,50,00,000
		বিনিয়োগ (নোট-৯) **INVESTMENTS (Note-9)**		
		সরকারী ট্রেজারী বিল		
	81,00,00,000	Government Treasury Bills	35,00,00,000	
		সম্পূর্ণ পরিশোধিত সাধারণ শেয়ার		
	4,93,000	Fully paid Ordinary Shares	9,86,000	
		ডিবেঞ্চার		
	15,65,00,000	Debentures	15,31,66,667	
		অন্যান্য বিনিয়োগ		
96,76,86,720	6,93,720	Other Investments	8,88,200	50,50,40,867
		ঋণ প্রদান (নোট-১০)		

2.3 Extracts from Company Annual Reports

2.3.5 UCB Ltd:
Balance Sheet - Other Investments Section

Effect of estimated material U.S. GAAP adjustments on U.K. shareholders' equity	**1989 £M**	*1988 £M*	**1989 $M**	*1988 $M*
Shareholders' equity as reported in the Group balance sheet	**696.1**	*515.9*	**1,127.0**	*835.2*
Estimated material U.S. GAAP adjustments:				
Property revaluations	**(111.2)**	*(113.2)*	**(180.0)**	*(183.3)*
Capitalisation of interest	**15.4**	*11.3*	**24.9**	*18.3*
Goodwill	**111.4**	*105.2*	**180.4**	*170.3*
Taxation (including deferred taxation)	**(51.5)**	*(48.8)*	**(83.4)**	*(79.0)*
Minority interests	**(0.3)**	*(0.4)*	**(0.5)**	*(0.6)*
Proposed ordinary dividend	**27.7**	*24.8*	**44.8**	*40.2*
Estimated shareholders' equity in accordance with U.S. GAAP	**687.6**	*494.8*	**1,113.2**	*801.1*

The translation of pounds sterling into U.S. dollars has been made at £1.00 to $1.6190 being the noon buying rate of the Federal Reserve Bank of New York on 30th September 1989.

Comparative Analysis - U.S. Multinationals (Growth)

TABLE 14

Ranked by revenue base in 1988	Full name of Company ranked among largest global U.S. export firms	Percentage of revenues from export activity	Percentage D/E	Rank in overseas sales revenues	Foreign held
01	General Motors, Detroit	7.8	47.9	41	
02	Ford Motor, Dearborn, Mich.	9.5	72.6	35	
03	Boeing, Seattle	46.3	4.3	01	
04	General Electric, Fairfield, Conn.	11.6	39.2	29	
05	IBM, Armonk, N.Y.	8.3	17.9	39	
06	Chrysler, Highland Park. Mich.	12.2	62.3	28	
07	E. I. Du Pont de Nemours, Wilmington, Del.	12.9	14.3	26	
08	McDonnell Douglas, St. Louis	23.0	42.3	5	
09	Caterpillar, Peoria, Ill.	28.1	32.2	4	
10	United Technologies, Hartford	15.8	24.7	20	
11	Eastman Kodak, Rochester, N.Y.	13.5	46.4	24	
12	Digital Equipment (1988 data), Maynard, Mass.	18.2	1.6	11	
13	Hewlett-Packard, Palo Alto, Cal.	21.0	7.7	7	
14	Unisys, Blue Bell, Pa.	20.3	39.7	8	
15	Philip Morris, New York	7.3	62.3	43	
16	Motorola, Schaumburg, Ill.	21.1	16.2	6	
17	Occidental Petroleum, Los Angeles, Cal.	8.7	56.7	37	
18	General Dynamics, St. Louis	16.7	25.9	13	
19	Allied Signal, Morristown, N.J.	12.3	32.8	27	
20	Weyerhaeuser, Tacoma	14.0	47.8	23	
21	Union Carbide, Danbury, Conn.	16.7	40.6	14	
22	Raytheon, Lexington, Mass.	16.0	1.8	18	
23	Textron, Providence, R.I.	15.8	69.8	19	
24	Westinghouse Electric, Pittsburgh, PA.	8.9	46.2	36	
25	Dow Chemical, Midland, Mich.	6.6	37.6	44	

(continues)

(continues)

Ranked by revenue base in 1988	Full name of Company ranked among largest global U.S. export firms	Percentage of revenues from export activities	Percentage D/E	Rank in overseas sales revenues	Foreign held
26	Archer Daniels Midland, Decatur, Ill.	16.0	16.4	17	
27	Monsanto, St. Louis	13.1	13.1	25	
28	International Paper, Purchase, N.Y.	10.5	26.0	33	
29	Hoechst Celanese (excluded as German controlled).				x
30	Exxon, New York	1.2	12.3	50	
31	Intel, Santa Clara, Cal.	32.2	14.9	2	
32	Minnesota Mining & Mfg., St. Paul	7.9	6.3	40	
33	Bayer USA (excluded as German controlled).				x
34	Lockheed, Calabasas, Cal.	6.4	41.6	45	
35	Phillips Petroleum, Bartlesville, Okla.	6.0	47.3	47	
36	Warner Communications, New York	16.0	45.0	16	
37	FMC, Chicago	19.7	101.3	10	
38	Deere, Moline, Ill.	11.6	26.7	30	
39	Rockwell International, El Segundo, Cal.	5.2	13.2	48	
40	Merck, Rahway, N.J.	10.4	2.5	34	
41	Compaq Computer, Houston	29.6	21.4	3	
42	Honeywell, Minneapolis	8.5	29.8	38	
43	Aluminum Co. of America, Pittsburgh	6.0	16.9	46	
44	North American Philips (excluded as Dutch controlled).				x
45	Dresser Industries, Dallas	14.8	13.0	22	
46	Amoco, Chicago	2.7	24.1	49	
47	Combustion Engineering, Stamford, Conn.	16.1	31.8	15	x
48	Abbott Laboratories, Abbott Park, Ill.	11.1	7.3	31	
49	Ethyl, Richmond	20.0	26.9	9	
50	Baxter International, Deerfield, Ill. .	7.6	34.2	42	

Source: Rankings per Fortune, July 17, 1990. D/E per Value Line Data Base Service via Lotus CD Investment, Forbes, January 8, 1990.

Comparative Analysis - U.S. Multinationals (Debt)

TABLE 15

Ranked in terms of debt assumption	Percentage D/E	Name of Company ranked among largest global U.S. export firms	Ranking in overseas sales revenues
01	101.3	FMC	10
02	72.6	Ford Motor Co.	35
03	69.8	Textron	19
04	62.3	Chrysler	28
05	62.3	Philip Morris	8
06	56.5	Occidental Petroleum	37
07	47.9	General Motors	41
08	47.8	Weyerhaeuser	23
09	47.3	Phillips Petroleum	47
10	46.4	Eastman Kodak	24
11	46.2	Westinghouse Electric	36
12	45.0	Warner Communications	16
13	42.3	McDonnell Douglas	5
14	41.6	Lockheed	45
15	40.6	Union Carbide	14
16	39.7	Unisys	43
17	39.2	General Electric	29
18	37.6	Dow Chemical	
19	34.2	Baxter International	42
20	32.8	Allied Signal	27
21	32.2	Caterpillar	4
22	31.8	Combustion Eng.	15
23	28.8	Honeywell	38
24	26.9	Ethyl	9
25	26.7	Deere	30

Ranked in terms of debt assumption	Percentage D/E	Name of Company ranked among largest global U.S. export firms	Ranking in overseas sales revenues
26	26.0	International Paper	33
27	25.9	General Dynamics	13
28	24.1	Amoco	49
29	21.4	Compaq Computer	3
30	24.7	United Technologies	20
31	17.9	IBM	39
32	17.0	Monsanto	25
33	16.9	Aluminum Co. of America	46
34	16.4	Archer Daniels Midland	17
35	16.2	Motorola	6
36	14.9	Intel	2
37	13.2	Rockwell International	48
38	13.0	Dresser Industries	22
39	12.3	Exxon	50
40	7.7	Hewlett-Packard	7
41	7.3	Abbott Laboratories	31
42	6.3	Minnesota Mining & Mfg.	40
43	4.3	Boeing	1
44	2.5	Merck	34
45	1.8	Raytheon	18
46	1.6	Digital Equipment (1988 data)	11
	30.9		

Note:
Four companies have been excluded from the fifty largest global U.S. export firms for purposes of this study as they are foreign (non-U.S.) held.

Data Collection and Analysis

Company Ranking (Global, Multinational, Internationally Active) TABLE 16

Initial serial number	Full name of Company respondent in country of registration	Global 1000 company ranking applicable
01	Allied Ghee Industries Ltd.	-
02	Al-Gosaibhi Group	-
03	Al-Taher Ltd.	-
04	Ad-Dustoor Ltd.	-
05	Artesia Foods Ltd.	-
06	Pt. Tri. Atmaja	-
07	Avon Products Co.	289
08	Axios Food Company Co.	-
09	BPB Industries PLC	726
10	British Petroleum PLC	20
11	The Boots Company PLC	417
12	Bufalo A.S.	-
13	The Coca Cola Company	66
14	Circular Distribution Ltd.	-
15	Contact Shoe Company Ges. m. b. H.	-
16	Cosmos S.A.	-
17	Cyprus Airways	-
18	Davy Corporation PLC	-
19	Daegu Financial and Investment Company-Royal Chemical Industry	-
20	Ribhi Darwazeh and Sons Company	-
21	Dejla Ltd.	-
22	Digital Equipment Company	81
23	ECC Group PLC	821
24	Economic Insurance Co. Ltd.	-
25	Ets. Fouad-Saccal S.A.	-

Global 1000 classification source: Business Week, July 18, 1988, pp. 101-119.
An Investor's Guide to the Leading International Companies;Global 1000.

Initial serial number	Full name of Company respondent in country of registration	Global 1000 company ranking applicable
26	Evergreen Marine Corp. Ltd.	-
27	Falcon Gulf Ltd. - Alam Group	-
28	Fouman Chimie S.A.	-
29	Grand Metropolitan PLC	155
30	Guinness PLC	-
31	Hamlaan Ltd.	-
32	Hanson PLC	128
33	Hitachi Ltd.	17
34	H. J. Heinz Company	238
35	Husein Sugar Mills Ltd.	-
36	Imperial Chemical Industries PLC	96
37	Intertan Inc.-Tandy Corporation	347
38	Industrias Sola Basic Mexico D.F.	-
39	Jezima Group of Companies	-
40	Khurma Trading Estab. Ltd.	-
41	Kurtas A.S.	-
42	Kutas A.S.	-
43	Kuwait Investment Authority - Kuwait Investment Office KIO	-
44	Lanka Lloyd	-
45	Lashko Co. Ltd.	-
46	Lematic Overseas Ltd.	-
47	Laura Ashley PLC	-
48	Lonrho PLC	770
49	Lucas Industries PLC	833
50	Marks and Spencer PLC	138
51	Megabyte Espana S.A.	-

Initial serial number	Full name of Company respondent in country of registration	Global 1000 company ranking applicable
52	Marubeni Corporation	288
53	Mekah Investments Ltd.	-
54	Mimosa Co. Ltd.	-
55	Mitsubishi Corporation	61
56	Mitsui Co.	130
57	Musa Ltd.	-
58	NEC Corp.	28
59	Noble Raredon PLC	-
60	Pariziana A.S.	-
61	Pentel Co.	-
62	Plastic Co. A. M. Zaghloul	-
63	Platignum PLC	-
64	Proctor & Gamble Company	84
65	Remalux Paints Co.	-
66	Reuters PLC	383
67	Reserve Services Ltd.	-
68	Risdall Group	-
69	Rothmans International Inc.	621
70	Rolls Royce PLC	812
71	Roomi Enterprises Ltd.	-
72	Sawa Enterprises Ltd.	-
73	Sawa - Pema Holdings	-
74	Shaheen Cotton Mills Ltd.	-
75	Shahin Constructions Company	-
76	Singh Air Conditioning Ltd.	-

Initial serial number	Full name of Company respondent in country of registration	Global 1000 company ranking applicable
77	Singh Ranbij - Dhiman & Sons Ltd.	-
78	Star Paper Industries Ltd.	-
79	Sunal A.S.	-
80	S+J Associates Ltd.	-
81	S. R. Textiles Ltd.	-
82	S+S Associates Ltd.	-
83	Tako Ltd.	-
84	Yong Lee Rubber Company	-
85	Veladaille Company	-
86	The Walt Disney Company	159
87	Waverly Cameron PLC	-
88	Wegal S.A.	-
89	Zevet - Boy & Abotsi Ltd.	-
90	Zevet International Ltd.	-
Total		25
Reconciling Total After Adjustments		24

Data Collection and Analysis
Development and Ranking (Corporate)

TABLE 17

Initial serial number	Global 1000 Analysis Name of Company analysed from primary and secondary source	Profit Performance Ranking 1988	1989	1990	Increase/ (Decrease) 1988-1990	1990 Sample Ranking in Global 1000
33	Hitachi	17	17	17	0	01
13	Coca Cola	66	39	23	(43)	02
10	British Petroleum	20	33	25	+ 5	03
64	Proctor & Gamble	84	60	32	(52)	04
55	Mitsubishi	61	27	39	(22)	05
58	NEC	28	48	50	+ 22	06
32	Hanson	128	115	55	(73)	07
36	Imperial Chemical Industries	96	94	93	(3)	08
30	Guinness	N/A*	232	127	N/A*	09
22	Digital Equipment	81	123	130	+ 49	10
29	Grand Metropolitan	155	215	148	(7)	11
56	Mitsui	130	135	150	+ 20	12
50	Marks & Spencer	138	192	156	+ 18	13
66	Reuters	383	292	194	(189)	14
34	H.J. Heinz	238	229	194	(44)	15
52	Marubeni	288	163	206	(82)	16
11	Boots	417	421	386	+ 31	17
69	Rothmans International	621	697	525	(96)	18
70	Rolls Royce	812	771	540	(272)	19
39	Tandy	347	459	622	+ 275	20
48	Lonrho	770	779	764	(6)	21
86	Walt Disney	159	N/A**	N/A**	N/A**	22
07	Avon Products	289	N/A**	N/A**	N/A**	23
09	BPB Industries	726	N/A**	N/A**	N/A**	24
23	ECC Group, English China Clays	821	N/A**	N/A**	N/A**	25
49	Lucas Industries	833	N/A**	N/A**	N/A**	26

Note:
N/A* = Not listed due to combined Guiness Peat listing in 1988.
N/A** = No longer part of the Global 1000 Classification during 1989 or 1990.

Data Collection and Analysis
PLC Mix Effect vs. M&A

TABLE 18

Serial number	Full name of Company respondent sampled in product life-cycle analysis	Company main stream products and product life-cycles: PLC prior to major M&A	Mix	PLC after major M&A	Mix	PLC-Change
01	Avon Products Co.	2.25 yrs.	4	3.00	4	+
02	The Coca Cola Company	47.00	3	-	-	N/A
03	Digital Equipment Company	6.00	4	-	-	N/A
04	H. J. Heinz Company	92.00	4	57.00	8	(-)
05	Intertan Inc. - Tandy Corporation	5.00	4	6.00	8	+
06	Proctor & Gamble Company	4.00	4	4.00	9	0
07	The Walt Disney Company	35.00	4	35.00	7	0
	U.K.:					
08	BPB Industries PLC	55.00	5	51.50	6	(-)
09	The Boots Company PLC	6.50	4	12.00	8	+
10	British Petroleum PLC	55.00	4	-	-	N/A
11	Davy Corporation PLC	-	-	-	-	N/A
12	ECC Group PLC	39.00	4	-	-	N/A
13	Guinness PLC	20.00	4	-	-	N/A
14	Grand Metropolitan PLC	3.00	3	4.00	7	+
15	Laura Ashley PLC	5.00	5	5.00	6	0
16	Imperial Chemical Industries PLC	2.50	3	-	-	N/A
17	Lonrho PLC	14.00	4	14.00	8	0
18	Lucas Industries PLC	14.00	3	-	-	N/A

(continues)

Serial number	Full name of Company respondent sampled in product life-cycle analysis	Company main stream products and product life-cycles				PLC-Change
		PLC prior to major M&A	Mix	PLC after major M&A	Mix	
19	Marks and Spencer PLC	3.00	3	-		N/A
20	Noble Raredon PLC	4.00	2	27.00		+
21	Platignum PLC	2.00	2	2.00		0
22	Reuters PLC	7.00	4	4.00	7	(-)
23	Rothmans International	2.00	1	1.30	2	(-)
24	Rolls Royce PLC	34.00	4	42.00	7	+
25	Waverly Cameron PLC	9.50	3	14.00	4	+
26	Risdall Group	12.00	4	-	-	N/A

Adjustment:
Noble Raredon PLC, British registered was originally replaced in the sample by Risdall Group due to the cultural realm of Noble Raredon's operations overseas on an almost exclusive basis.

Japan:

33	Hitachi Ltd.	-	-	22.50	4	+
34	Marubeni Corporation	-	-	-	-	N/A
35	Mitsubishi Corporation	8.00	4	6.00	8	+
36	Mitsui Co.	5.50	4	5.00	8	(-)
37	NEC Corp.	4.00	4	-	-	N/A
38	Pentel Co.	-	-	8.00	3	+

Serial number	Full name of Company respondent sampled in product life-cycle analysis	Company main stream products and product life-cycles PLC prior to major M&A	Mix	PLC after major M&A	Mix	PLC-Change
	Other countries:					
29	Taiwan: (Asia Pacific): Evergreen Marine Corp. Ltd.	20.00 yrs.	3	-	-	N/A
35	Pakistan (Indian Peninsula): Husein Sugar Mills Ltd.	20.00 yrs.	3	-	-	N/A
57	Jordan (Middle East): Khurma Trading Estab. Ltd.	6.00 ds.	2	10.00	2	+
64	Turkey (Near East): Bufalo A.S.	20.00 yrs.	2	-	-	N/A
72	Cyprus (Mediterranean Europe): Cyprus Airways	-	-	45,00	3	+
	Total number of companies affected					22

Data Collection and Analysis
PLC Diversification Effects vs. M&A

TABLE 19

Serial number	Full name of Company respondent sampled in product M&A analysis	Company main stream products and product diversifications Core products	Vertical	Horizontal
01	Avon Products Co.	Fragrances added to Cosmetics and Skin Care products	X	-
04	H. J. Heinz Company	Weight Watcher Brand (dairy products), Pet Foods, Rice based products, Soft Drinks, added to Tomato Ketchup, Baked Beans, Soups, Pickles	X	X
05	Intertan Inc. - Tandy Corporation	Security Devices, Electronic Parts, Watches, Video Recorders, added to Computer Systems, TV Sets, Hi-Fi Systems, Tools and Hardware	-	X
06	Proctor & Gamble Company	Coffee and Beverages, Mens Toiletry and Fragrances, Hair Care, Beauty Skin Care, Feminine Protection Products, added to Soaps, Washing Products, Disposable Nappies and Tooth Paste	X	X
08	BPB Industries PLC	Polystyrene Thermal Laminates, Lightweight Steel Building Frames, Paper Tubes, added to Plasterboard, Plaster and Paper Liners	X	X

Serial number	Full name of Company respondent sampled in product M&A analysis	Company main stream products and product diversifications Core products	Vertical	Horizontal
09	The Boots Company PLC	Film and Film Processing, Bicycles and Car Accessories, and Paints, added to Pharmaceuticals, Baby Food, Toiletries, and Cosmetics	-	X
14	Grand Metropolitan PLC	Pillsbury-Pizza, UB Restaurants, Eye Lab, S&E&A Metaxa, added to Smirnoff, Malibu, S&B	X	X
15	Laura Ashley PLC	Fragrance added to garments, furnishings	-	X
17	Lonrho PLC	Hotel division, Printing & Publishing division, Engineering division, Textiles division, added to Mining division, Agriculture division, Oil & Gas division, and Motor Distribution division	-	X
20	Noble Raredon PLC	Tour Operations encompassing integrated routes, aircraft and hotels, added to Overhead and Slide Projector Equipment	-	X
21	Platignum PLC	Furniture and Housewares added to existing range of Furniture and Housewares	X	-
22	Reuters PLC	PRISM (Programmable Integrated Switching Module), Triarch 2000, Company Newsyear and Reuters News Pictures Service, added to Reuter-Monitor Page FXFX, Dealing 2000, Reuter Monitor Dealing Service, Instinet.	X	-

4. DATA LOCATION

Table

4.1 Primary and Secondary Data Sources 20

Data has been obtained from:

4.1.1 Annual reports and private company records (1989 and 1989 90).

4.1.2 Forbes 1000 ranking 1990. Source: Value Line Data Base Service via Lotus CD Investment, Forbes Magazine, New York, January 8th, 1990, pp. 119 214

4.1.3 Standard & Poor's Register of Corporations, Standard & Poor's Corporation, New York, 1986 ed., p. 1 - 2661, Vol. 1.Standard & Poor's Register of Directors and Executives, Ibid, pp. 1 - 1484, Vol. 2. Standard & Poor's Register of Corporations, Directors and Executives - Indexes, Ibid, p. 1 - 1109, Vol. 3: Standard Industrial Classification Index, pp. 1 - 419. Geographical Index, pp. 501 - 658. Countries other than U.S. and Canada - Geographical Index, pp. 658 - 660. Cross-Reference Index, pp. 701 - 753. Ultimate Parent Index, pp. 802 - 847. New Individual Additions, New Company Additions - Updates to the Register.

The above registers were on lease from Standard & Poor's Corporation.

5.1 Al Gosaibi Group:
Respondent Questionnaire

TABLE 21

QUALITATIVE REVIEW:

PRIVATE AND CONFIDENTIAL

Could you please inform us about the policy-organisational behaviour of the company you represent as relates to the items set out below:

Your name:
Mr. A. Rahim A. Fakhro

The company's name:
Al Gosaibi Group

Country of nationality:
Saudi Arabia and Bahrain (State of Bahrain)

Corporate structure and business activity:

Organised by functional divisions (Trading, Manufacturing, Hotels, Shipping, Transportation, Banks, Contracting, Insurance)

(a) Holding company (if applicable):
Al Gosaibi is holding with divisions, foreign subsidiaries, participations

(b) Operating activity:

Strong in main stream areas such as aluminum processing, tiles, local factories for manufacturing under licenses, and domestic money exchanges.

Please tick off as appropriate by cultural realm of country:

(1) North American and Anglo countries:
(2) Northwestern European countries:
(3) Southern European and Mediterranean countries:
(4) Asia Pacific countries and Japan:
(5) Countries of the Indian Peninsula:
(6) Middle Eastern and Near Eastern countries: X
(7) African countries:

QUALITATIVE REVIEW:

Could you please inform us about the policy behaviour of the company you represent as relates to the items set out below.

Please tick off as appropriate:

(1) The company has been acquired during the last 10 years or forms part of a larger merged combination;
X

(2) The company has been acquired or merged during the last 10 years;
X

(3) The R&D department receives most of the discretionary investments;
X

(4) The Sales, Marketing and Advertising departments receive most of the discretionary investments;
X

(4) Advertise also on behalf of foreign licensors: OFC, Pepsi Cola, Sumitomo Corporation, Mirrlees Blackstone Diesels, Saudi United Insurance Co. Ltd, CSA, GAC.

Advertisement in joint venture with partners:
The Continental Group Inc./Continental Can, The Saudi National Pipe Company, Saudi Enterprise and Port Services Company.

(3) Diversification includes financial services and petrochemicals.

(2) The shareholders are:
Ahmad Hamad Algosaibi and Brothers (Saudi)

(1) The Group has combined its interests through participation, licensing and joint ventures as well as trade representation:

A.B.C Hansen Com. A/S, Aijkawa Ironworks and Construction Co. Born Heaters Ltd, Borsig GmbH, Fairmont Railways Motors Inc., Fiat TTG, Japan Steel Works Ltd, Nippon Steel Corporation, Nissin Electric Company, Pepsicola International Inc., Osaka Transformers, Sandiacre Electric Ltd, Somura Sangyo, Takenaka, Takuma Co. Ltd, Toyo Engineering Corporation, Wollard Aircraft Equipment, Yodogawa Steel Works Ltdand Sumitomo Corporation. Aside from Danish, German, American, British and Japanese companies, domestically represent:

Al-Sanea Chemical Products.

QUANTITATIVE REVIEW:

Could you please also provide us with the following pertaining to your company:

(a)	Percentage of debt [as opposed to equity]:	% 46.00
(b)	Percentage of R&D [measured as a percentage of revenues]:	% 14.50
(c)	Percentage of growth [i.e. latest actual annual revenue growth percentage]:	% 12.00

We appreciate your cooperation in the acquisition of these important research data. For purposes of consistency and accuracy could you please provide those data pertaining to the 1989 operating period, December ending, or alternatively the period 1989-February 28th, 1990 in case your fiscal year does not correspond with your calendar year.

Please rest assured that these data will be treated confidentially and published only in direct relation to the research. We will be glad to share with you the general findings of this survey, reflecting the relative position of your particular company.

R. van Lent

QUANTITATIVE REVIEW:

Could you please further provide us with the following pertaining to your company:

Average product-life cycle [in case of a diversified holding specify one or more core products] in as far as these would have an overriding effect on the mainstream business and effective product-life cycle:

(a) Product-life cycle positioning prior to any material acquisition or merger during the last five years:

Core product:		Product-life cycle [no. of years]:
(1)	Building Materials	10 years
(2)	Electro-mechanical Equipment	7 years
(3)	Capital Equipment	10 years
(4)	Mechnical Engineering Products	10 years

9.25 years on average for Group's product-life cycle. Does not include money exchange services, insurance, hotels, shipping.

(b) Product-life cycle positioning following any material acquisition or merger during the last five years:

Core product		Product-life cycle [no. of years]:
(1)	Financial services including insurance	Cannot be applied.
(2)	Banking services	
(3)		
(4)		

Encl: Confirmation. Adjusted info. re. Al Gosaibi Group,
Ahmad Hamad Algosaibi & Bros., AlKobar, Saudi Arabia,
P.O. Box 106 Alkhobar, C.R. No. 1439

المملكة العربية السعودية
المؤسسة العامة لجسر الملك فهد

عبد الرحيم عبد الله فخرو
قسم المعلومات الفنية

ص.ب ٧٣٣
الخبر ٣١٩٥٢
المملكة العربية السعودية
تلفون المكتب ١١٢١/٨٣٣٣٤٥٥

ص.ب ٢٨١٥٣
دولة البحرين
تلفون المنزل ٦٦٥٢٣٤
٦٦١٤٠٣

A60

A. RAHIM A FAKHRO
Contry : SUADI ARIBIA & BAHRAIN.
Add. : A-E FAKHROO.
P.O Box 28153
STATE OF BAHRAIN

TABLE 22

5.2 Digital Equipment Corporation:
Respondent Questionnaire

MEASUREMENT OF INTERESTS AMONG STAKEHOLDERS

The purpose of our review discussions is to make your interests part of our extended research on the policy behaviour of international companies; their capital structure, R&D, and growth pattern.

Researchers Broeck and Webb [1973], later James [1976], divided the world into "cultural realms" of homogeneous groupings. Collins and Sekely [1988] in a comprehensive study further examined 411 companies in 9 countries and 9 industries. The original results, covering 214 companies in 14 countries were added, reflecting earlier work by Collins and Sekely [1983], and by Stonehill and Stitzel [1969].

In our own survey, we interview shareholder-appointed management or shareholder-representatives [financial institutions or private international families and their holdings] in relation to the aforementioned determinants; capital structure, R&D and growth pattern.

The purpose is to test independently the policy behaviour of internationally active companies. Based on these three selective determinants we assess the relative position of each company as surveyed within its appropriate cultural realm and on a comparative basis in relation to other cultural realms.

Robert van Gestel

Robert van Gestel London, February 1990

QUALITATIVE REVIEW:

Could you please inform us about the policy-organisational behaviour of the company you represent as relates to the items set out below:

Your name: Representative, Michelle Hagen

The company's name: Digital Equipment Corporation

Country of nationality: Maynard, Massachusetts - USA

Corporate structure and business activity: Digital is a multinational which consists of the design, manufacture, and sale of Networked Computer Systems, Software, and Services, and the integration of Multivendor Systems.

(a) Holding company (if applicable): N/A

(b) Operating activity:
Digital builds a full range of desktop, client/server, production, and mainframe systems for Multivendor Computing environments.

Please tick off as appropriate by cultural realm of country:

X (1) North American and Anglo countries: X
(2) Northwestern European countries:
(3) Southern European and Mediterranean countries:
(4) Asia Pacific countries and Japan:
(5) Countries of the Indian Peninsula:
(6) Middle Eastern and Near Eastern countries:
(7) African countries:

QUANTITATIVE REVIEW:

Chief Financial Officer, as per request, is Mr. James Osterhoff in Maynard, for Digital Equipment Corporation. In U.K. contact Mr. John Reeve, Finance, Reading, at Digital Equipment (U.K.) Limited.

Could you please also provide us with the following pertaining to your company:

(a) Percentage of debt [as opposed to equity]: 14.10 %
(b) Percentage of R&D [measured as a percentage of revenues]: 11.90 %
(c) Percentage of growth [i.e. latest actual annual revenue growth percentage]: 11.00 %

We appreciate your cooperation in the acquisition of these important research data. For purposes of consistency and accuracy could you please provide those data pertaining to the 1989 operating period, December ending, or alternatively the period 1989-February 28th, 1990 in case your fiscal year does not correspond with your calendar year.

Please rest assured that these data will be treated confidentially and published only in direct relation to the research. We will be glad to share with you the general findings of this survey, reflecting the relative position of your particular company.

NOTE: Reference (a) page 36, Annual Report, B/S 1990 1989 Fiscal
(b) page 35 " " P&L " "
(c) page 35 " " P&L " "
Plus page 26, Financial Summary.

Calculation as per request is attached separately. See "ATTACHMENT".

MEASUREMENT OF INTERESTS AMONG STAKEHOLDERS

This sector of our review discussions focuses on, in particular, the R&D pattern of policy behaviour of international companies.

It serves therefore as an extension of our earlier review discussions started February 1990 which concentrated on the capital structure, R&D and growth pattern within the context of cultural realms.

Researchers Steiner, Miner and Gray [1982] evaluating management policy and strategy observed that rapid changes of new product introduction in well growing markets could damage ROI declining. Yet as investment intensity would rise in combination with high ROI and high marketing, R&D would become depressed.

Powell [1988] went as far as to say that expected return on equity for growing high technology firms would have to be 20% as a necessary prerequisite to finance most early growth internally, thereby eliminating the need to take on premature debt.

Powell also forwarned that expected P/Es of 12 to 20 times earnings had to be considered as right in most favourable markets.

Duncan [1958], Kotler, Fahey and Yatusinpitak [1985], Cantwell [1988], Ionnou [1987] and Thurley and Wirdenius [1989] all laid a connection to some degree, illustrating cause and effect of R&D investment and growth.

This applied to all industries, as was examined, and hence seemed to point in the same direction. If this were the case we said, the real issue was whether R&D pattern of policy

behaviour of international companies would truly benefit from additional leverage. There was also the question whether or not companies being acquired, would benefit in terms of R&D pattern of policy behaviour.

As acquisitions are an effective and measurable method, of usually leveraged non-organic growth, establishing a link between acquisitions and R&D pattern we felt would move us closer towards an answer.

A review of 1984, 1985, 1986, and 1987 R&D scoreboards, representing 95% of total non-governmental private-sector R&D expenditures in the United States, the latest such data available, showed a number of interesting facts:

1984, a record year of acquisition activity also showed the biggest gain in R&D ever since a steady climb of R&D investment began in the late seventies. Whereas R&D expenditures as a % of sales stood at 2.9 in 1984, in 1980 this was 2.0%.

In 1985, the second record year of continuing acquisition activity, R&D expenditures climbed further to 3.1%.

In 1986, despite a decrease in revenues of 1%, R&D expenditures continued to grow to 3.5%. As of 1987 the same trends of growth in acquisition activity and R&D only repeated.

Based on data released by the Office of the Chief Economist, Securities and Exchange Commission [1985], and as researched by Jensen [1986], there again seemed cause and effect between leverage and R&D:

First of all, it was found that, contrary to popular belief, increases in institutional holdings do not decrease R&D expenditure.

Secondly, when firms do increase their R&D expenditures to high levels they do not become more vulnerable to takeovers than other firms.

Thirdly, when announcements about increases in R&D expenditures are made, share prices respond positively to increases in R&D expenditures.

Fourthly, as merger and acquisition activity increases, total spending on R&D remains competitive, and thus independently is increasing.

But perhaps most interesting were the results of Hall's [1987] publication on the effect of takeover activity on corporate R&D. Based on a 10-year study of all U.S. manufacturing firms [period 1976-1985], Hall confirmed that:>

The acquired and the non-acquired firm in the same industry did not behave markedly different in that the acquired firms did not have higher R&D expenditures [measured by the ratio of R&D to sales] prior to the acquisition while the non-acquired firms did not have lower R&D expenditures [measured by the ratio of R&D to sales] prior to their not being selected for acquisition.

The purpose of this extension is to test independently the policy behaviour of internationally active companies as relates to their R&D pattern.

Ryan Gestel

Robert van Gestel

London, August 1990

08.31.90.

QUALITATIVE REVIEW:

Could you please inform us about the policy behaviour of the company you represent as relates to the items set out below.

Please tick off as appropriate:

(1) The company has been acquired during the last 10 years or forms part of a larger merged combination;

(2) The company has been acquired or merged during the last 10 years;

(3) The R&D department receives most of the discretionary investments;

XXX (4) The Sales, Marketing and Advertising departments receive most of the discretionary investments;

XXX NOTE:

R&D represents 12% of Total Operating Revenues. See page 30 in Annual Report (1989 section).

Selling, General, and Administrative Expenses represent 28.7 % of Total Revenues. See page 31 in Annual Report (1989 section).

Encl.: Digital Equipment Corporation,
1990 Annual Report (Fiscal Year 1990 1989).

08.31.90.

QUANTITATIVE REVIEW:

Could you please further provide us with the following pertaining to your company:

Average product-life cycle [in case of a diversified holding specify one or more core products] in as far as these would have an overriding effect on the mainstream business and effective product-life cycle:

(a) Product-life cycle positioning prior to any material acquisition or merger during the last five years:

Core product:	Product-life cycle [no. of years]:	
(1) SOFTWARE	3.0	3.0
(2) NETWORKED COMPUTER SYSTEMS	3.0 - 10.0	6.5
(3) HEALTH SERVICE	3.0 - 10.0	6.5
(4) MULTIVENDOR SYSTEMS INTEGRATION	3.0 - 10.0	6.5
		22.5 T.
		AVG. 6.0 Yrs.

Fax

PLEASE RETURN TO: R. van Geetel

CONFIRMATION RETURN NOTE - JUNE 1991

Name of Company DIGITAL EQUIPMENT CORPORATION

Dear Sir

During 1990 your Company was contacted to provide financial data based on standard calculations for a comparative study. I have now been able to verify these data and on the basis of the data as appear in your Annual Report of 1989 and the calculation as applied would like to ask you if you could return this confirmation to me at Fax (0923) 242227.

Thank you for your help in this study.

Sincerely yours,

R. van Geetel

R. van Geetel

FROM 06.24.1991 14:17 NO.34 P. 1

digital Facsimile Transmission

0734-855090
0734-867969

A71

Please complete this form in black ink

From: JOHN REEVE

Tel/DTN: 0734 854794

Mailstop:

Date: 24/6/91

Basis of calculation:
Debt-to-equity based on total shareholders' wealth is calculated as Total Liabilities versus Total Assets and Total Owners' Equity. On this basis the results for the Company are 14.1 %.

R&D is calculated on the basis of Total Revenues, showing in this way 11.9 %.

Growth is calculated as the year used as basis minus the previous year, and versus the previous year. In this case, growth appears as 11.0 %.

We confirm with the above for the purposes of your study and comparative analysis.

Name of Company DIGITAL EQUIPMENT COLLORATION

Representative MR. JOHN REEVE

Function DIGITAL EQUIPMENT (UK) LTD.

Signature and/ or Company seal/stamp

Date 24/6 1991

Attachment	Calculation of Ratio	
(a) % of debt as opposed to equity D/E Ratio = 14.1	$\frac{2.632.106}{10.667.779 + 8.035.673} = 14.1$	Total liabilities/Total assets + Total owner's equity
(b) % of R&D as % of revenues R/D Ratio = 11.9	$\frac{1.525.129}{12.741.956} = 11.9$	R&D/Total revenue
(c) % of growth as % of revenue growth Growth Ratio = 11.0	$\frac{11.475.446 - 12.341.956}{11.475.446} = 11.0$	Total revenues 1988 - (1989)/ 1988 revenues

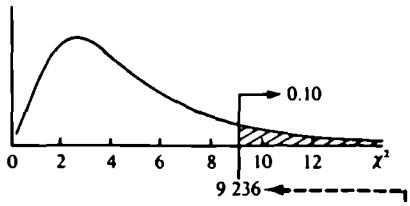
PERCENTAGE POINTS OF THE χ^2-DISTRIBUTION

P	99·5	99	97·5	95	10	5	2·5	1	0·5	0·1
$\nu=1$	$0{\cdot}0^4393$	$0{\cdot}0^3157$	$0{\cdot}0^3982$	0·00393	2·71	3·84	5·02	6·63	7·88	10·83
2	0·0100	0·0201	0·0506	0·103	4·61	5·99	7·38	9·21	10·60	13·81
3	0·0717	0·115	0·216	0·352	6·25	7·81	9·35	11·34	12·84	16·27
4	0·207	0·297	0·484	0·711	7·78	9·49	11·14	13·28	14·86	18·47
5	0·412	0·554	0·831	1·15	9·24	11·07	12·83	15·09	16·75	20·52
6	0·676	0·872	1·24	1·64	10·64	12·59	14·45	16·81	18·55	22·46
7	0·989	1·24	1·69	2·17	12·02	14·07	16·01	18·48	20·28	24·32
8	1·34	1·65	2·18	2·73	13·36	15·51	17·53	20·09	21·95	26·12
9	1·73	2·09	2·70	3·33	14·68	16·92	19·02	21·67	23·59	27·88
10	2·16	2·56	3·25	3·94	15·99	18·31	20·48	23·21	25·19	29·59
11	2·60	3·05	3·82	4·57	17·28	19·68	21·92	24·73	26·76	31·26
12	3·07	3·57	4·40	5·23	18·55	21·03	23·34	26·22	28·30	32·91
13	3·57	4·11	5·01	5·89	19·81	22·36	24·74	27·69	29·82	34·53
14	4·07	4·66	5·63	6·57	21·06	23·68	26·12	29·14	31·32	36·12
15	4·60	5·23	6·26	7·26	22·31	25·00	27·49	30·58	32·80	37·70
16	5·14	5·81	6·91	7·96	23·54	26·30	28·85	32·00	34·27	39·25
17	5·70	6·41	7·56	8·67	24·77	27·59	30·19	33·41	35·72	40·79
18	6·26	7·01	8·23	9·39	25·99	28·87	31·53	34·81	37·16	42·31
19	6·84	7·63	8·91	10·12	27·20	30·14	32·85	36·19	38·58	43·82
20	7·43	8·26	9·59	10·85	28·41	31·41	34·17	37·57	40·00	45·31
21	8·03	8·90	10·28	11·59	29·62	32·67	35·48	38·93	41·40	46·80
22	8·64	9·54	10·98	12·34	30·81	33·92	36·78	40·29	42·80	48·27
23	9·26	10·20	11·69	13·09	32·01	35·17	38·08	41·64	44·18	49·73
24	9·89	10·86	12·40	13·85	33·20	36·42	39·36	42·98	45·56	51·18
25	10·52	11·52	13·12	14·61	34·38	37·65	40·65	44·31	46·93	52·62
26	11·16	12·20	13·84	15·38	35·56	38·89	41·92	45·64	48·29	54·05
27	11·81	12·88	14·57	16·15	36·74	40·11	43·19	46·96	49·64	55·48
28	12·46	13·56	15·31	16·93	37·92	41·34	44·46	48·28	50·99	56·89
29	13·12	14·26	16·05	17·71	39·09	42·56	45·72	49·59	52·34	58·30
30	13·79	14·95	16·79	18·49	40·26	43·77	46·98	50·89	53·67	59·70
40	20·71	22·16	24·43	26·51	51·81	55·76	59·34	63·69	66·77	73·40
50	27·99	29·71	32·36	34·76	63·17	67·50	71·42	76·15	79·49	86·66
60	35·53	37·48	40·48	43·19	74·40	79·08	83·30	88·38	91·95	99·61
70	43·28	45·44	48·76	51·74	85·53	90·53	95·02	100·4	104·2	112·3
80	51·17	53·54	57·15	60·39	96·58	101·9	106·6	112·3	116·3	124·8
90	59·20	61·75	65·65	69·13	107·6	113·1	118·1	124·1	128·3	137·2
100	67·33	70·06	74·22	77·93	118·5	124·3	129·6	135·8	140·2	149·4

The function tabulated is χ^2_P defined by the equation $\frac{P}{100} = \frac{1}{2^{\nu/2}\Gamma(\frac{1}{2}\nu)}\int_{\chi^2_P}^{\infty} x^{\frac{1}{2}\nu-1}e^{-x/2}dx$. If x is a variable distributed as χ^2 with ν degrees of freedom, $P/100$ is the probability that $x \geq \chi^2_P$. For $\nu<100$, linear interpolation in ν is adequate.

Kruskal-Wallis test difference between cultural groups as relates to capital structures of multinationals, H = 13.43 - significant at the 0.025 level.

Values of χ^2 for Selected Probabilities



Example.
d.f. (Number of degrees of freedom) = 5,
the tail above $\chi^2 = 9.236$ represents 0.10 or 10% of the area under the curve.

	Probabilities (or Areas Under χ^2 Distribution Curve Above Given χ^2 Values)								
	.90	.70	.50	.30	.20	.10	.05	.02	.01
d.f	Values of χ^2								
1	.016	.148	.455	1.074	1.642	2.706	3.841	5.412	6.635
2	.211	.713	1.386	2.408	3.219	4.605	5.991	7.824	9.210
3	.584	1.424	2.366	3.665	4.642	6.251	7.815	9.837	11.345
4	1.064	2.195	3.357	4.878	5.989	7.779	9.488	11.668	13.277
5	1.610	3.000	4.351	6.064	7.289	9.236	11.070	13.388	15.086
6	2.204	3.828	5.348	7.231	8.558	10.645	12.592	15.033	16.812
7	2.833	4.671	6.346	8.383	9.803	12.017	14.067	16.622	18.475
8	3.490	5.527	7.344	9.524	11.030	13.362	15.507	18.168	20.090
9	4.168	6.393	8.343	10.656	12.242	14.684	16.919	19.679	21.666
10	4.865	7.267	9.342	11.781	13.442	15.987	18.307	21.161	23.209
11	5.578	8.148	10.341	12.899	14.631	17.275	19.675	22.618	24.725
12	6.304	9.034	11.340	14.011	15.812	18.549	21.026	24.054	26.217
13	7.042	9.926	12.340	15.119	16.985	19.812	22.362	25.472	27.688
14	7.790	10.821	13.339	16.222	18.151	21.064	23.685	26.873	29.141
15	8.547	11.721	14.339	17.322	19.311	22.307	24.996	28.259	30.578
16	9.312	12.624	15.338	18.418	20.465	23.542	26.296	29.633	32.000
17	10.085	13.531	16.338	19.511	21.615	24.769	27.587	30.995	33.409
18	10.865	14.440	17.338	20.601	22.760	25.989	28.869	33.346	34.805
19	11.651	15.352	18.338	21.689	23.900	27.204	30.144	33.687	36.191
20	12.443	16.266	19.337	22.775	25.038	28.412	31.410	35.020	37.566
21	13.240	17.182	20.337	23.858	26.171	29.615	32.671	36.343	38.932
22	14.041	18.101	21.337	24.939	27.301	30.813	33.924	37.659	40.289
23	14.848	19.021	22.337	26.018	28.429	32.007	35.172	38.968	41.638
24	15.659	19.943	23.337	27.096	29.553	33.196	36.415	40.270	42.980
25	16.473	20.867	24.337	28.172	30.675	34.382	37.652	41.566	44.314
26	17.292	21.792	25.336	29.246	31.795	35.563	38.885	42.856	45.642
27	18.114	22.719	26.336	30.319	32.912	36.741	40.113	44.140	46.963
28	18.939	23.647	27.336	31.391	34.027	37.916	41.337	45.419	48.278
29	19.768	24.577	28.336	32.461	35.139	39.087	42.557	46.693	49.588
30	20.599	25.508	29.336	33.530	36.250	40.256	43.773	47.962	50.892

Source From Stephen P Shao, *Statistics for Business and Economics*, 3rd ed. (Columbus, Ohio: Charles E Merrill 1976) p 790

Note to Chi Square Distribution:

A chi square goodness-of fit test was applied to compare the sample for normality in the distribution of the debt proportions. Thus, a significance test of the proportions was used to determine whether the observed cases in the sample corresponded to an expected distribution. The value of quantities of the sampling distribution [Sum (Observed Theoretical) / Theoretical] was calculated from the actual frequencies for each cell. In comparing the observed data to the expected frequencies of the theoretical model, the D/E sample appeared to be representative of the population even at the 0.01 level, meeting the 0.05 criteria. This could not be said about R&D or growth.

There remained doubt however about the normality of the D/E sample population. In testing the difference betqeen the observed sample mean m and the hypothesised population mean μ, for sampling sizes of n = 10 or more, as is the case in the study (n = 87), the means of the different D/E samples have an approximately Normal distribution. But with the population distribution highly skewed, a Normal sampling distribution of the mean cannot be expected with n not being greater than 100

On this basis, it would not have been appropriate to base the statistical analysis on the analysis of variance (ANOVA), nor alternatively, the analysis of the co-variance (ANOCOVA), effectively an interactive analysis of the debt ratios, growth and R&D. When these sort of tests were run on an experimental basis, this proved inadequate and not in line with the aims of the study as set out (Chapter I). In any event, this sort of measurement clearly would have been outside the quantitative scope of this study. The study, in compliance with the objectives as defined, specifically tests the D/E ratios and cultural influences on international capital structure. Therefore, any results from additional experiments could only have added to the qualitative interpretation. This is not the case and not necessary.

7. SUMMARY TABLES

7.1 D/E Distribution Histogram TABLE 25

	1	2	3	4	5	6	7	8	9
6.0	x								
7.3	x								
14.0	x								
14.5	x								
14.6	x								
17.0	x								
22.0	x								
25.0				x					
25.1	x								
27.9	x								
28.0		x							
30.0			x						
30.8	x								
32.0		x							
36.5	x								
38.1	x								
38.3	x								
39.0	x								
40.8	x								
41.0		x							
41.2	x								
42.0			x						
45.1	x								
46.0		x							
50.0									x
50.1	x								
54.0	x								
55.0	x								
57.9		x							
58.0	x								
58.3	x								
60.0					x				
61.4	x								
62.7	x								
65.0	x								
66.0	x								
66.7	x								
67.0					x				
67.9	x								
70.0						x			
74.0	x								
75.0			x						
76.0	x								
80.0			x						
85.0	x								
88.9	x								
89.9	x								
100.0	x								
122.0	x								
150.0	x								

<10	20	30	40	45	50	55	60	65	70	80	>90
2	4	9	10	7	3	11	6	7	9	11	9

7.2 Growth Distribution Histogram TABLE 26

```
     .........1.... 2.... 3.... 4.... 5.... 6
(20.2........ x
(13.3........ x
( 0.7........ x
  0.0........ x
  0.8........ x
  0.9........ x
  3.5........ x
  4.8........ x
  4.9........ x
  5.0.............x
  5.2........ x
  7.0........ x
  7.5.............x
  8.0.................x
  9.0.................x
  9.1........ x
  9.5........ x
 10.0.........................x
 10.9........ x
 11.0........ x
 12.5........ x
 12.9........ x
 13.5........ x
 13.8........ x
 14.0........ x
 14.5........ x
 15.0.........................x
 17.0.............x
 17.5.................x
 18.0........ x
 18.3........ x
 18.6........ x
 20.0.........................x
 21.3........ x
 21.5........ x
 21.9........ x
 22.0........ x
 25.0.........................x
 27.0........ x
 28.0........ x
 29.5........ x
 30.0..............................x
 31.0........ x
 33.0........ x
 34.0........ x
 34.4........ x
 35.0.............x
 36.0........ x
 40.0.............x
 45.0........ x
 50.0........ x
 54.0.............x
 68.7........ x
 70.0........ x
```

>5.0 9
>10.0 14
>15.0 13
>20.0 13
>25.0 9
>30.0 8
>35.0 10
>40.0 3
>45.0 2
>50.0 1
<49.9 5

7.3 R&D Distribution Histogram TABLE 27

```
     .....1.... 2.... 3..... 4.... 5..... 6..... 7.... 8

 0.0.....x
0.15.....x
 0.3.....x
 0.4.....x
 0.5.....x
 0.7.....x
 0.9.....x
 1.0.....x
 1.2.....x
 1.5.....x
 2.0.....x
 2.3.....x
 2.9.....x
 3.0.....x
 3.3.....x
 3.5.....x
 3.8.....x
 4.0.....x
 5.0.....x
 5.3.....x
 5.4.....x
 5.8.....x
 5.9.....x
 6.0.....x
 8.0.....x
 8.8.....x
 9.0.....x
10.0.....x
11.0.....x
11.5.....x
12.0.....x
12.5.....x
13.0.....x
14.0.....x
15.0.....x
15.6.....x
16.0.....x
17.0.....x
20.6.....x
25.0.....x
25.4.....x
30.0.....x
35.0.....x
35.6.....x
40.0.....x
48.0.....x
48.3.....x
75.0.....x
```

```
 >2.0. . . . . . . . . . . . . .15
 >4.0. . . . . . . . . . . . . .14
 >6.0. . . . . . . . . . . . . .14
 >8.0. . . . .2
>10.0. . . . . . . . .6
 10.0. . . . . . . . . . . . . . . . . . . .8
>12.0. . . . .3
>14.0. . . . . . . . . . .6
>16.0. . . . .4
>18.0. . . . .2
>30.0. . . . . . . . . .5
>40.0. . . . .4
<39.0. . . . .4
```

7.4 Geographical Classifications

7.4.1 Consolidated

TABLE 28

	Means (X)	D/E	R&D	GRTH
01	U S A	44.2	12.5	17.0
02	U K	42.3	8.7	17.0
03	Asia Pacific	84.2	11.7	9.8
04	Japan	59.4	6.3	22.1
05	Indian Peninsula	59.8	10.7	20.7
06	Mid East	51.5	9.2	19.6
07	Near East	66.4	21.4	41.8
08	Meditteranean Europe	54.5	16.5	17.7
09	Africa	45.0	6.4	16.0
	TOTAL	52.83	10.71	19.35

7.4.2 Sorted by Growth

TABLE 29

	Means (X)	D/E	R&D	GRTH
07	Near East	66.4	21.4	41.8
04	Japan	59.4	6.3	22.1
05	Indian Peninsula	59.8	10.7	20.7
06	Mid East	51.5	9.2	19.6
	TOTAL	52.83	10.71	19.35
08	Meditteranean Europe	54.5	16.5	17.7
01	U S A	44.2	12.5	17.0
02	U K	42.3	8.7	17.0
09	Africa	45.0	6.4	16.0
03	Asia Pacific	84.2	11.7	9.8

7.4.3 Sorted by R&D

TABLE 30

	Means (X)	D/E	R&D	GRTH
07	Near East	66.4	21.4	41.8
08	Meditteranean Europe	54.5	16.5	17.7
01	U S A	44.2	12.5	17.0
03	Asia Pacific	84.2	11.7	9.8
	TOTAL	52.83	10.71	19.35
05	Indian Peninsula	59.8	10.7	20.7
06	Mid East	51.5	9.2	19.6
02	U K	42.3	8.7	17.0
09	Africa	45.0	6.4	16.0
04	Japan	59.4	6.3	22.1

7.4.4 Sorted by D/E

TABLE 31

	Means (X)	D/E	R&D	GRTH
03	Asia Pacific	84.2	11.7	9.8
07	Near East	66.4	21.4	41.8
05	Indian Peninsula	59.8	10.7	20.7
04	Japan	59.4	6.3	22.1
08	Meditteranean Europe	54.5	16.5	17.7
	TOTAL	52.83	10.71	19.35
06	Mid East	51.5	9.2	19.6
09	Africa	45.0	6.4	16.0
01	U S A	44.2	12.5	17.0
02	U K	42.3	8.7	17.0

7.5 Cultural Classifications

7.5.1 Consolidated

TABLE 32

01	N. America and Anglo	42.4	9.9	16.8
02	Pacific Asia	69.3	8.5	17.1
03	Indian Peninsula	59.8	10.7	20.7
04	Mid & Near East	55.2	12.2	25.2
05	Med & S. Europe	54.5	16.5	17.7
06	African	45.0	6.4	16.0
	TOTAL	52.83	10.71	19.35

7.5.2 Sorted by Growth

TABLE 33

04	Mid & Near East	55.2	12.2	25.2
03	Indian Peninsula	59.8	10.7	20.7
	TOTAL	52.83	10.71	19.35
05	Med & S. Europe	54.5	16.5	17.7
02	Pacific Asia	69.3	8.5	17.1
01	N. America and Anglo	42.4	9.9	16.8
06	African	45.0	6.4	16.0

7.5.3 Sorted by R&D

TABLE 34

05	Med & S. Europe	54.5	16.5	17.7
04	Mid & Near East	55.2	12.2	25.2
	TOTAL	52.83	10.71	19.35
03	Indian Peninsula	59.8	10.7	20.7
01	N. America and Anglo	42.4	9.9	16.8
02	Pacific Asia	69.3	8.5	17.1
06	African	45.0	6.4	16.0

7.5.4 Sorted by D/E

TABLE 35

02	Pacific Asia	69.3	8.5	17.1
03	Indian Peninsula	59.8	10.7	20.7
04	Mid & Near East	55.2	12.2	25.2
05	Med & S. Europe	54.5	16.5	17.7
	TOTAL	52.83	10.71	19.35
06	African	45.0	6.4	16.0
01	N. America and Anglo	42.4	9.9	16.8

TABLE 36

Pt. Tri Atmaja	03	11	150.0	2.0	10.0
Laura Ashley PLC	02	05	122.0	2.0	17.5
Khurma Trading Est. Ltd	06	18	100.0	10.0	20.0
Marubeni Corp	04	02	89.9	0.7	27.0
Mitsubishi Corp	04	02	88.9	15.6	17.0
Hamlaan Ltd	06	06	85.0	5.0	30.0
Avon Products Co.	01	08	80.0	1.0	0.8
Reserve Services Ltd	06	13	80.0	16.0	28.0
Megabyte Espana S.A.	08	07	80.0	10.0	30.0
Lonrho PLC	02	04	76.0	0.7	10.9
Lanka Lloyd	03	19	75.0	3.0	10.0
S. R. Textiles Ltd	05	17	75.0	6.0	25.0
Artesia Foods Ltd	08	11	75.0	3.5	3.5
Pentel ,Co.	04	01	74.0	0.4	12.9
Deagu Financial and Investment Co. - Royal Chemical Industry	03	03	70.0	13.0	15.0
Allied Ghee Ind. Ltd	05	11	70.0	8.0	10.0
S+J Associates Ltd	05	11	70.0	10.0	8.0
Roomi Enterprises Ltd	05	18	70.0	13.0	15.0
Sine Enterprises Ltd	05	17	70.0	12.0	30.0
Fouman Chimie S.A.	07	03	70.0	10.0	35.0
Noble Raredon PLC	02	19	67.9	48.0	21.3
Yong Lee Rubber Co.	03	15	67.0	30.0	15.0
Kurtas A.S.	07	02	67.0	25.0	40.0
Kutas A.S.	07	11	67.0	30.0	70.0
Sunal A.S.	07	11	67.0	40.0	30.0
Sawa - Pema Holdings	09	13	67.0	4.0	5.0
Musa Ltd	09	18	66.7	9.0	30.0
Shaheen Cotton Mills Ltd	05	17	66.0	8.0	0.0
Jerzina Group of Co.s	03	17	65.0	12.5	30.0
Cyprus Airways	08	19	62.7	0.15	0.9
Bufalo A.S.	07	02	61.4	2.3	34.4
S+S Associates	05	07	60.0	12.0	20.0
Est. Fouad-Saccal S.A.	06	11	60.0	10.0	20.0
Lashko Co. Ltd	06	04	60.0	10.0	25.0
Plastic Co. A.M. Zaghloul	06	02	60.0	11.5	17.0
A. Marougas	08	06	60.0	3.5	18.0
Waverly Cameron PLC	02	01	58.3	10.0	18.6
Marks & Spencer PLC	02	16	58.0	5.3	9.5
H. J. Heinz Co.	01	11	57.9	35.6	4.9
NEC Corp	04	07	57.9	1.5	7.5
Falcon Gulf - Alam Group	06	15	55.0	11.5	25.0
The Coca Cola Co.	01	11	54.0	5.4	50.0

Evergreen Marine Corp Ltd	03	19	50.1	2 0	0 7
Riscall Group	01	04	50.0	0.9	36.0
Singh Air Conditioning Ltd	05	02	50.0	15 0	17 5
Ad-Dustoor Ltd	0x	10	50.0	2 0	5.0
Axios Food Co.	08	11	50.0	5 0	25 0
Parisiana A.S.	08	17	50.0	75.0	9.0
Circular Distributors Ltd	09	11	50.0	5.0	20 0
Dejla Ltd	09	17	50.0	2 0	7 0
Mekan Investments Ltd	09	11	50.0	3 8	5.2
Mimosa Co. Ltd	09	07	50.0	4.0	8.0
Al-Gosaibi Group	06	04	46.0	8.0	10 0
Wegal S.A.	08	17	46.0	3.0	15 0
Platignum PLC	02	05	45.1	0.5	20.2
Proctor & Gamble Co.	01	08	42.0	2.9	12.5
British Petroleum	02	09	42.0	5.9	21.9
ICI PLC	02	03	42.0	5.9	22.0
Rothman's Int'l Inc.	02	11	41.2	4.0	21.5
Husein Sugar Mills Ltd	05	11	41.0	3.3	68.7
Kuwait Investment Authority - Kuwait Invsmt Office	06	18	41.0	0.5	33.0
Reuters PLC	02	10	40.8	5.0	18.3
Guiness PLC	02	11	39.0	48.3	31.0
Hitachi Ltd	04	07	38.3	5.8	54.0
Davy Corp.	02	06	38.1	25.4	14.5
Zavet International Ltd	09	01	36.5	17.0	40.0
Lematic Overseas Ltd	06	02	32.0	35.0	9.0
Remalux Paints Co.	06	03	32.0	0.0	9.0
Rolls Royce PLC	02	02	30.8	20.6	13.5
The Boots Co.	02	08	30.0	1.0	35.0
Grand Metropolitan PLC	02	11	30.0	5.8	54.0
Zavet - Boy & Abotsi Ltd	09	01	30.0	5.0	20.0
The Walt Disney Co.	01	10	28.0	25.0	34.0
Economic Insurance Co. Ltd	08	14	28.0	0.0	29.5
Intertan Inc.-Tandy	01	07	27.9	8.8	13.3
Shahin Construction Co.	06	06	25.1	0.0	9.1
Ribhi Darwazah & Sons Co.	06	06	25.0	8.0	45.0
Cosmos S.A.	08	13	25.0	15.0	25.0
Sawa Enterprises Ltd	09	18	25.0	3.0	8.0
Star Paper Ind. Ltd	09	12	25.0	11.0	17.5
Al-Taher Ltd	06	18	22.0	10.0	10.0
BPB Industries	02	15	17.0	0.3	7.5
EEC Group PLC	02	15	14.6	1.2	4.8
Lucas Industries PLC	02	02	14.5	6.0	13.8
Digital Equipment Co.	01	07	14.0	12.0	11.0
Mitsui Co.	04	02	7.3	14.0	14.0
Singh Ranbij - Dhiman & Sons Ltd	05	02	6.0	25.0	15.0

DETAIL APPENDIX A

(Heinz)

CONSOLIDATED STATEMENTS OF INCOME AND RETAINED EARNINGS
H.J Heinz Company and Subsidiaries

Fiscal Year Ended (dollars in thousands except per share data)	May 2, 1990 (52 weeks)	*May 3, 1989 (53 weeks)*	*April 27, 1988 (52 weeks)*
Consolidated Statements of Income:			
Sales	$6,085,687	$5,800,877	$5,244,230
Cost of products sold	3,726,613	3,550,249	3,212,580
Gross profit	2,359,074	2,250,628	2,031,650
Operating expenses	1,437,158	1,447,138	1,343,637
Operating Income	921,916	803,490	688,013
Interest income	26,748	31,037	39,850
Interest expense	108,542	77,694	73,995
Other expense, net	28,692	31,942	31,295
Income before income taxes	811,430	724,891	622,573
Provision for income taxes	306,979	284,661	236,559
Net Income	$ 504,451	$ 440,230	$ 386,014
Consolidated Statements of Retained Earnings:			
Amount at beginning of year	$2,263,829	$2,002,073	$1,770,632
Net income	504,451	440,230	386,014
Cash dividends:			
Common stock	207,387	178,340	154,418
Preferred stock	113	134	155
Amount at end of year	$2,560,780	$2,263,829	$2,002,073
Per Common Share Amounts:			
Net income	$ 1.90	$ 1.67	$ 1.45
Cash dividends	$ .81	$ .69½	$ .60½

See Notes to Consolidated Financial Statements

DETAIL APPENDIX B

(M&S)

BALANCE SHEETS
AT 31 MARCH 1990

	Notes	The Group		The Company	
		1990	1989	1990	1989
		£m	£m	£m	£m
Fixed assets					
Tangible assets:					
Land and buildings		2,093·9	1,947·7	1,958·6	1,841·1
Fixtures, fittings and equipment		340·3	320·4	292·8	276·7
Assets in the course of construction		31·3	15·8	25·7	15·3
	12	2,465·5	2,283·9	2,277·1	2,133·1
Investments	13	—	—	433·4	407·5
Net assets of financial activities	14	79·8	71·6	—	—
		2,545·3	2,355·5	2,710·5	2,540·6
Current assets					
Stocks	15	374·3	364·4	268·7	261·4
Debtors	16	256·7	192·6	640·3	443·8
Investments	17	19·6	13·9	19·1	13·5
Cash at bank and in hand	18	256·7	88·2	33·4	25·4
		907·3	659·1	961·5	744·1
Current liabilities					
Creditors: amounts falling due within one year	19	912·5	743·1	751·2	615·9
Net current (liabilities)/assets (excluding financial activities)		(5·2)	(84·0)	210·3	128·2
Total assets less current liabilities		2,540·1	2,271·5	2,920·8	2,668·8
Creditors: amounts falling due after more than one year	20	355·2	343·7	290·0	295·0
Provisions for liabilities and charges	21	4·3	5·1	—	—
Net assets		2,180·6	1,922·7	2,630·8	2,373·8
Capital and reserves					
Called up share capital	22	675·0	669·6	675·0	669·6
Share premium account	23	50·0	34·7	50·0	34·7
Revaluation reserve	23	458·0	456·5	479·4	479·4
Profit and loss account	23	991·6	757·8	1,426·4	1,190·1
Shareholders' funds		2,174·6	1,918·6	2,630·8	2,373·8
Minority interests		6·0	4·1	—	—
Total capital employed		2,180·6	1,922·7	2,630·8	2,373·8

Approved by the Board

14 May 1990

The Lord Rayner, CHAIRMAN

J R Oates, FINANCE DIRECTOR

DETAIL APPENDIX C

(Heinz)

CONSOLIDATED
BALANCE SHEETS
H.J. Heinz Company
and Subsidiaries

Assets (dollars in thousands)	*May 2, 1990*	*May 3, 1989*
Current Assets:		
Cash and cash equivalents	$ 125,817	$ 102,605
Short-term investments, at cost which approximates market	115,264	135,124
Receivables (net of allowances of $8,564 and $9,660)	640,788	507,475
Inventories:		
Finished goods and work-in-process	701,645	616,703
Packaging material and ingredients	291,940	285,998
	993,585	902,701
Prepaid expenses and other current assets	138,246	127,281
Total current assets	2,013,700	1,775,186
Property, Plant and Equipment:		
Land	38,690	40,394
Buildings and leasehold improvements	498,833	440,832
Equipment, furniture and other	1,958,016	1,702,880
	2,495,539	2,184,106
Less accumulated depreciation	927,787	818,083
Total property, plant and equipment, net	1,567,752	1,366,023
Other Noncurrent Assets:		
Investments, advances and other assets	258,166	255,221
Goodwill (net of amortization of $51,694 and $38,413)	430,888	390,016
Other intangibles (net of amortization of $36,279 and $33,998)	216,945	215,361
Total other noncurrent assets	905,999	860,598
Total assets	$4,487,451	$4,001,807

See Notes to Consolidated Financial Statements

Liabilities and Shareholders' Equity (dollars in thousands)	*May 2, 1990*	*May 3, 1989*
Current Liabilities:		
Short-term debt	$ 336,873	$ 245,941
Portion of long-term debt due within one year	44,506	22,900
Accounts payable	460,044	407,050
Salaries and wages	79,789	75,470
Accrued marketing	75,786	91,780
Other accrued liabilities	209,759	218,480
Income taxes	73,244	54,281
Total current liabilities	1,280,001	1,115,902
Long-Term Debt and Other Liabilities:		
Long-term debt	875,228	693,480
Deferred income taxes	309,683	281,489
Other	135,640	133,698
Total long-term debt and other liabilities	1,320,551	1,108,667
Shareholders' Equity:		
Capital stock		
Third cumulative preferred, $1.70 first series, $10 par value	599	757
Common stock, 287,400,000 shares issued, $ 25 par value	71,850	71,850
	72,449	72,607
Additional capital	152,128	109,665
Retained earnings	2,560,780	2,263,829
Cumulative translation adjustments	(73,910)	(89,205)
	2,711,447	2,356,896
Less		
Treasury shares, at cost (33,881,804 shares at May 2, 1990 and 30 437,230 shares at May 3, 1989)	777,548	579,658
Unearned compensation relating to the ESOP	47,000	–
Total shareholders' equity	1,886,899	1,777,238
Total liabilities and shareholders' equity	$4,487,451	$4,001,807

DETAIL APPENDIX D

(Platignum)

Group Profit and Loss Account

for the year ended 31st March, 1990

ote		1990	1989 (14 months)
		£000	£000
1	**Turnover**	22,576	28,293
	Cost of Sales	(16,220)	(20,885)
	Gross Profit	6,356	7,408
	Administrative expenses	(5,535)	(7,807)
	Other operating income	2	132
	Operating profit/(loss)	823	(267)
2	Interest payable and similar charges	(563)	(598)
	Profit/(loss) before taxation	260	(865)
4	**Exceptional Items**	—	(2,072)
	Profit/(loss) on ordinary activities before taxation	260	(2,937)
5	**Tax on profit/(loss) on ordinary activities**	(11)	(191)
	Profit/(loss) on ordinary activities after taxation	249	(3,128)
6	**Extraordinary items**	(120)	(1,791)
7	**Profit/(loss) for the financial year**	129	(4,919)
8	**Dividends**	(2)	(3)
9	**Profit retained/(Accumulated loss)**	127	(4,922)
9	**Earnings/(loss) per ordinary share**	0.12p	(2.24p)

The accounting policies on page five and notes on pages ten to sixteen form part of these financial statements.

DETAIL APPENDIX E

(Platignum)

DETAIL APPENDIX F

(DEC)

Consolidated Balance Sheets

(in thousands)

	June 30, 1990	July 1, 1989
Assets		
Current Assets		
Cash and cash equivalents *(Note F)*	$ 2,008,983	$ 1,655,264
Accounts receivable, net of allowance of $87,632 and $74,345	3,206,765	2,965,408
Inventories *(Note A)*		
Raw materials	352,976	360,135
Work-in-process	479,472	570,064
Finished goods	705,810	707,802
Total inventories	1,538,258	1,638,001
Prepaid expenses	345,797	255,195
Net deferred Federal and foreign income tax charges	521,809	381,140
Total Current Assets	7,621,612	6,895,008
Property, Plant and Equipment, at Cost *(Note A)*		
Land	352,296	300,540
Buildings	1,712,204	1,599,673
Leasehold improvements	569,885	530,773
Machinery and equipment	4,392,609	3,817,587
Total property, plant and equipment, at cost	7,026,994	6,248,573
Less accumulated depreciation	3,158,902	2,602,677
Net property, plant and equipment	3,868,092	3,645,896
Other assets, net *(Note G)*	165,117	126,875
Total Assets	$11,654,821	$10,667,779
Liabilities and Stockholders' Equity		
Current Liabilities		
Bank loans and current portion of long-term debt *(Note H)*	$ 12,538	$ 29,755
Accounts payable	660,819	553,818
Federal, foreign and state income taxes	453,997	445,977
Salaries, wages and related items	472,153	300,393
Deferred revenues and customer advances *(Note A)*	903,038	833,831
Other current liabilities *(Note M)*	787,224	230,265
Total Current Liabilities	3,289,769	2,394,039
Net deferred Federal and foreign income tax credits	33,137	102,048
Long-term debt *(Note H)*	150,001	136,019
Total Liabilities	3,472,907	2,632,106
Stockholders' Equity *(Notes I and J)*		
Common stock, $1.00 par value; authorized 450,000,000 shares; issued 130,008,231 shares	130,008	130,008
Additional paid-in capital	2,565,487	2,469,711
Retained earnings	6,257,199	6,366,418
Treasury stock at cost; 7,453,501 shares and 8,471,655 shares	(770,780)	(930,464)
Total Stockholders' Equity	8,181,914	8,035,673
Total Liabilities and Stockholders' Equity	$11,654,821	$10,667,779

The accompanying notes are an integral part of these financial statements.

DETAIL APPENDIX G

(Avon)

Platignum plc and its Subsidiaries

Group Balance Sheet

as at 31st March, 1990

	1990	1989
	£000	£000
Fixed assets		
Intangible assets	61	43
Tangible assets	3,382	3,235
	3,443	3,278
Current assets		
Stocks	4,584	5,231
Debtors	3,509	7,215
Cash at bank and in hand	1	45
	8,094	12,491
Creditors: amounts falling due within one year	(7,105)	(10,880)
	989	1,611
Total assets less current liabilities	4,432	4,889
Creditors: amounts falling due after more than one year	(616)	(1,203)
Provisions for liabilities and charges	(40)	(37)
	3,776	3,649
Capital and reserves		
Called up share capital	10,191	10,191
Share premium account	112	112
Revaluation reserve	448	448
Profit and loss account	(6,975)	(7,102)
	3,776	3,649

The financial statements were approved by the Board of Directors on 27th July 1990

S S Cohen and R A Campbell Directors

The accounting policies on page 11 and notes on pages ten to sixteen form part of these financial statements.

Consolidated Statement of Cash Flows

Avon Products Inc.

(In millions)

Years ended December 31	1989	1988	1987
Cash flows from operating activities			
Earnings from continuing operations	$ 152.4	$ 141.1	$ 227.2
Adjustments to reconcile earnings to net cash provided by continuing operations			
Depreciation	52.6	54.6	50.9
Amortization	15.3	10.3	6.3
Provision for doubtful accounts	37.3	33.5	27.9
Translation losses	48.1	8.6	3.4
Deferred income taxes	(.6)	(15.6)	6.5
Cumulative effect of accounting change	—	(20.0)	—
Gain on sale of subsidiary stock, net of taxes of $69.9	—	—	(121.1)
Provision for restructure	—	—	29.4
Other	29.1	(5.2)	1.4
Changes in assets and liabilities, net of acquisitions			
Accounts receivable	(103.0)	(146.4)	(51.6)
Inventories	(26.0)	(55.8)	(35.1)
Prepaid expenses and other	76.1	20.4	.9
Accounts payable and accrued liabilities	68.9	95.2	62.6
Income and other taxes	45.4	46.6	(.7)
Other noncurrent assets and liabilities	(27.4)	(9.3)	(31.7)
Net cash provided by continuing operations	368.2	158.0	176.3
Net cash (used) by discontinued operations	(81.8)	(222.6)	(92.0)
Net cash provided (used) by operating activities	286.4	(64.6)	84.3
Cash flows from investing activities			
Capital expenditures	(37.1)	(48.1)	(46.5)
Disposal of properties	25.3	36.2	23.9
Acquisitions of businesses, net of cash acquired	—	(19.8)	(325.0)
Sale of companies and subsidiary stock	96.4	70.0	351.0
Purchase price adjustment—sale of companies	(67.9)	—	—
Net cash provided by investing activities	16.7	38.3	3.4
Cash flows from financing activities			
Cash dividends paid	(94.7)	(115.4)	(141.9)
Short-term debt and commercial paper, net	53.1	(223.3)	58.1
Proceeds from long-term debt	—	600.5	42.3
Retirement of long-term debt	(332.6)	(107.8)	(28.3)
Exercise of options and warrants	40.0	1.9	21.4
Net cash provided (used) by financing activities	(334.2)	155.9	(48.4)
Effect of exchange rate changes on cash	(48.0)	(33.5)	(40.1)
Net increase (decrease) in cash and equivalents	(79.1)	96.1	(.8)
Cash and equivalents at beginning of year	163.5	67.4	68.2
Cash and equivalents at end of year	$ 84.4	$ 163.5	$ 67.4
Supplemental disclosure of cash flow information			
Acquisitions of businesses			
Working capital, other than cash	$ —	$ (1.1)	$ (28.9)
Property, plant and equipment	—	(2.4)	(10.0)
Intangible assets	—	(32.7)	(287.2)
Other, principally noncurrent liabilities	—	16.4	1.1
Cash paid to acquire businesses	$ —	$ (19.8)	$(325.0)
Cash paid for			
Interest, net of amount capitalized	$ 134.9	$ 102.6	$ 83.6
Income taxes, net of refunds received	51.5	91.8	23.4

The accompanying notes are an integral part of this statement.

DETAIL APPENDIX H

(P&G)

Consolidated Balance Sheet

The Procter & Gamble Company And Subsidiaries

June 30 (Millions of Dollars)	1990	1989
Assets		
Current Assets		
Cash and cash equivalents	$ 1,407	$ 1,587
Accounts receivable, less allowance for doubtful accounts of $29 in 1990 and $24 in 1989	2,647	2,090
Inventories	2,865	2,337
Prepaid expenses and other current assets	725	564
	7,644	6,578
Property, Plant, and Equipment	7,436	6,793
Goodwill and Other Intangible Assets	2,594	2,305
Other Assets	813	675
Total	$18,487	$16,351
Liabilities and Shareholders' Equity		
Current Liabilities		
Accounts payable — trade	$ 2,035	$ 1,669
Accounts payable — other	350	466
Accrued liabilities	1,690	1,365
Taxes payable	445	523
Debt due within one year	897	633
	5,417	4,656
Long-Term Debt	3,588	3,698
Other Liabilities	706	447
Deferred Income Taxes	1,258	1,335
Shareholders' Equity		
Convertible Class A preferred stock	1,000	1,000
Common stock — shares outstanding:* 1990—346,294,159; 1989—323,980,816	346	162
Additional paid-in capital	510	529
Currency translation adjustments	44	(63
Reserve for employee stock ownership plan debt retirement	(963)	(1,000
Retained earnings	6,581	5,587
	7,518	6,215
Total	$18,487	$16,351

*Adjusted for two-for-one stock split effective October 20, 1989

See accompanying Notes To Consolidated Financial Statements.

DETAIL APPENDIX I

(Coke)

Consolidated Balance Sheets

(Dollars in thousands except share data)

December 31,	1990	1989
Assets		
Current		
Cash and cash equivalents	$1,429,555	$1,096,020
Marketable securities, at cost (approximates market)	62,569	85,671
	1,492,124	1,181,691
Trade accounts receivable, less allowances of $29,510 in 1990 and $14,347 in 1989	913,541	768,335
Finance subsidiary—receivables	38,199	52,093
Inventories	982,313	789,077
Prepaid expenses and other assets	716,601	812,304
Total Current Assets	4,142,778	3,603,500
Investments and Other Assets		
Investments		
Coca-Cola Enterprises Inc.	666,847	695,195
Coca-Cola Amatil Limited	569,057	524,931
Other, principally bottling companies	788,718	710,297
Finance subsidiary—receivables	128,119	140,520
Long-term receivables and other assets	321,977	354,881
	2,474,718	2,425,824
Property, Plant and Equipment		
Land	147,057	146,482
Buildings and improvements	1,059,969	950,251
Machinery and equipment	2,204,188	1,890,960
Containers	374,526	307,012
	3,785,740	3,294,705
Less allowances for depreciation	1,400,175	1,273,486
	2,385,565	2,021,219
Goodwill and Other Intangible Assets	275,126	231,993
	$9,278,187	$8,282,536

December 31,	*1990*	*1989*
Liabilities and Shareholders' Equity		
Current		
Accounts payable and accrued expenses	$1,576,426	$1,386,516
Loans and notes payable		
Finance subsidiary	161,432	184,691
Other	1,742,179	1,234,617
Current maturities of long-term debt	97,272	12,858
Accrued taxes	719,182	839,248
Total Current Liabilities	4,296,491	3,657,930
Long-Term Debt	535,861	548,708
Other Liabilities	332,060	294,358
Deferred Income Taxes	264,611	296,055
Shareholders' Equity		
Preferred stock, $1 par value—		
Authorized: 100,000,000 shares; Issued: 3,000 shares of Cumulative Money Market Preferred Stock in 1990 and 1989; Outstanding: 750 shares in 1990; 3,000 shares in 1989, stated at aggregate liquidation preference	75,000	300,000
Common stock, $.50 par value—		
Authorized: 1,400,000,000 shares; Issued: 840,487,486 shares in 1990; 837,819,578 shares in 1989	420,244	418,910
Capital surplus	512,703	437,324
Reinvested earnings	6,447,576	5,618,312
Unearned compensation related to outstanding restricted stock	(67,760)	(45,892)
Foreign currency translation adjustment	4,031	(7,206)
	7,391,794	6,721,448
Less treasury stock, at cost (172,248,315 common shares in 1990; 163,789,772 common shares in 1989)	3,542,630	3,235,963
	3,849,164	3,485,485
	$9,278,187	$8,282,536

See Notes to Consolidated Financial Statements.

19. Operations in Geographic Areas. Information about the Company's operations in different geographic areas at December 31, 1989, 1988 and 1987 and for the years then ended is presented below (in millions). Intercompany transfers between geographic areas are not material.

1989	United States	Latin America	European Community	Northeast Europe and Africa	Pacific and Canada	Corporate	Consolidated
Net Operating Revenues	$4,022.2	$646.2	$1,855.1	$425.2	$1,959.5	$ 57.6	$8,965.8
Operating Income	468.2	226.7	540.6	147.3	612.8	(269.8)	1,725.8
Identifiable Operating Assets	2,476.0	515.4	1,342.8	328.8	652.7	1,036.4(a)	6,352.1
Equity Income						75.5(b)	75.5
Investments in Affiliates						1,930.4(c)	1,930.4

1988	United States	Latin America	European Community	Northeast Europe and Africa	Pacific and Canada	Corporate	Consolidated
Net Operating Revenues	$3,683.6	$583.2	$1,618.3	$385.2	$2,030.0	$ 37.5	$8,337.8
Operating Income	433.9	179.5	465.7	130.4	570.5	(181.7)	1,598.3
Identifiable Operating Assets	2,353.4	431.8	754.8	279.4	683.7	1,035.5(a)	5,538.6
ıity Income						92.5(b)	92.5
Investments in Affiliates						1,912.0(c)	1,912.0

1987	United States	Latin America	European Community	Northeast Europe and Africa	Pacific and Canada	Corporate	Consolidated
Net Operating Revenues	$3,459.1	$558.0	$1,383.4	$326.1	$1,917.0	$ 14.7	$7,658.3
Operating Income	384.5(d)	153.2	393.2	114.9	453.3	(175.3)	1,323.8
Identifiable Operating Assets	2,625.9	368.3	751.0	289.8	766.4	1,586.0(a)	6,387.4
Equity Income						64.4(b)	64.4
Investments in Affiliates						2,218.1(c)	2,218.1

Identifiable Liabilities of Operations Outside the United States amounted to approximately $1,082.8 million, $946.2 million and $949.6 million at December 31, 1989, 1988 and 1987, respectively.

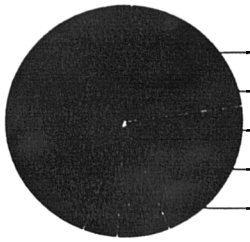
(a) General corporate identifiable operating assets are composed principally of marketable securities and fixed assets.

(b) Equity income has been restated to exclude the Company's equity income (loss) from CPE, which has been reported as a discontinued operation.

(c) Includes investments in soft drink bottling companies and joint ventures for all periods and CPE for 1988 and 1987. The Company's investment in CPE, which was sold in November 1989, approximated $598.1 million and $989.4 million at December 31, 1988 and 1987, respectively.

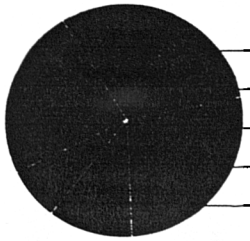
(d) Includes provisions for restructured operations aggregating $36 million.

Net Operating Revenues
(Millions)



United States	$4,022
Pacific and Canada	$1,960
European Community	$1,855
Latin America	$ 646
N.E. Europe and Africa	$ 425

Operating Income
(Millions)



United States	$468
Pacific and Canada	$613
European Community	$541
Latin America	$227
N.E. Europe and Africa	$147

18. Lines of Business. Information concerning operations in different lines of business at December 31, 1989, 1988 and 1987 and for the years then ended is presented below (in millions). The Company operates principally in the soft drink industry. Citrus, fruit drinks and other products are included in the Foods Business Sector. Intercompany transfers between sectors are not material.

	Soft Drinks				
1989	USA	International	Foods	Corporate	Consolidated
Net Operating Revenues	$2,565.7	$4,759.2	$1,583.3	$ 57.6	$8,965.8
Operating Income	390.6	1,517.6	87.4	(269.8)	1,725.8
Identifiable Operating Assets	1,814.4	2,806.0	695.3	1,036.4(a)	6,352.1
Equity Income				75.5(b)	75.5
Investments in Affiliates				1,930.4(c)	1,930.4
Capital Expenditures	136.3	215.6	61.6	49.0	462.5
Depreciation and Amortization	73.9	48.4	30.7	30.8	183.8

	Soft Drinks				
1988	USA	International	Foods	Corporate	Consolidated
Net Operating Revenues	$2,284.4	$4,503.8	$1,512.1	$ 37.5	$8,337.8
( )erating Income	351.9	1,338.8	89.3	(181.7)	1,598.3
Identifiable Operating Assets	1,711.9	2,097.1	694.1	1,035.5(a)	5,538.6
Equity Income				92.5(b)	92.5
Investments in Affiliates				1,912.0(c)	1,912.0
Capital Expenditures	80.2	159.2	82.0	65.4	386.8
Depreciation and Amortization	66.9	42.8	32.0	28.1	169.8

	Soft Drinks				
1987	USA	International	Foods	Corporate	Consolidated
Net Operating Revenues	$2,120.1	$4,109.2	$1,414.3	$ 14.7	$7,658.3
Operating Income	323.6	1,108.9	66.6(d)	(175.3)	1,323.8
Identifiable Operating Assets	2,047.4	2,126.7	627.3	1,586.0(a)	6,387.4
Equity Income				64.4(b)	64.4
Investments in Affiliates				2,218.1(c)	2,218.1
Capital Expenditures	78.0	92.3	55.4	77.8	303.5
Depreciation and Amortization	60.3	43.0	28.9	22.3	154.5

(a) General corporate identifiable operating assets are composed principally of marketable securities and fixed assets.

(b) Equity income has been restated to exclude the Company's equity income (loss) from CPE, which has been reported as a discontinued operation.

( ) Includes investments in soft drink bottling companies and joint ventures for all periods and CPE for 1988 and 1987. The Company's investment in CPE, which was sold in November 1989, approximated $598.1 million and $989.4 million at December 31, 1988 and 1987, respectively.

(d) Includes provisions for restructured operations aggregating $36 million.