

**BRITISH CORPORATE CURRENCY EXPOSURE  
AND  
FOREIGN EXCHANGE RISK MANAGEMENT**

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## ABSTRACT

This thesis investigates corporate management of exposure to changes in exchange rates. Hypotheses of how currency exposure is perceived and managed are derived from the theoretical literature. A contingency model of the way managers deal with this exposure is suggested and tested by conducting a two stage survey of practice in Times 1000 British based corporations. It is hypothesised that the way these corporations manage their currency exposure is dependent on three groups of forces. It is dependent first on regulatory and market forces in the environment external to the corporation, second on the way in which different forms of currency exposure impact the corporation and third, on the way the corporation organises itself internally to manage its exposure. Regulatory and market forces are also hypothesised to influence both the internal organisation of currency exposure management and forms of currency exposure experienced and the latter are hypothesised to influence directly the shape of the internal organisation of exposure management. It is further hypothesised that these same three groups of factors influence or determine the perception of the effectiveness of different currency exposure management methods used.

A large scale postal survey was conducted and was informed by detailed interviewing of managers in fifteen corporations. The results obtained from 119 usable responses from over six hundred corporations contacted were used to test the model proposed.

It was found that foreign exchange risk management method usage was weakly associated with market and regulatory forces in the environment external to the corporation, but strongly associated with the way a corporation organised internally to manage the issue. Although external market forces also associated strongly with forms of exposure identified by survey respondents, no direct link was identified between forms of exposure and methods a corporation used to manage it. Methods used to manage currency exposure

considered highly effective were found to be associated only with aspects of a corporation's internal organisation of exposure management, with no link apparent with the corporation's external regulatory and market environment. The power of the contingency model was found to be modest and elements of the original model could be discarded. The importance of taking into account organisational and behavioural variables in understanding the management of a technical phenomenon was underlined.

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## **CHAPTER 1 - INTRODUCTION**

### **1.1 Introduction**

This chapter introduces the subject of this thesis, the management of corporate currency exposure, and provides the reader with a definition of the subject researched. It explains the importance of the topic to both practising managers and theorists and provides the reader with a guide to the structure of the dissertation.

Corporate currency exposure management can be analyzed from different angles. For example, it can be, and is, often viewed as a corporate finance issue where the focus is the technical aspects of the subject. It can also, as here, be viewed as a management issue where the focus is on how and by whom the subject is handled.

In adopting a management viewpoint the focus of attention becomes the business structures in which managers work, the processes which are adopted in doing the work and the decisions which are taken in getting the work done. What is of concern here is where, how and why action takes place in the organisation. Such study consequently draws on a variety of disciplines and in particular on the behavioural sciences.

One of the advantages of using a management approach lies in avoiding the disadvantage of adopting a purely technical focus which often ignores the context in which decisions are taken. This includes, for example, training, managers' backgrounds, managers' attitudes, departmental and functional responsibilities, and wider corporate objectives. These are particularly important considerations in dealing with complex issues which cross departmental and functional boundaries. The advantage of a management approach is that it does take these factors into account and seeks to understand why those involved in corporate currency risk management do not always display the rational behaviour or perfect judgment which the disciplines of economics and finance theory suggest that they should.

How does this thesis focus on management? It does so by examining the extent to which corporate currency risk management seems to be determined by the context in which it takes place rather than by concentrating on the technical aspects of the issue itself. It does so by

identifying and measuring a number of features of the external and internal environment of corporations and examines their association with corporate currency risk management.

## **1.2 Definition of the Subject Researched**

Corporate currency exposure is the exposure of the business corporation to changes in its expected value as a result of exchange rate changes. Changes in the value of one currency expressed in terms of another, which are signalled by changes in “nominal” exchange rates affect the value, expressed in terms of a corporation's domestic currency, of all the foreign currency assets and liabilities of the corporation. Changes in exchange rates which do not compensate for changes in the purchasing power of one currency in terms of another, or changes in the purchasing power of one currency in terms of another not compensated for by exchange rate changes, “real” exchange rate changes, affect the value of future business done in any currency and thereby the value of the corporation. The phenomenon of how the value of the corporation is affected, how managers can and do address this phenomenon is the subject of this research.

One other term which needs defining at this point is “risk”. The term currency exposure and currency risk are frequently used interchangeably. Glaum (1990) notes that there are in the literature two different ways of defining risk. The first, the colloquial meaning, is the “probability of the occurrence of unfavourable outcomes”, see Weston and Brigham (1981). The second sees risk in more neutral terms and defines it as “the spread of possible outcomes around some expected value”, Levich and Wihlborg (1980). The latter is to be preferred in the sense that exchange rate exposure can result in positive as well as negative outcomes. Currency risk as a term can also be used to denote that the exposure is being quantified or measured whilst the term currency exposure makes no such assumption. As quotations in this introductory chapter make clear, however, few writers in practice consistently make this distinction.

The dearth of attempts to measure the different forms of corporate currency exposure empirically, is itself prima facie evidence that definitions of it developed to date have not satisfactorily addressed the issue of measurability. Indeed, an observed emphasis given to some forms of exposure over others reflects quantifiability. If managers are to estimate all

forms of their currency exposure, it seems they must be defined in a way which makes them quantifiable. It would appear that the only way to do this is to decompose currency exposure into all its identifiable discrete components.

Some writers have implicitly recognised that this is the way to proceed. Shapiro (1975) for example has written that,

“The sum of both price and quantity effects is the competition effect of the exchange rate change on the company's costs. Analogous considerations have to be applied to the prices and quantities of the company's outputs, and it then becomes apparent that the overall effect is composed of a great number of small effects.” p 492.

As the literature review which follows makes clear, if there is broad agreement as to the general nature of currency exposure, little agreement exists in attempts at detailed definitions of it. It is conventional to identify three elements in corporate currency exposure. The first is **translation exposure**, exposure to the consequences of translating the accounts of foreign subsidiaries into the currency of their parent company. The second is **transaction exposure**, an exposure to foreign currency denominated anticipated payments and receipts in already contracted for transactions. The third is **economic exposure**, the exposure of the corporation to, as yet, not contractually agreed future cash flows. Many other terms have been used to define currency exposures, but all essentially include elements or combinations of these three forms.

The complexity involved in deriving satisfactory definitions should not be underestimated. For example, economic exposure is often defined as “exposure” or openness to, or lack of protection against, “unexpected” real exchange rate changes. This implicitly assumes that these real exchange rate changes have not yet occurred. Yet, what of real exchange rate changes that have taken place in the recent past which will impact on future business, not yet contracted for, unless action is taken? If this is not economic exposure, what is it? It is not transaction exposure because the business has so far not been contracted. Yet, the corporation is clearly exposed as a consequence of an exchange rate change. The point is that managers can fail to react to exposures that have already materialised from an exchange

rate change just as much as to changes that have taken place. Economic exposure is exposure to changes in future cash flows not to future real exchange rate changes. Recent real exchange rate changes will also affect future cash flows, although corporations will be in reactive rather than proactive mode to them. If this is not economic exposure, a phenomenon generated by a real exchange rate change exists which cannot be conventionally classified.

### **1.3 The Importance of the Subject of the Thesis**

In the last twenty years a growing share of all world business has been international in the sense that an ever increasing proportion of business is transacted across national boundaries. Given that different nations maintain their own distinct currencies, any changes in the relative values of those currencies must affect an increasing proportion of commercial activity. As Buckley (1992) eloquently expresses it:

“If money is the language of business, foreign exchange is the language of international business.” p 1.

From the 1970s, following the breakdown of the mechanisms put in place at Bretton Woods in 1944, exchange rates, which measure the relative values of different currencies, have become increasingly volatile. Corporate exposure to exchange rate or currency volatility has increased and has become a growing focus of attention for managers, their advisors, consultants and academics alike.

As Ohmae (1990) has noted:

“Today as a genuinely interlinked economy emerges, two more Cs, [ in the context of the three Cs of customers, competition and company ], have to be added to the list, Country... and currency, by which I mean the exposure of such organisations to fluctuations in foreign exchange rates. So important have the last two Cs become that no responsible company can operate in a borderless environment without paying real attention to them.” p 2.

Other leading academics also believe corporate currency exposure to be a serious issue for managers. For example, Robock and Simmonds (1989) have stressed that:

“For many multinationals, managing foreign exchange exposures - that is responding to anticipated changes in exchange rates - is the most important international financial challenge. Changes in the value of currencies, both devaluations and revaluations, have been frequent and significant in amount. Even more frequent have been the number of false alarms.”, p 555.

“The importance of having a comprehensive understanding of the implications of foreign currency changes on a company's operations cannot be overstressed.” p 555

and it has come to be seen as a strategic issue,

“When a sudden fluctuation in exchange rates can turn an otherwise brilliant strategy into a seemingly irreparable haemorrhage of cash, making arrangements to deal with such fluctuations must lie at the very heart of strategy, not as an afterthought to strategy defined by other considerations.” Ohmae (1990) p 2.

“Exchange rate fluctuations can also have a profound effect on industry competition. The devaluation of the dollar against the yen and many European currencies, for example, has triggered significant shifts in many industries since 1977.” Porter (1980), p 177,

even to the extent that currency exposure has been referred to as “strategic exposure”.

Czinkota, Rivoli and Ronkainen (1989) observed that management consultants Coopers and Lybrand have calculated that currency exposure may have generated more variability in U.S. corporate profits than any other factor. Almost two decades ago, Ankrom (1974) asked managers what it would be worth to put an end to the surprise element of currency fluctuations. This question, seemingly, appears as relevant today. If managers are concerned to achieve a steady growth in their profits the implication of this finding is both that

currency exposure is an important consideration for managers and that managers may be unable to manage the phenomenon as successfully as they would wish.

One key question that this discussion raises is whether and, if so, how far managers, amongst others, correctly define, identify and manage their exposure. Another is what determines the way they do so. As Eitemann, Stonehill and Moffett (1992) have stressed:

“An understanding of foreign exchange risk is essential for managers and investors in today's environment of volatile foreign exchange rates.” p 8.

#### **1.4 The Subject of the Dissertation**

This thesis examines the management of corporate currency exposure from the perspective of those within business corporations. It considers the ways managers are able to act to deal with their currency exposure and how they act to do so. It looks at and attempts to evaluate what determines the ways in which they act and the implications for all who are tasked with managing this phenomenon in the context of overall corporate management.

The thesis concerns the perceptions, opinions, decisions and actions of managers who operate in a business environment in which there are numerous currencies whose value is defined in terms of exchange rates. Changes in exchange rates impact the business environment and the task of managing within it. This thesis does not, however, directly concern itself with the reasons why exchange rates change and whether or not changes compensate for, or are compensated by, inflation, a subject already well researched in the economics literature. It accepts the preponderant view that real exchange rate changes are a significant feature of the business environment. It is also not directly concerned with whether or not managers should be actively managing their currency exposure, a subject well researched in the finance literature. Again, it accepts the preponderant view, that corporate currency exposure management cannot be left to shareholders or managed by inaction without serious consequences for the corporation.

However, the thesis is directly concerned with the nature of currency exposure, in order to examine how it affects the corporation and its performance. It is also concerned with what

can be done by managers to deal with exposure, both to prevent adverse consequences for the corporation and to capitalise on opportunities to improve performance.

Essentially managers can make two different errors. The first is to fail to predict exchange rate changes which occur, i.e. unanticipated exchange rate changes. The second is to predict exchange rate changes which fail to materialise, reflecting the heed taken of what Robock and Simmonds (1989) define as false alarms. Claims that companies which specialise in making currency forecasts cannot predict the direction of exchange rate changes, much less their magnitude, better than by guesswork, imply that managers' decisions will be fraught with difficulty.

“Exposure to exchange rate movements is a serious problem for firms in the current environment, especially those that are global competitors.” Lessard in Porter (1986) p 166.

Managers, it is clear, have a difficult task in estimating or measuring their currency exposure when told that,

“Foreign exchange exposure [is] defined as the coefficient in a multiple linear regression of an asset's future domestic currency market place on (the set of) the contemporaneous foreign exchange rates.” Adler and Dumas (1983), p 43.

It is easy to imagine a manager disconcerted at the prospect. However, managers are concerned to exert as much control over their environment as they can. They are concerned that their expectations are realised, which an inability to manage currency exposure may well frustrate. This is worrying for management.

If it is clear that a straightforward measurable definition of currency exposure needs to be developed, it is also alleged that much work needs to be done to examine the methods employed by corporations to manage their exposure. Doubt is expressed as to the appropriateness of the way in which corporations do so:

“Firms which recognised important economic exposures have not systematically managed them.” Glaum & Roth (1992) p 11.

Further, allegations have been made that insufficient guidelines are available to guide managers on how to manage their exposure and that those they do employ are suspect. Lessard (1990) has observed that managers are unhappy with the way they deal with their exposure. If managers were on top of the subject they would be exploiting it to advantage. However, rarely in the literature is there any reference to the opportunities afforded by currency volatility. The following six instances are among very few found:

“A company is faced with three basic alternatives in its approach to foreign exchange risk: it can ignore it, neutralise it, or try to profit from actively managing it.” Glaum (1990). p 90

“The volatility of exchange rates during the last decade has brought an additional dimension to the problem of a competitor's cost advantage. Exchange rate fluctuations of 30 to 40% in a matter of six months are not unusual; this can either totally wipe out cost advantages or can suddenly make some manufacturing locations more attractive.” Prahalad and Doz (1987), p 42.

“Foreign exchange should not be part of the industrial policy to give industry an easy time to rake in short-term profit, or reason to cry lack of competitiveness - this is one refuge for scoundrels that should be closed down for good.” Ohmae (1990) p 168.

“Currency fluctuations only widen strategic options. They do not kill alert corporations.” Ohmae (1990) p 168.

“Yet the design of a firm's marketing strategy under conditions of home currency fluctuation presents considerable opportunities for gaining competitive advantage.” Shapiro and Robertson (1976). p 1.

“It is generally agreed that in managing FEE (foreign exchange exposure) the principal objective is to protect companies from currency losses, with perhaps a secondary goal of seeking currency gains where circumstances seem propitious.”  
Earl (1984). p 161.

Almost all surveys and theoretical literature concentrate on the problems generated by currency exposure. It is perhaps unfortunate that the terms exposure and risk have negative connotations. Currency volatility can present opportunities and provide advantage to a corporation.

A key question concerns who should be managing this exposure. The literature contains a number of differing viewpoints. Allen (1991) wrote:

“The treasurer is usually the expert on which of the many risk management products is appropriate in particular circumstances but it is usually the financial controller who is in the best position to identify and quantify the risks which need to be managed.” Allen (1991) p 24.

Shapiro and Robertson (1976) said:

“Another major effect can be a change in the national control environment as governments adopt new policies to moderate or adapt to changes in currency rates. One of the international marketing manager's tasks should be to identify the likely effects of an exchange rate change and then act on them by adjusting pricing, product, credit and market selection policies. Unfortunately multinational marketing executives have generally ignored exchange risk management. Marketing programs are always “adjusted” only after changes in exchange rates.”  
p 1.

Srinivasulu (1981) observed in the light of Volkswagen's experience that:

“Reacting to economic exposure can require strategic changes that transcend the financial manager's function and encompass virtually every decision area, including marketing, production, sourcing and plant location.” p 13.

Cornell and Shapiro (1983) considered that:

“The major burden of exchange risk management must fall on the shoulders of marketing and production executives.” p 26.

This last view has been disputed, particularly by those who identified the importance of a finance oriented overview and the flexibility of a short-term financial response before longer term strategic responses could be put in place.

Another issue for discussion is what methods managers should be using to manage their currency exposure. There are a large number of methods available to choose from. The postwar era has seen the rapid development of financial instruments which have been extensively used to manage currency exposure and for which extensive claims have been made, see Kettell (1991). But Ross (1991) has stated:

“Research in the UK has not been able to prove that a consistent hedging policy is more profitable over the long-term than consistently doing nothing. One rationale may be the need for certainty.” p 94.

and Mathur (1982) has written:

“If foreign exchange markets are efficient, reflecting all existing information, gains and losses from currency fluctuations will tend to offset each other. Hedging strategies will not be consistently effective and will reduce the firm's net cash flows.” p 26.

Grant and Soenen (1991) have gone further:

“Hedging can be counterproductive. There are 3 scenarios:

1. Hedging of continuous cash flows against long-term currency trends does not protect against steadily declining margins,
2. General and relative price risks,
3. Competitive reaction to a company's foreign exchange management where the competitive firm is unhedged.” p 58.

Other methods used to manage exposure arise from operating decisions and include natural hedging techniques. Ohmae (1990) wrote:

“This move towards [establishing] regional headquarters is also consistent with companies' growing need to hedge exposure to currency fluctuations through sound operating decisions and not simply through shrewd use of financial instruments.” p 88.

There is also debate about the extent to which managers are clear what their exposure management objectives are.

Ohmae (1990) has stated that:

“It's not possible to get to a currency neutral position unless the objective is considered up front when you think about plant utilization, necessary break-even capacity, likely sales by country and so on. It [to get to a currency neutral position] has to be an objective as long as currency exchange rates remain volatile.” p 4.

Broder (1984) reported failing to find any statistical association between avowed risk management objectives and the way managers say they are actually exposed.

Belk and Glaum (1990) have also highlighted the belief of some corporate managers that because they could do little to manage their currency exposure, even if they wanted to, there was no point in considering it further. They believed that they were in the grip of market and political forces and those forces dictated the nature and impact of that exposure. Others have questioned managers' alleged inability to deal with the issue. According to Soenen and Madura (1991):

“The goal of increasing a company's value in terms of its shareholders requires a long-term approach to the management of exchange risk. There are three main options:

- (1) The company can adjust its operating policies with regard to sourcing, pricing, sales and marketing to respond to exchange rate changes.
- (2) The company can match inflows and outflows of operational and financial cash flows.
- (3) A portfolio of business operations can be selected with exposures that offset one another.” p 119

A final issue is what can be learnt from management experience with the methods that have been employed to manage exposure. The literature contains many evaluations of individual management methods, but it is only recent empirical surveys which have begun to make comparisons of the perceived effectiveness of different methods. Almost no work has been carried out into the perceived effectiveness of methods used in combination.

## **1.5 Guide to the Contents of the Thesis**

The thesis examines corporate currency exposure and its management from a management perspective using a contingency model.

The thesis contains this introduction, seven further chapters and a bibliography. There are also five appendices which contain the letters to chief executives and finance directors of

British Times 1000 corporations inviting them to take part in the survey conducted for this thesis, the questionnaire sent to them, a summary of the responses to the survey questions and the open-ended replies. This short introductory chapter has defined the broad thrust of the thesis and the following chapter contains a literature review. The third chapter includes the contingency model, definition of the variables it contains, the statement of the hypotheses and methodological review. Two groups of independent variables: regulatory and market, measure the external corporate environment. Three groups of variables: corporate structure, managerial attitudes and strategies, and management background and expertise are intermediate variables, which measure the internal corporate structure. The forms which currency exposure take are also intermediate variables. Finally methods used to manage currency exposure and those among them considered highly effective are the dependent variables.

The subsequent four chapters set out the results of the survey. The fourth chapter sets out the data on the forms of currency exposure which respondents see themselves subject to and examines the adequacy of the taxonomy put forward. The first hypothesis that the external corporate environment determines the forms of exposure experienced is tested and neither rejected nor confirmed.

The fifth chapter sets out and examines the data on methods used to manage currency exposure. The second and third hypotheses that the methods used to manage exposure are determined by the external corporate environment and by the forms of exposure experienced respectively are then tested and rejected.

The sixth chapter takes the examination of methods used to manage currency exposure further. It examines the fourth and fifth hypotheses that the internal corporate environment for managing currency exposure is determined by the external corporate environment and by the forms of exposure respectively and rejects them. The sixth hypothesis that methods used to manage currency exposure are determined by the internal corporate environment is tested and confirmed. The reasons for the rejection of the second, third, fourth, and fifth hypotheses but not the sixth hypothesis lead on to a discussion of what organisation theory

and behavioural theory, and in particular bounded rationality and agency theories, can do to help explain the findings.

The seventh chapter sets out and examines the data obtained in the survey on methods of managing currency exposure considered highly effective. It retests hypotheses two, three and six using this alternative way of measuring the way currency exposure is managed. A short further examination of management theory on perception and behaviour, to see if it can help in explaining the findings, is undertaken.

The eighth and final chapter summarises the findings of the research conducted in the course of completing this thesis. It brings together the conclusions from the preceding four chapters, highlighting the contribution of this research both to the theory of currency exposure and its management and to suggesting possible improvements in management practice. The final section of the chapter proposes priorities for future research.

## **1.6 Conclusion**

This chapter has introduced the subject of the thesis. A brief definition of the subject researched has been provided and its importance explained. The structure of the thesis has been set out. In the following chapter the literature on the subject will be reviewed.

## **CHAPTER 2 - A REVIEW OF THE LITERATURE**

### **2.1 Introduction**

This chapter reviews the literature on corporate currency exposure and the way it is managed. First it maps the different perspectives from which the subject has been researched. Then it summarises what the literature says about the forms the phenomenon of corporate currency exposure takes and how it is dealt with. Next it puts corporate currency exposure and its management in the context of the corporation and its environment. Finally, the review presents the strengths and weaknesses of this research, drawing conclusions about the ways in which the subject can be profitably studied and developed.

### **2.2 The Nature of the Literature on Corporate Currency Exposure**

The literature on corporate currency exposure and its management comprises two elements: theoretical contributions and surveys of practice. Theoretical contributions emanate principally from the disciplines of economics and finance, whose primary focus has been how to define currency exposure, to establish whether the phenomenon is a significant issue and, if so, whether it should be managed. The lack of attention which the subject has received in the management and accounting literature may be an explanatory factor for a discernible dearth of theoretical contributions on how currency exposure should be managed. Surveys of practice concentrate on how currency exposure is managed but have rarely seized the opportunity to provide insight into the determinants of the way it is managed.

At the macroeconomic level there has long been an interest in currency matters. Purchasing power parity was first effectively described by Henry Thornton (1802), though only so termed by Gustav Cassell (1918). Exchange rates are the relationships between the currencies of different countries and policymakers are heavily involved in determining and influencing them both directly and indirectly. The majority of the literature on exchange rates is focused at the macroeconomic or country level, concerning itself with national policy questions. [See, for example, Boulding (1955).]

Texts, like that of Begg, Fischer and Dornbusch (1987), which preoccupy themselves with microeconomic issues, make no mention of different currencies. There are some exceptions: Lipsey (1963) looks at price changes caused by exchange rates and their impact on manufacturers. Even so, manufacturers are not assumed to have any discretion in the prices they charge. One of the fullest accounts of the impact of currency fluctuations on the firm can be found in Yeager (1966).

The economics literature is of concern here only to the extent that it illuminates the context in which corporations operate. Of greater relevance to this thesis is the literature which adopts a corporate perspective or that of corporate managers who are charged with dealing with currency exposure.

The volume of writings which focus at the corporate or managerial level is negligible before the early 1970s but escalated dramatically in the late 1970s and 1980s following the breakdown of the Bretton Woods Agreement. This surge coincided with a marked increase in exchange rate volatility. Over the last twenty years academics and business managers have been equally active as authors. Practitioners were more active in the decade to 1980; since then academics have become more active as their ranks have been swollen by former practitioners, particularly corporate treasurers like Donaldson (1987) and Kenyon (1990).

In management, responsibility for currency related issues is now firmly located within the finance function. Finance directors and treasurers, in whom much of this responsibility has progressively been vested over the last twenty years, have been the most prolific writers. The British professional periodical which publishes more articles on the subject than any other is *The Treasurer*, the journal of the Association of Corporate Treasurers, although many articles have also appeared in other finance journals. In contrast, accountants have been slow to recognise responsibility for currency issues which is reflected in the paucity of articles in the accountancy literature on how to manage currency exposure. A dearth of articles in the literature of other functional business disciplines tells a similar story.

In universities it is the economists who have concentrated on foreign exchange issues at the macroeconomic or country level, although they have taken an increasing interest in

corporate currency exposure. However, it is academics from business schools who have been the most prolific commentators. Since a majority of these schools have, like businesses, structured themselves along functional lines, it is academics in the finance discipline who have been most active. Their work is to be found in finance journals, in books dedicated to currency matters and in finance, particularly international finance, textbooks.

However, increasingly, corporate currency exposure has become the focus of academics specialising in international business, partly on the grounds that currency issues are more prominent than in domestic business, and partly because currency exposure has increasingly come to be seen as transcending traditional functional boundaries. As international business has become more established as a subject, so these academics have more and more made the front-running in international business journals, for example in the *Journal of International Business Studies* and in the *Columbia Journal of World Business* as well as in international business textbooks. Lack of attention to the subject by other academic functional disciplines parallels that of business managers working in those same functions and functional specialisation may be seen as a significant determinant of both interest and involvement in the subject.

Practitioners have largely described their own corporate practices and left it to academics to produce a theoretical framework to facilitate understanding of the subject. The latter have also been almost exclusively responsible for comparative empirical investigations of currency exposure and its management, although few of these surveys have been large. Even fewer, if any at all, have claimed to have produced findings representative of the business community in any of the countries in which they have been conducted.

From the early 1970s most of the references to corporate practice were to small numbers of individual concerns with which the authors like Ankrom (1974) and Prindl (1976) were personally familiar. Survey research only began in earnest in the latter half of the 1970s. Surveys then conducted have focused principally on the United States and the United Kingdom. These include surveys carried out in the United States by Nolte (1976), Jilling and Folks (1977), Tran (1979), Morsicato (1980), Rodriguez (1980), Cezairli (1988) and

Lessard (1990) and those in the U.K. by McRae and Walker (1978) and (1980), Walker (1978), Broder (1984), Walsh (1986) and Belk and Glaum (1990). The first work to compare practice in different countries was that commissioned by the British-North America Committee and was carried out by Blin et al (1980), surveying corporations on both sides of the Atlantic. Davis et al (1991) have also carried out a comparative survey of British and American multinationals.

### **2.3 The Relevance and Importance of Corporate Currency Exposure**

“Perhaps no single development in the post World War II monetary scene has so challenged the operations of international business as the advent of flexible exchange rates between the world's major currencies.” Blin et al (1980) p 1.

Currency risk is important to contemporary business. Jorion (1990) examined the exposure of US multinationals to foreign currency risk and discovered significant cross-sectional differences in the relationship between the value of the US corporations and the exchange rate. He also found a positive correlation between the value of US corporations and their degree of foreign involvement. Grant (1990) has also drawn attention to studies which indicate that exchange risk drives approximately 50% of an investment's potential return as well as its risks.

These findings implicitly stress that currency exposure can be used to generate corporate advantage. However, as noted in the introductory chapter, only a small number of direct references to advantage are found in the entire literature. Furthermore there are no discussions of whether, in theory, corporate currency exposure is as likely to benefit corporations as it is to disadvantage them.

There is no reason to believe that what Coopers and Lybrand observe of the importance of the impact of currency exposure on the profits of corporations in America is not equally true of firms in Britain, which has an even greater proportion of international trade in relation to gross domestic product than America, see Czinkota et al (1989). Robock and Simmonds (1989), academics representing both sides of the Atlantic, take the view that for many

multinationals, managing foreign exchange exposures is the most important international financial challenge.

While the subject may be recognised as important, there is concern that it is neither well understood nor well managed. As Lessard argues:

“However, foreign exchange management as currently practised is unlikely to help firms compete effectively and, in fact, is likely to provide misleading signals.” (in Porter 1986 p 166)

Hagemann (1977) has also observed:

“In recent years drastic fluctuations in exchange rates have repeatedly taken corporate directors of finance by surprise.” p 81.

Such concerns are echoed elsewhere and the penalty for failing to deal with currency exposure can be severe. For example, Wheelack (1973) suggested that managerial insensitivity to, or ignorance of, the impact of a company's foreign exchange operations on a host country had even provoked hostility leading to expropriation. Individual case histories provide examples of companies that have either had their existence put at risk as a result of currency exposure or have ceased business largely or even solely because of such exposure. Among oft cited examples are Rolls-Royce, Laker Airways, Allied-Lyons and Showa Shell.

The practical difficulties of measuring the broad impact of currency exposure should not be underestimated. Carlson (1979) estimated that large exchange rate fluctuations were beginning to have an adverse effect on world trade. Cushman (1988) calculated that, in the absence of currency risk, US imports would have been on average about 9% higher and US exports about 3% higher during the period 1974-1983. Thurow (1993) also notes:

“The world has learned to live with currency volatility in the last two decades, but a large price has been paid. It is well to remember that the world's real growth rate in the 1980s was well below that of the 1970s, despite the food shocks, oil shocks,

inflation, recessions, and hard times for which that earlier decade is now remembered.” p 242.

He goes on, somewhat ironically in the light of subsequent events, to say:

“To reduce currency volatility within Europe, the Europeans are reconstructing a system of fixed exchange rates for Europe.” p 242.

However, without a reduction in real volatility, mechanisms to fix exchange rates will not mitigate currency exposure.

On the other hand, Willett and McKinnon (1986) have calculated that, although the costs to corporations are not unimportant, evidence indicates that exchange rate volatility over the past decade was not as damaging to them as initially anticipated. These findings are corroborated by Barone-Adesi and Yeung (1990).

The difficulties of measuring the impact of currency exposure are also to be found at the corporate level. The only gains and losses consequent upon exchange rate movements which can be quantified exactly are those arising from transactions in which the amount of foreign currency to be paid or received has been contractually agreed.

Belk and Glaum (1990) in their interview survey of the management of foreign exchange risk in UK multinationals questioned the accuracy of some assessments of the nature of corporate economic exposures, casting doubt on the ability of a number of their respondents to identify their longer term exposures.

## **2.4 Defining Corporate Currency Exposure**

Contemporary discussions of the subject conventionally distinguish three discrete forms of corporate currency exposure, namely translation, transaction and economic exposure. Such apparent consistency belies both the diversity of terminology used to define currency exposure that has developed over the last twenty years and the lack of agreement as to how to define its components. Definitions of exposure have been progressively modified during

this time period. A preoccupation with defining currency exposure has arguably been at the expense of serious analysis of the determinants of the phenomenon. Severe difficulties have been experienced and continue to be encountered in deriving universally acceptable definitions. As Walker (1985) observed:

“there is no single all embracing definition of exposure to all types of foreign exchange risk.” p 303.

A number of bases have been employed to distinguish different exposures. As this section will illustrate, prominent among these are taxonomies based on: the contractual status of what is exposed, the status of the exposures for “accounting” as distinct from “economic” purposes, the nominal or real nature of the exposures, the impact of the exposures on corporate cash flows or notional values, and latterly on whether the exposures are strategic or not. For want of any discussion of the criteria on which to compare the merits of these bases, the proliferation of competing taxonomies is virtually guaranteed. Given that no threefold classification could other than compromise the single syndrome bases to date developed, the least controversial starting point to illustrate the confusion is, therefore, with the conventional taxonomy.

### **Translation Exposure**

Translation exposure is the exposure a corporation experiences when it is required to convert its foreign currency denominated assets and liabilities and the trading accounts of its foreign subsidiaries, which are denominated in local currency, into its domestic currency. Translating such statements from one currency into another is purely an accounting requirement and this form of exposure has also been described as an accounting exposure.

The assets and liabilities being translated from one currency into another are not thereby being either purchased or sold by the corporation so no “real” gains or losses are being incurred in this operation. These valuations when translated into the parent currency simply give rise to notional or paper valuations, which will alter at the next accounting date should a different exchange rate then prevail. For this reason the valuations are transient ones and are only of significance if analysts, shareholders or other interested parties believe they are

so, see Buckley (1992). Even if the average of exchange rates ruling over the period, or the exchange rate ruling at the time transactions take place, is used in translating the accounts, the trading results, though less dependent on the arbitrary relative strength of currency values at the year end date, will still depend on the exchange rates used.

The fact that the surplus or deficit is a paper one, rather than a real one, is also more consequential for the trading account since the accounting profits that are used to assess the performance of corporations are in this sense all paper profits. Despite efficient markets theory, which states that non-cash items should not affect share prices, there is more force than first appears to the argument that translation exposure can influence corporate fortunes and must be addressed. See Ross (1992).

Arguments concerning accounting exposure, broadly the exposure relating to or highlighted by corporate accounting statements, dominate the early literature, see Donaldson (1980). Ankrom (1974) spends much time defining accounting exposure, distinguishing translation effects from those involving outstanding transactions. Kenyon (1990) observes that Ankrom was the first writer to use the expressions translation, transaction and economic risks. He notes that Ankrom recognises only items already on the accounting balance sheet, which are classified as translation risks and as transaction risks, the future sales and purchases which are certain to take place, but at a point in time before the company is able to adjust prices in line with exchange rate movements. Ankrom then defines economic exposure as the sum of translation and transaction exposure after eliminating any double counting, e.g. in inventory. Since any purchase or sale certain to take place must already be contracted for, it is difficult to know how it can be a future sale rather than a current sale, except in the sense that there has not yet been a passing of money. This description is a conventional transaction exposure and not an economic exposure as the term would be understood today. As Kenyon says, Ankrom's analysis does not cover threats from real exchange rate movements.

Rodriguez (1974) found that translation exposure was the only exposure actually managed, but she was soon to report that management was increasingly paying attention to transaction exposure due to changes in regulatory legislation (Rodriguez (1977)).

## **Transaction Exposure**

Transactions are, as already noted, captured in the trading account. The transactions that preoccupied Ankrom and later writers are those foreign currency transactions, already entered into, which give rise to receipt or payment of foreign currency. A link with the balance sheet also remains. If payment on the transaction has not yet been made, a foreign currency debt will be recorded as a receivable or payable; if payment has occurred, a foreign currency cash balance will have been created prior to conversion to the corporation's domestic currency. The transaction exposure which arises is thus an exposure to having an amount of foreign currency payable or receivable; or an exposure to having a cash balance not converted into the domestic currency, which may take on a different value if and when converted.

Another term used to denote transaction exposure is contractual exposure. Buckley (1992) noted that most commentators define transaction exposure as related to a contract already entered into. For a contract to exist, there must in law be "consideration", which means that the exposure is at least quantified. However, there is no agreement as to whether the amount in foreign currency must be certain before it can be called a transaction exposure. Buckley, despite defining transaction exposure as arising because a payable or receivable is denominated in a foreign currency, identified a method for dealing with this exposure even when the amount of the transaction is not entirely certain.

Transaction, as distinct from translation exposures, involve cash and the exposure is ultimately in the value of the cash flow to the parent company. However, foreign subsidiaries can have transaction exposures to foreign currencies which include the currency of domicile of the parent. Until the amount of cash to be paid or received can be calculated exactly in the parent currency, its value in that currency is undecided. It will depend on any nominal exchange rate changes that occur between the present and the conversion date which date is itself uncertain. For example, the debt may not be paid on time and in the case of default it will not be paid at all.

## **Economic Exposure**

The exact origin of use of the term economic exposure to describe currency exposure is obscure and its originator unknown. One early mention of economic effects in relation to cash flow exposure is in Shulman (1970), but the term is rarely used before the mid 1970s, and when it is, it is confusingly employed by Ankrom (1974) to describe the sum of transaction and translation exposures (see above).

Shapiro (1976) referencing Dufey (1972) observed that:

“a new literature has recently been developed which focuses on the effects of an exchange-rate change on future cash flows, that is, the degree to which the present value of a firm is affected by a given exchange rate change. The major conclusions are that the sector of the economy a firm operates in (export, import competing, or purely domestic) and the sources of its inputs (imports, domestic traded or nontraded goods) are far more important in delineating a firm's true economic exposure than is any accounting definition.” p 37.

Dufey (1972) wrote:

“What really happens to the subsidiary when the country in which it operates devalues its currency? Obviously change in the profitability of this subsidiary, and therefore in its value to the parent, will depend substantially on the effect of the devaluation on the subsidiary's future revenues and costs.” p 52.

adding:

“This analysis is obviously a simplified version of what is known in international economics as the ‘adjustment process’ applied to the individual firm.” p 53.

Few at the time, or even for many years, recognised economic exposure in this sense. Smith (1980) and Charyk (1987) use the term economic exposure to describe general exposure to economic variables. Another example of confusion is provided by Evans (1976) who

observed that there are two basic types of exposure that confront multinational operations: one he described as the “pure economic exposure”, which exists when fluctuations can occur in the currency exchange rate while a debt is outstanding; the other refers to a change in earnings per share resulting from currency fluctuations.

The latter type, described in the context of accounting results, is doubtless a reference to translation exposure. Jory (1977) also has two categories of foreign exchange risk. He, like Evans, defined pure economic exposure as resulting from a debt or receivable denominated in a foreign currency which has a fluctuating value. He also distinguishes “earnings per share exposure” arising from the translation of assets and liabilities of a foreign affiliated or subsidiary company into the currency of the parent company.

Given that economic exposure was once considered to be what is now defined as transaction exposure, it is ironic that transaction exposure should now itself be considered a part of economic exposure, since both have cash flow consequences. Historically many writers recognised only translation and transaction exposures. Some writers like Teck (1978) identified a third form of exposure, historic exposure, which he defined as the effect currency fluctuations have on the value of assets carried in accounting statements.

It is only at the end of the 1970s that the term economic exposure began to be used differently and to approximate more closely to the way it is used today. Some of the credit for this must be given to Rodriguez (1979a) who observed that exchange rate fluctuations are often associated with changes in aggregate demand and changes in price levels. She reasoned that translation, or accounting exposure, considers the book value of the company according to accounting practices and that transaction or “conversion exposure” focuses on those cash flows involving exchange transactions during a specific period. Both measures fall short of the ideal which is to determine economic value as measured by the level of the firm's future cash flow and its variability. If a firm implements operating policies that compensate for exchange rate moves, the value of the firm will not be affected by exchange fluctuations. It will only be exposed to risk to the extent that adjustments in its operations cannot fill the gap in value created by fluctuating exchange rates. The usefulness of

economic exposure as a management concept thereby depends on the assumption that the economic value of a firm is based on an assessment of future cash flows.

What is new here is the realisation that the exposure of future cash flows can be affected by changes in aggregate demand resulting from price changes consequent upon exchange rate changes. This conceives cash flow exposure as broader than exposure to transactions already entered into. Focus shifts towards transactions which may be expected to occur in the future. However, this emphasis on economic exposure should not be overplayed. Rodriguez barely examines it in her own survey of corporate practice and it is referred to only once more in her book.

Rodriguez (1979a) wrote:

“The term ‘real economic exposure’ was used in this round of interviews to liberate managers from preprogrammed answers and to make them think about the variables which they really consider to be at risk in case of exchange fluctuations. Economic exposure has come to mean different things to different people. However, the term is usually identified as a measure reflecting the ‘true impact’ of exchange rate fluctuations, in contrast to the ‘paper impact’ of translation exposure.” p 49.

Rodriguez does not mention economic exposure again. What is explicit, however, is that management did not understand economic exposure as it is understood today, since only 8% identified future profits as a variable subject to, and considered part of, economic exposure. Translation exposure was seen as the quintessential part of economic exposure by managers in just under half of the corporations surveyed by Rodriguez with transaction exposure as another element of it. What is also telling though, is that it was transaction exposure that was most often managed in covering decisions made.

Waters (1979) attempted a broader classification. He divided foreign exchange exposures into two groups depending upon whether gains and losses were reported in the accounts. In the first group he places translation exposure and inventory exposure, singling out inventory

from other assets. In the second group he places commitment, operating profit and economic exposure.

Kenyon (1981), then treasurer of the British multinational Plessey, saw his task at that time as bringing a much needed

“systematic and cohesive view of the topic.” p 1.

in which the various forms of currency risk have been and may usefully be defined, making the point forcefully that the field is one in which definitional confusion abounds. It is therefore, fitting to quote from his later 1990 work his description of how he defined the subject in his first book:

“Kenyon's (1981) primary distinction was between economic and financial currency risk:

1. Economic currency risk was defined as the risk to competitiveness from changes in the real exchange rate - i.e. Shapiro's real operating exposure.
2. Financial currency risks were defined as risks from changes in nominal exchange rates to the values of the company's existing assets, liabilities and other commercial commitments. Financial risks were subdivided into:
  - (a) trading risk = mismatch between currencies of cost and of sale and
  - (b) balance sheet risk = mismatch between assets and liabilities in a given currency.” p 90.

In advising British corporations that the easiest way to avoid currency risk is to invoice in sterling, Reiss (1980) exhibited the common propensity of the time not to examine the implications of economic exposure beyond transaction risk as it arose. This narrowness of interpretation is also manifest by those like Booth (1982), who stated that economic exposure is of concern to management because it affects the value of foreign operations and

by Cezairli (1988), who considered the exposure of foreign subsidiaries but not that of domestic ones. In contrast, Eiteman and Stonehill (1989) defined economic exposure more broadly:

“Economic exposure measures the change in the value of the firm that results from changes in future operating cash flows, and caused by an unexpected change in exchange rates.” p 172.

The reluctance to think through the full nature of economic exposure may also arise from a corporate preoccupation with short-term financial results and the impact on these of translation and immediate transaction exposures. Broder (1984) states that the various accounting methods of distinguishing exposed from unexposed net assets provide an easily computed measure of exposure. Evidence from Jilling and Folks (1977) and Rodriguez (1980) suggest that translation exposure was given primary emphasis by their survey respondents. Some research such as that of Jilling and Folks (1977) excluded the concept of economic exposure altogether from study.

As Kemp (1982) observed, although economic exposure is much more complete and relevant, measurement of it has been considered practically impossible. Academics have been unwilling to contemplate in any detail those exposures which cannot be easily measured and quantified in models. Aggarwal (1979), for example, includes economic exposure in his model, but it is defined in only the most general of terms as a reduction in corporate earnings power due to exchange rate changes. Lietaer (1970) had earlier set out to provide a model of the mechanics of foreign exchange which could be used as a basis for corporate hedging operations to reduce foreign exchange risk. Believing that corporate currency exposure could be defined exactly, he was preoccupied with quantified or transaction exposures rather than with economic exposures.

### **Later Definitions of Corporate Currency Exposure**

Srinivasulu (1983a and 1983b) set out the first major attempt to provide a comprehensive framework for classifying currency or foreign exchange exposure. He identified nine discriminating factors. The first of these factors is, in his nomenclature, the nature of the

exposure, which discriminates translation, transaction and economic exposure. He drew attention to the way in which exposures are linked, noting that if the same transaction is on the books at more than one reporting period, it also causes translation exposure. Why being on the books at a single reporting date does not cause translation exposure is unclear. He also defined economic exposure as the impact of unexpected currency realignments on future cash flows and hence the value of the firm, making the point that economic exposure is exposure to real exchange rate changes.

The other eight discriminating factors identified by Srinivasulu are as follows: (1) taxation; (2) organisation structure, in that exposure can be to particular currencies, to a corporation's subsidiaries in countries employing different currencies, thus exposure can be to the parent, its subsidiaries or to each element of the corporation separately; (3) proforma or actual exposure distinguishing the exposure which is budgeted for from the one which is not. However, to say that the actual amount exposed may differ from that planned, due to variations in activity levels, does not imply that actual exposure is invariably related to activity levels. Srinivasulu discriminated next (4) on the basis of time frame. Exposures are seen as long, medium or short-term depending on the methods used to manage them. Yet, if different methods can be employed to manage any particular exposure, what is short or long-term is a matter of subjective judgment. Transaction exposures can be short-term such as a foreign currency sale on two months credit, or they can be very long term. A sum to be redeemed can be that on a fifteen year foreign currency denominated bond. The other discriminating factors Srinivasulu identifies are, (5) the degree of diversifiability of the exposure, (6) its contingency, (7) whether it is contractual or quasi-contractual and (8) whether or not it is recorded on the balance sheet.

Except for the first mentioned, all these discriminating factors can be dimensions of any particular exposure and are not ways of discriminating between discrete exposures. That is to say a currency exposure can have pre-tax and after tax implications, be looked at on a country by country or currency by currency basis, either on a subsidiary or group basis or on a proforma or actual basis. The exposure can be classified according to any arbitrary time frame, (what is medium term to one manager may be long term to another), it may have different degrees of diversifiability depending, say, on market circumstances. The exposure

may also have arbitrarily assessed causation and duration and differing balance sheet treatments according to the domicile of the corporation drawing up the accounts.

Illuminating though it is, therefore, in providing different dimensions for examining currency exposures, Srinivasulu's taxonomy essentially provides nine different ways of classifying any particular exposure. In order to be able to measure currency exposure it is necessary to find a way of classifying exposures such that each has discrete properties. There is no substitute for a more detailed classification of exposures based on their unique aspects.

Srinivasulu (1983a) himself, suggested one way to do this by drawing attention to one form in which economic exposure manifests itself: that is as a broad category of exposure that affects a corporation, by changing its competitive capability profile across its markets and products. For such a corporation, what is needed is a breakdown of economic exposure into subcategories. That Srinivasulu did not pursue this task may be a consequence of his major assumption that product/market decisions are a given for the treasurer or whoever deals with the issue, so that the strategic solution to currency exposure is pre-empted and the firm has to fall back on the financial hedge.

Broder (1984), investigating the foreign exchange risk management function in U.K. multinationals, carried out the first large scale survey of British corporate practice. He took as the components of corporate foreign exchange risk the classification of exposure put forward by Adler and Dumas (1983). The latter decomposed total exposure to this risk into five components; (1) the impact on short term nominal assets; (2) on long-term nominal assets; (3) on both the salvage value of existing physical assets and on the replacement cost or purchase price of physical assets to be replaced or acquired; (4) on sales prices and unit costs; and (5) indirectly, via sales prices, on the planned volume of sales and consequently on the planned volume of production and other physical activities.

In fact, Broder resorted to a classification of exposures very little different from the standard threefold one of translation/ transaction/economic exposure. In his questionnaire he asks corporations if they have objectives covering translation, transaction, off-balance-sheet-

commitment and the real value of future cash flow exposures. Later in his thesis, off balance sheet and economic exposures are equated. Corporations are also asked to describe the types of exposures about which they receive management reports. Listed responses are again translation, transaction and cash flow exposures. Additionally, listed are what are termed confirmed-order exposure and exposure to tenders not yet adjudicated.

No direct attempt, however, was made to invite corporations to measure the incidence of these exposures, perhaps because Broder considered the classification inappropriate for such a purpose. However, if the nature and extent of a corporation's exposure cannot be assessed, it becomes very difficult to interpret management practices in the face of the firm's unique overall profile of exposure.

Walsh (1986), who was unaware of Broder's work completed two years earlier, also set out to examine foreign exchange risk management in UK multinationals. He offered a detailed classification of currency exposure adopting a different empirical approach. He based his own work on the semi-structured interviewing of a smaller random sample of British corporations with Irish subsidiaries on which he gathered supplemental archival data. Walsh's classification of exposure is in part derived from his empirical investigations. However, he made no attempt to quantify the incidence or severity of the exposures he described. Rather, he said:

“It will be shown that both statistical and accounting approaches to the measurement of economic exposure to foreign exchange risk are unlikely to be successful and that ultimately, qualitative approaches to the measurement of foreign exchange exposure are likely to be the only [workable?] operational technique.” p 102.

“However,” he continued, “qualitative measurement amounts to the production of a more refined classification of exposure, and it is argued that measurement in a quantitative manner is unlikely, and that the real issue is the development of a more sophisticated classification of exposure.” p 102.

Nevertheless, using the qualitative classification Walsh set out a model which he tested with notional data from which he generated “quantified results”.

Walsh's classification, like those before him, is based on the distinction between translation, transaction and economic exposures, though he rapidly dismissed translation exposure stating contentiously that:

“Translation exposure has been excluded from consideration in this thesis because it is no longer an important issue” p 74.

The creative originality of his definition of currency exposure lies in his classification of economic exposure into four subsets. The first of these he termed sticky price exposure, which is the propensity for there to be a time lag between a change in costs arising from exchange rate changes and an alteration in a firm's prices. Prices are sticky because there are rigidities in the system. Walsh noted that if the firm is an exporter, then its period of exposure would be extended to include the time lag between the sale of products and the receipt of cash in the home currency. He thus specifically included transaction exposure in this subset.

The second subset he called traded goods exposure, which arises from the multinational tradability of products and factors of production. A business is exposed where its markets are not self-sufficient either with respect to its inputs, its factors of production, or to its outputs, its products and services. For example, costs of traded goods and services can rise or fall as a result of currency changes.

The third subset Walsh described as parallel import exposure. In examining the Irish subsidiaries of UK multinationals, Walsh found them exposed to competition from their British parent companies' own British customers. An exchange rate change sometimes meant that the British customers of the parent could buy from the parent more cheaply than the Irish subsidiary was able to do. The British customers would as arbitrage traders resell into the subsidiary's own market.

The final subset Walsh described as exposure resulting from the macroeconomic and sectoral consequences of exchange rate changes. This subset is very broad. Walsh gave three examples: farm incomes, government spending and the export sector. The exposure in his first example arises from price-setting mechanisms, which determine output prices and can prevent unofficial price adjustments, seemingly, one form of sticky price exposure. The exposure in his second example is the exposure to a reduction in customer demand, due to exchange rate changes, where government is the customer. The exposure in the third example is that of major exporters facing an overvalued domestic currency. Such companies cannot raise their output prices as they are too high already, whether set in the local or a foreign currency.

Flood and Lessard (1986) popularised new terminology when they focused on “operating exposure”, a term used by Shapiro (1982) to distinguish the elements of economic exposure or the effects of exchange rate changes on the firm's operating cash flows. They argued that the exposure of operating flows can be separated into two components: a competitive effect and a conversion effect.

Operating exposure is observed to differ from contractual exposure because it is not the currency of invoice that determines the operating exposure of a firm, but the market structure in which the firm operates. Secondly, operating exposure may bear little relationship to the location of the company's physical assets. Thirdly, operating exposure is a response to changing real exchange rates in contrast to the nominal exchange rates that drive contractual exposure. Fourthly, understanding the firm's accounting statements is not sufficient to assess its operating exposure; a competitive analysis must be undertaken.

Operating exposure is thus clearly distinguished from translation and transaction exposure. Yet, apart from emphasising the way exposure can upset the competitive balance and highlighting the fact that the bulk of a corporation's exposure occurs as a result of its operations, it is unclear why the term economic exposure will not suffice. Since not all cash flow exposures result from a corporation's own “operations”, the term “commercial exposure” used by Earl (1984), but one remaining to be adopted elsewhere, more explicitly points to operations in the market as a whole.



Drawing attention to the nature of currency exposure in operations does, however, focus on its nature and underlines the fact that, as Lessard and Lightstone (1986) stressed, managers need to understand that exchange rates can have a significant impact on profit. This is so, even in companies that have no foreign operations or exports, but which do face important foreign competition in the domestic market.

Donaldson (1987) argued the need to concentrate on categorizing exposures from the corporate perspective. The sixfold classification which Donaldson derived is set out below. However, as a preface to his analysis it is significant to point out that Donaldson also stated that:

“as in many areas of treasury management, there is no universal agreement as to the meaning of the expression ‘economic exposure’. Properly defined, it embraces the impact of exchange rate movements on all of the company's future cash flows; technically, therefore, it includes all transaction exposures.” p 86.

Donaldson asserted that the form and extent of currency exposures will depend on the nature of the business. The examples listed below, ignoring transaction exposure, indicate the general concepts involved.

- (i) **Price lists:** Those companies which issue price lists other than in their domestic currency to their overseas customers are committed to sell at predetermined prices in a specific foreign currency for as long as the list remains valid. The extent of the currency risk cannot be known other than in general terms since the volume of orders cannot be determined.
- (ii) **Future export business:** Even though the company does not issue a price list, the extent and profitability of its export business is still likely to be affected by exchange rate movements.
- (iii) **Future domestic business:** The domestic market is always exposed to foreign competition to a greater or lesser extent. Where the domestic currency is

undervalued, the company will be substantially sheltered in its home market, which will appear unattractive to foreign manufacturers.

- (iv) **Competitive tenders:** Tendering in foreign currency exposes the company in a similar way to issuing price lists - it constitutes a commitment to supply with no certainty that the commitment will have to be honoured.
- (v) **Raw Materials:** It is not only output prices that can be affected by future exchange rate movements. In a similar way, the cost of bought-in materials and services can also change, especially if they are or could be imported.
- (vi) **Non-Trading receipts:** Are short term flows of foreign currency denominated dividends once declared and royalties once agreed (there could also be non-trading payments, for example, of dividends from a subsidiary and royalties to a third party).

A number of points need to be made about this taxonomy. Donaldson did not distinguish the consequences of pricing in the supplier's currency, as distinct from the currency of a customer or a third party. Second, the way he classified exposures does not distinguish between exposures to different parties, for example to competitors and customers. Third, his focus on non-trading receipts ignores non-trading payments; nor did he indicate why distinguishing trading from non-trading items is sufficiently significant to warrant highlighting and separate classification. Fourth, for measurement purposes, the different forms of exposure he distinguished are not mutually exclusive or watertight. For example, a tendering situation could be either future domestic business or future export business. Finally, and more importantly, there are two possible forms of exposure he did not highlight at all.

One of these is the exposure that exists for a corporation whose supplies are affected by currency movements earlier in the chain of supply. This culminates in an exposure which the corporation's own supplier has to its own direct suppliers. The second is the corporation's exposure to the consequences of its direct customers being exposed in their turn to their own customers or those further down the supply chain, including those who will eventually supply the final customer.

After Donaldson, several additional ways of defining currency exposure have entered the literature, although many are of limited value and do not materially affect or progress the ability to measure currency exposure. Ross (1990b) reported that economic exposures were also beginning to be described as strategic exposures, thus endorsing the view of Aggarwal and Soenen (1989), who observed that,

“A long-run cash flow denominated in a foreign currency creates a strategic problem that requires a strategic reorientation of operating objectives and policies..” p 61.

However, with the existence of a number of other strategic corporate exposures that have nothing to do with currency, it would almost certainly be inappropriate for the term strategic exposure to supersede the term economic exposure, given the firm association with currency exposure now enjoyed by the latter term. Nevertheless, it is a relevant term inclusive of economic currency exposures and challenges the preconception that currency issues are the preserve of the finance function.

Lessard (1990) surveyed U.S. corporate responses to volatile exchange rates. In doing so he identified the following as the exposures which companies actually manage: contractual items (transaction exposure) over the next 18 months, projected dividend remittances, contractual items beyond 18 months, projected effects of exchange rate changes on foreign operating profits, projected foreign purchases, projected capital outlays, projected effects of exchange rates on domestic operating profits, projected net foreign revenues, balance sheet translation exposure and other factors. A number of these exposures are economic or operating exposures, although neither term is used specifically. Several are transaction exposures.

Respondents are found to accord greater importance to managing individual transaction exposures than to managing other forms. However, three quarters of respondents identified unspecified “other factors” as important, which suggests that the taxonomy needs expanding. Furthermore, the definitions used to describe economic exposures are not mutually exclusive. For example, projected capital outlays will generate foreign and/or

domestic operating profits and possibly foreign purchases. The impact of exposure to foreign purchases will impact on domestic and/or foreign operating profits and projected net foreign revenues will also impact on foreign operating profit.

Consequently, it is difficult to calculate how respondents' rate the importance of managing economic exposure compared to that of managing transaction and translation exposure, though it is clear that corporations attach considerably more importance to managing transaction exposure than to managing translation exposure. However, summing overlapping definitions of economic exposure will exaggerate the perceived importance of managing economic exposure, complicating any comparisons with the importance accorded to transaction exposure.

Cezairli (1988), surveyed the nature of foreign exchange exposure management practised in foreign subsidiaries of Fortune 500 multinational corporations in 1987. He conventionally classified currency exposure as translation, transaction and economic and, (like Lessard), chose to measure the importance corporations attached to managing the different exposures rather than to the perception of their impact on the corporation. He also found that transaction exposure was given greater attention by management than economic exposure and that both these exposures were given more attention than translation exposure.

Belk and Glaum (1990) found the same pattern of exposure management in the multinationals they interviewed in the United Kingdom and Soenen and Aggarwal (1989), who limited their survey to examining transaction and translation exposure, identified more corporations managing transaction than translation exposure.

No review of the literature which defines currency exposure would be complete without reference to macroeconomic exposure as Buckley (1992) termed it. Reminiscent of the fourth subset of economic exposure identified by Walsh (1986), Buckley has defined it as being:

“concerned with how the firm's profits, cash flow and value change as a result of development in the economic environment as a whole - that is, within the total

framework of exchange rates, interest rates, wage levels, key commodity prices and other shocks to the system.” p 451.

He highlighted the methodology, using regression analysis techniques to establish the sensitivity of a firm's profits, cash flow and/or value to changed macroeconomic variables to develop coefficients to aid hedging strategy, which is drawn from the work of Oxelheim and Wihlborg (1987, 1989a and 1989b). However, whether meaningful single coefficients can be derived for multi-economy environments, for many multinationals operate simultaneously in many different economies, is very much open to question. Capel (1991) has argued:

“Given the difficulties of assessing economic exposure in practice, Shapiro and others have advocated an operational measure of economic exposure that is obtained by regressing the firm's past cash-flows on the average exchange rate prevailing in these past periods. This procedure rests implicitly on the assumption that, although the firm's economic exposure cannot be directly observed, it is constant. [As was illustrated above], a cash-flow maximizing firm is likely to change its exposure if exchange rates change. Moreover, if there are adjustment costs, the firm's optimal strategy in each period depends on its previous decisions. Exposure is thus variable and therefore a regression does not yield a reliable measure of it.” p 1103.

Companies which are involved in mining which makes use of single commodities in manufacture are employing this kind of technique, see e.g. Lighterness (1987). However its value for the generality of business remains to be demonstrated. It is also unclear whether macroeconomic exposure captures any form of currency exposure that economic exposure does not.

### **The Relationship among Different Forms of Currency Exposure**

Despite a growing tendency in the literature for currency exposures to be defined and distinguished as economic, transaction and translation exposures, it has been well recognised in the theoretical literature (see above Srinivasulu (1983a) and (1983b), also Earl

(1984), Walker (1985), Lessard (1986) and Donaldson (1987), that there are links between these three forms. The existence of transaction exposure at a corporate accounting year end which links transaction with translation exposure was noted earlier. Steps taken to manage a transaction exposure can in consequence alter the shape of a translation exposure and in hedging the latter a new transaction exposure may be created. Foreign currency denominated debtors and creditors are also balance sheet items and their domestic currency value will affect the income statement making transaction exposure, like translation exposure, an accounting exposure. The link between economic exposure and transaction exposure has also been highlighted. For some commentators transaction exposure is deemed to be an element of economic exposure, as both are seen as cash flow exposures. When the distinction is made between them it is that transaction exposure is exposure to what is already contracted for. Yet, as has also been noted, a business with a regular pattern of trading will have very predictable future cash flows and the way economic exposures will, on the placing of firm orders, become transaction exposures blurs the distinction between the two forms.

Many of today's economic exposures are thus tomorrow's transaction exposures and the pattern of cash flows will reflect itself in the accounts of the business at each reporting date. The shape of a corporation's economic exposure is thus also linked to the shape of its translation exposure. How the corporation manipulates the currencies in which its future cash flows will be denominated, will impact the currencies of the revenue and expense items to appear on its income statement and the currencies of the assets and liabilities appearing in its balance sheets. Doing anything which alters the shape of the economic exposure of a business, then, will also alter the shape of its transaction and translation exposure.

Past surveys which have sought to measure the different forms of exposure have, however, said little about the links between the different forms. They have not sought to measure the strength of those links. But, if executives are charged with managing the different exposures and managing one of them changes the shape of the others, how each exposure impacts the other needs to be clearly understood. Exposures by implication need to be managed as a whole. If the way corporations manage one form of exposure, impacts the shape of another form of exposure and, possibly the way that other form of exposure must be managed,

executives will have to realise that in taking care of one exposure they may adversely affect or ameliorate other forms.

## **2.5 The Ways Corporate Currency Exposure is Managed**

### **Managing by Not Managing**

Arguments are encountered, principally in the finance literature, see Logue and Oldfield (1977), that there is no need for corporations to manage their currency exposure because purchasing power parity eliminates real exchange rate changes in the longer term. In the Capital Asset Pricing Model, it has been suggested that it makes no difference whether exchange risk is managed separately or passed along to the capital market. Further, it is argued, as an implication of the Modigliani-Miller theorem, that even if currency exposure does need to be managed, management should be the responsibility not of the corporation but of the shareholder, who can decide whether or not to hold shares in particular corporations. These and other arguments for non-management of corporate currency exposure are comprehensively rehearsed and rebutted in Dufey and Srinivasulu (1984), who justify active management in the light of market imperfections: incomplete securities markets, positive transaction and information costs, the deadweight costs of financial distress and agency costs.

Broder (1984) calculated that real exchange rate changes impact corporations for significant periods of time. He, not atypically, found that such deviations [from PPP] were substantial, that there was no systematic tendency for the deviation to revert to zero, and that in the main the deviations followed a martingale with time invariant parameters. Such findings, which contradict the classical PPP explanation of the behaviour of real and nominal exchange rates, but are consistent with an efficient markets interpretation of foreign exchange markets, also support the argument for exposure management.

Further, if, as is argued, managers often fail to recognise the full extent of their corporate exposure, it is even less likely that a shareholder, presupposing that he or she had the time available to do the work required, could form an accurate view of a corporation's exposure from information the corporation is required to provide in its annual accounts and/or

elsewhere. The only companies, given that they are exposed, that do not attempt to manage their currency exposure are either those who do not understand that they have an exposure, or are those that recognise their exposure but do nothing about it either because they believe that the cost of managing that exposure would outweigh the benefit obtained, or as Belk and Glaum (1990) reported, they may believe that they can do little or nothing about it. Arguments for not managing currency exposure in principle are generally discounted and are not explored further here.

### **Active Methods Used to Manage Currency Exposure**

A list of methods used to manage currency exposure can be compiled from an examination of the literature. Most of the relevant literature comprises articles which review the advantages and disadvantages of individual methods or small groups of them; there is no work which attempts to list or categorise them comprehensively. Empirical surveys, which have questioned corporations on the management techniques they use, have produced incomplete lists. Indeed, no list is ever likely to be comprehensive and, to an extent, any exercise to try to produce one must be arbitrary. For example, should all forms of option be treated as one method or should each of the various types of option be distinguished and listed separately?

The literature typically comprises articles which examine one or a small number of exposure management techniques and review their positive and negative features. For instance, Beidleman, Hilley and Greenleaf (1983) catalogued foreign currency debt, parallel or back-to back loans, currency swap and forward contracts among the techniques of covering long-dated exposure. Such articles are numerous and there are too many to do justice to them all here. The majority of them analyze individual financial instruments and describe the benefits they can offer in general terms.

Dufey and Giddy (1981) for instance, suggested that the success of international financial innovations depends on whether such innovations are: a means of circumventing regulation, an “unbundling” of previously linked financial services, or a combination of services with relatively low transaction costs.

One method may be said to be relatively inexpensive, another method can be tailored to the specific requirements of a corporation, and yet another can reduce some of the risk while retaining the opportunity of gaining some advantage.

Although it is helpful to know that some methods are more flexible and cost effective than others, it is only by examining their use that their effectiveness can be evaluated. Subjective evaluations of effectiveness must be suspect, either because survey respondents may fail to appreciate the effect of a method or because they may misattribute an effect to it. Moreover, none of the surveys have provided a definition of effectiveness to guide respondents. Indeed, the very complexity which may impair the judgment of respondents also affects observing researchers.

In whatever way defined, the number of methods available for use in currency risk management has grown substantially within the last forty years for two principal reasons. First, the opening up of world financial markets after the Second World War, through deregulation and harmonization, has permitted the development of a new range of financial instruments and has facilitated access to different financial markets, themselves stimulated by the increasing exchange rate volatility of the 1970s and 1980s.

As Cavalla (1987) said:

“After the breakdown of the Bretton Woods agreement and the resulting uncertainties arising from fluctuating exchange rates, the first currency futures contracts were introduced in 1972. The increasing volatility of the financial markets in the 1980s and the progressive abandonment of exchange controls have generated demand for these risk management vehicles. The primary economic purpose in the futures market is to provide a system of risk transference. The currency options market has greatly expanded trading possibilities in the UK.” p 94.

Dufey and Giddy (1981) have charted the development of these new financial instruments, noting the introduction of swaps in the late 1950s, parallel loans in the early 1960s and currency futures and foreign exchange options in the 1970s.

Second, the growth of global and multinational companies has permitted the development of strategies which take advantage of the existence of a range of currencies whose strengths are negatively correlated over time. Paradoxically, therefore, companies exposed to a greater number of currencies may thus have been able to achieve lower overall exposure.

### **Classification of Methods Used to Manage Currency Exposure**

The growth in the number of currency exposure management methods has not, however, been accompanied by much debate in the literature as to how such methods should be classified. Buckley (1992) followed convention, arguably established by Prindl (1976), when he distinguished those techniques whose existence and employment is dependent on a corporation but no outside agencies, from those techniques whose use depends on the market. Sprackland (1990) observed that any company wishing to handle its currency exposure must first define its exposure and then adopt a hedging policy that can be managed with either internal or external techniques. Internally, for example, a company can minimize its exposure by billing in its currency or by adjusting its foreign-currency selling prices by what it expects to be changes in currency values. Externally, a company can take out forward contracts, it can buy options that give it the right but not the obligation to exchange currencies, or sell receivables to shorten exposure.

Alcarria et al (1991) attempt to distinguish between those methods that can be employed prior to agreeing a transaction and those which can only be used once a contract exists. Nevertheless, with the exception of an exposure management method embedded in the contract itself, e.g. indexation, most methods can be employed both before and after transactions take place.

Cezairli (1988) classifies methods according to the currency exposures he believes they address. He lists ten methods for managing both transaction and translation exposure which all differ from the seven methods he lists for the management of economic exposure. But if, as Buckley (1992) has argued, a number of methods (e.g. options) are relevant in the management of all forms of exposure, macroeconomic, economic, transaction and

translation, it can also be misleading to classify individual methods according to whether they are used to manage particular exposures.

A different taxonomy for classifying management methods in the context of their effectiveness was put forward by Lessard (1990). Methods are grouped by the nature of the decision made in employing them. Methods are classified according to whether they involve making pricing decisions, sourcing decisions, investment decisions, capacity utilization decisions, financial hedging decisions or are the consequence of planning decisions.

### **Effectiveness of Currency Exposure Management Methods**

A comprehensive assessment of the effectiveness of different methods can only be discovered from large scale surveys which try to obtain a clear idea of whether currency exposure impacts different corporations in unique ways and what makes managers deal with their exposure using specific methods individually or in combination.

The observed lack of attention given in the literature to comparative assessments of the effectiveness of different exposure management methods as well as a tendency to neglect these other issues relates directly to the paucity of survey information gathered.

To summarise, information on comparative usage and effectiveness of different currency exposure management methods is found to be obtainable only from the few available surveys of corporate practice. The nature of these surveys and the information they provide is dealt with below.

### **The Way Currency Exposure is Perceived and Managed**

This section reviews the contribution of early surveys and the subsequent section sets out what these and later surveys reveal of ways currency exposure is managed.

The research focus of the Blin et al (1980) survey drew attention to longer term exposures but was concerned primarily with short-term ones. The study of North American (US and Canadian) and British firms addressed questions such as how firms involved in international

operations perceive, measure, monitor and control their foreign exchange risks; who within the company assumes responsibility for foreign exchange decisions; what effect flexible exchange rates have on the organisational structure of firms and on the presentation of their accounts; and what effects flexible exchange rates have on pricing, invoicing, inventory management, investment and financing decisions.

With respect to the way firms cope with exchange risk, they found that their subjects had adapted to the reality of unpredictable exchange rates and did not appear to have refrained from increasing their direct foreign investment in the face of exchange rate uncertainties. Firms were attempting to appraise the economic risk in exchange-rate fluctuations, often beyond the accountant's financial statements.

Internal reporting channels, criteria and organisational structures, they found, were emerging to monitor and deal with overall exposure. Specific responsibility for these tasks had become better identified both with and without the provision of additional staffing and other resources. Little impact was acknowledged on pricing or inventory decisions along the lines often suggested by economists, such as lengthening payables in weak currencies. Actual changes in pricing or inventories were reported to be prompted by considerations transcending exchange risk, such as the competitive structure of product markets. However, the competitive structure of product markets is likely to be highly influenced by exchange rate relationships. Little was discovered about structural change in response to exposure.

The survey found that the use of systematic hedging procedures based on markets for deferred delivery of currencies, the so-called forward markets, was widespread and growing. It also considered the foreign exchange implications of long-term financing schemes and overall capital structure but came to no real conclusions on this element.

The study highlighted the aforementioned distinction between contractual and non-contractual cash flows, and observed that the former usually have a known maturity and magnitude even if they are denominated in a foreign currency. It noted that forward markets can be used to lock in the value of contractual flows. However, exposures arising from non-contractual cash flows are less well defined and consequently are less amenable to

straightforward hedging transactions. Exchange rate fluctuations affect market potential - domestic and foreign - according to supply and demand elasticities. The corporation's uncertain non-contractual flows are difficult to hedge via forward or money markets because their magnitude and timing are unknown.

The authors observed that floating exchange rates had forced multinationals to manage exchange risk on a day-to-day basis for more than eight years, (since the breakdown of the Bretton Woods agreement). However, fewer than a third of companies indicated that some internal adjustments for economic exposure were undertaken. Almost half of the U.S. firms, but only one in seven of the U.K. firms said that they undertook economic exposure adjustments, which varied widely from hedging to altering account balances on the basis of foreign subsidiaries' ability to adjust prices. A few U.S. firms said that they adjusted inventories for economic exposure. Very few U.K. firms took account of "economic exposure"; only one did so by evaluating cash flows, foreign exchange risk and necessary prices monthly, and another by analysing the profit and leverage effects of foreign exchange risk.

Looking at short-term market hedging strategies in 1980, before the introduction of FAS #52, almost all U.S. companies reported hedging translation exposure to avoid adverse effects on reported earnings. U.K. firms were more interested in balance sheet exposure per se, expressing concern about matching liabilities and assets, balance sheet ratios and equity change. The survey indicated that forward markets were the preferred of the two hedging vehicles: money markets were much less used, however, given their different accounting treatment. (Forward contracts are off-balance-sheet items whereas outright borrowing, conversion and investment in a currency are recorded on the face of the accounts.)

To complicate long-term hedging strategies, the authors said, forward markets become increasingly thin as delivery dates become more remote. These market limitations severely constrain the feasibility of external hedging and often necessitate alternative nonmarket techniques. These techniques have been developed not only in response to shortcomings of forward exchange and money markets but also as a response to exchange controls. Financing techniques were the dominant vehicle for achieving long-term hedging, but

almost a third of companies evaluated alternative local versus parent company currency financing techniques. Adjusting the capitalization of overseas subsidiaries is never mentioned alone. However, more than half the respondents did indicate a more complex approach to long-term hedging. This complexity was more apparent among U.S. firms, who favoured matched financing, than among their U.K. counterparts. The instrument most commonly used to effect long-term hedging was foreign currency-denominated debt. Among all respondents, 85% said they used foreign debt either alone or in combination with other strategies.

Implementation of risk management strategies requires allocation of decision-making responsibility within the corporation. The major difference between U.S. and U.K. firms seems to have been a somewhat greater decentralization of responsibility among the latter, at least at the implementation stage. On average, however, in all three countries, general policy regarding exchange exposure management was normally formulated by senior management at headquarters level. Responsibility for data analysis and forecasting was also concentrated at senior levels in the firm with limited evidence of decentralization. The locus of responsibility for deciding which exposures to hedge was lodged at the senior management level, with subsidiaries and staff playing secondary roles. Development and implementation of hedging policy was less centralized. In a quarter of all cases subsidiaries had major responsibility and in other cases subsidiaries managed jointly with headquarters.

No inventory-related effects were discerned by firms. Foreign asset acquisition seemed to have been affected somewhat among U.S. firms, but far less among those in the U.K. For example, fewer U.S. firms than U.K. or Canadian firms indicated either insignificant or no investment effects. Similarly more U.S. firms gave more consideration to the risk of fluctuating exchange rates in appraising capital expenditure projects than U.K. firms did, a finding which may indicate a lack of use of exchange rate variables in investment analysis by U.K. companies.

The authors of the British-North America survey concluded that flexible exchange rates had sometimes fostered greater centralization of the group treasury function and that

occasionally exchange rate flexibility had affected the corporate structure, resource allocation and responsibilities for financial and asset structure of the corporation.

The large scale survey carried out by Broder (1984) adopted a bottom-up approach to corporate foreign exchange risk management in investigating the exposure management practices of UK multinational corporations. He reported that formalised systems to manage corporate implications of deviations from PPP were still in an early stage of development in most companies, if they existed at all.

Broder asked how frequently companies used the following methods: leading and lagging of intercompany accounts, money market operations, forward exchange market operations, futures contracts, currency options and the adjustment of accounts payable and receivable with third parties. He also asked his respondents to rank according to use in the context of long-term contractual exposures: the undertaking of loans to match the duration and magnitude of contractual commitments, covering forward in successive stages, inserting a price escalation clause and any other method the respondent specified. The “do nothing” or “leave exposed” option was also listed. The vast majority used forward market contracts frequently. No other method was used as frequently by companies. Covering forward was the most used method for covering long-term contractual exposures, with the insertion of a price escalation clause the most used device.

A survey, sponsored by the Institute of Chartered Accountants of England and Wales (ICAEW), and reported in Davis, Coates, Collier and Longden (1991), focused on currency risk management in multinational companies. It examined matched pairs of United States and British based multinationals, concentrating on the treasury perspective. The survey describes in detail the practices of twenty four multinationals, particularly the way each dealt with its transaction and translation exposure. However, the manner in which longer term currency exposures impact the corporation and their management was largely ignored.

Jilling and Folks (1977) carried out one of the first surveys which collected information on respondents' subjective evaluation of the use and effectiveness of currency exposure management methods. They asked their U.S. corporate respondents to say whether they

used particular methods and to rate their perceived usefulness. The most highly ranked techniques in terms of both use and effectiveness were increasing borrowing levels in a currency and forward exchange contracts. In all twenty-one methods are rated which are reproduced in the tables below. In comparing these with later research it must be borne in mind that certain financial instruments like swaps and options were not available at that time. A Business International Survey (1986), for example, reported that the principal methods that U.S. multinational enterprises used to protect against currency exposure were balance sheet management, leads and lags, forward exchange contracts and currency options.

**Table 2.1 - How US financial executives rate foreign exchange management techniques ranked by usage. (Jilling & Folks (1977)).\***

Increase borrowing levels in currency  
 Accelerate/decelerate subsidiary dividend payments  
 Use forward exchange contracts  
 Decrease borrowing levels in currency  
 Lead/lag intra-company receivables/payables  
 Adjust product price in local markets  
 Reschedule intra-company debt payments  
 Lead/lag local currency external receivables/payables  
 Adjust product price levels in export markets  
 Net exposure with exposure in other currencies  
 Adjust inventory levels  
 Use contractual clauses calling for assumption of exchange risk by supplier's customers  
 Vary currency of billing to external parties  
 Finance fund requirements or invest excess cash of third country subsidiaries in currency  
 Seek different credit terms from suppliers  
 Adjust transfer prices  
 Factor receivables  
 Formally alter credit terms to customers  
 Utilize government exchange risk guarantee programmes  
 Lease rather than buy from suppliers  
 Lease rather than sell to customers

\* Techniques listed in descending order of usage

**Table 2.2 - How US financial executives rate foreign exchange management techniques ranked by usefulness. (Jilling & Folks (1977)).\***

Increase borrowing levels in currency  
Use forward exchange contracts  
Decrease borrowing levels in currency  
Lead/lag intra-company receivables/payables  
Adjust product price in local markets  
Lead/lag local currency external receivables/payables  
Reschedule intra-company debt payments  
Accelerate/decelerate subsidiary dividend payments  
Adjust transfer prices  
Adjust product price levels in export markets  
Finance fund requirements or invest excess cash of third country subsidiaries in currency  
Net exposure with exposure in other currencies  
Adjust inventory levels  
Use contractual clauses calling for assumption of exchange risk by supplier's customers  
Vary currency of billing to external parties  
Seek different credit terms from suppliers  
Formally alter credit terms to customers  
Lease rather than buy from suppliers  
Utilize government exchange risk guarantee programmes  
Lease rather than sell to customers  
Factor receivables

\* Techniques listed in descending order of usage

Usage ratings were found to be broadly positively associated with effectiveness or usefulness ratings. Given the view that managers act logically, relative use of methods of exposure management may be taken as one measure of perceived effectiveness on the grounds that the more effective the method is considered to be, the more likely it will continue to be used. The lack of such an association would certainly question the ability of respondents to assess effectiveness, with the proviso that management has had time to test the effectiveness of the methods it uses and reject those which have been found unsatisfactory.

Cezairli (1988) ignored a certain amount of exposure management by focusing solely on the exposure of foreign subsidiaries and by not surveying his respondents to find out if they used the ten identified methods he lists for managing both translation and transaction exposure to manage economic exposure. Nor did he ask them if they used the seven methods, which he listed as used for managing economic exposure, to manage transaction and translation exposure. He must consequently have underestimated the use of some of the methods he specifies for managing economic exposure by, for example, ignoring the use of financial instruments. To manage economic exposure, surveying strictly pricing and strategic methods, he found companies making use, in particular, of price adjustments,

matching and the securing of flexibility in sourcing. The proximity of Mexico to the United States, as noted earlier may explain the prominence of sourcing found here and in the Lessard (1990) survey but not in British ones.

Cezairli (1988) noted that Fortune 500 corporations only rate as effective and very effective half of the methods they use. Comparisons with Cezairli's findings on the effectiveness of foreign exchange risk management methods are complicated by the further distinction he drew between practices employed in developed countries and those in developing ones. He found, for example, that forward contracts are seen by respondent companies as most effective when used to manage translation and transaction exposures in developed countries, but less so than pricing decisions when used in developing ones. But even in developed countries, certain operating methods are seen as more effective than some of the other financial instruments employed.

Soenen and Aggarwal (1989) established that the majority of UK companies they surveyed used forward market contracts, and nearly a half, money market hedging. Two in five varied the currency in which they priced, and more than a third made credit term adjustments or practised leading and lagging to manage their exposure. Forward exchange contracts were considered by a majority of responding companies to be the most effective method of hedging against short term foreign exchange risk. However, Aggarwal and Soenen (1989), have maintained that long term exposure to foreign exchange risk cannot be managed by using traditional hedging techniques available in financial markets. No other information is given concerning the effectiveness of methods used, although Soenen and Aggarwal detected an increase in the sophistication of exposure management, in particular in British companies.

Belk and Glaum (1990) reported that a majority of their interviewees both claim their corporations to be risk averse and to favour exposure management exclusively by financial means. But they added that those corporations claiming to be risk averse were rarely completely so in practice. Unfortunately, they, like Soenen and Aggarwal, did not deal directly with the issue of effectiveness of individual exposure management methods in their survey.

The only other survey which questions respondents on both the use and effectiveness of methods to manage exposure is that carried out by Lessard (1990) in the United States. Lessard (1990) researched the use of the following techniques which are ordered according to reported respondent usage: respondent specified techniques, hedging with forwards up to 12 months, matching revenues and costs, hedging by long-term borrowing in foreign currencies, hedging with options - up to 18 months, hedging with forwards - 12 to 24 months, adjusting foreign prices to maintain dollar revenues, hedging with forwards beyond 24 months, moving sourcing to low cost regions, siting plants with a view to flexibility in shifting production capacity, and hedging with options beyond 18 months.

Given the limited menu of methods listed it is perhaps to be expected that managers from all the corporations taking part would record that they used other techniques. In fact more than two thirds recorded the use of other techniques "a lot". This argues strongly for a more comprehensive listing of methods. What is also notable is the degree of use reported by respondents of methods such as matching and selective foreign plant location, given the findings of earlier surveys. It has already been suggested though, that this may partly reflect the involvement of U.S. companies in Maquiladora firms in Mexico, given their \$2 per hour labour rates against those of \$12-15 they face locally.

Lessard (1990), while confirming that most firms' management of operating exposures is largely financial, also emphasised widespread employment of strategic methods to deal with these exposures by U.S. companies. A 1990 survey of Australian corporations, (see the Australian Bureau of Industry Economics (1991)), reports a similar pattern. It reports of its corporate respondents, that in their business strategies for reducing currency exposure: a quarter have established offshore operations, one in five has changed sourcing or selling markets and one in ten has differentiated products. It is also reported that approximately one-third of corporations have sought to reduce their exposure by retreating from export markets.

The Lessard survey dealt with effectiveness of foreign exchange risk management, as noted earlier, on the basis of a novel classification of management methods. Respondents were

asked how effectively their firms responded to rapid changes in exchange rates in terms of different types of decisions.

Lessard commented as follows on his findings:

“when asked about the effectiveness of their firms' responses to shifting exchange rates, managers from all functions viewed their firms' financial hedging decisions as much more effective than their sourcing or investment decisions and somewhat more effective than their pricing decisions and their planning for exchange rate volatility.” Lessard (1990) p 26.

Nevertheless, he also reflected that the perceived effectiveness of financial instruments can be influenced by the greater ease of quantifiability of their impact in comparison to that of other methods, adding that there is,

“also the organisational complexity of operating responses”, Lessard (1990) p 26.

which complicates any assessment of their effectiveness. Because of the potential bias against finding other responses as effective, the perceived relative effectiveness of financial hedging methods may need some discounting.

Lessard has also said that,

“...although most large firms view foreign exchange fluctuations as a major competitive concern, few as yet formally incorporate such fluctuations in their planning process.” Lessard (1990) p 23.

Aggarwal and Soenen (1989) raised the issue of a strategic response when observing that long-term exposure to foreign exchange risk could not be managed by using traditional hedging techniques available in financial markets. They stated:

“However, such exposure must be managed because there are significant and persistent deviations from parity conditions and from efficiency in the foreign

exchange markets. Therefore, firms must use their marketing, production, and financial strategies to protect against losses in value related to long-term changes in exchange rates. The management of economic exposure to currency changes must be integrated with strategic planning in each of these areas. Possible strategic responses to exchange risk in the areas of marketing, production, and finance include market selection and segmentation, pricing strategy, export policies, sourcing strategy, production planning and plant location.” p 60.

Finally, in any exercise attempting to evaluate the effectiveness of exposure management methods, it must not be forgotten that certain of them may only be effective when used in combination with other methods. As Flicker and Bline (1990) have observed:

“A variety of hedging strategies are available to assist managers in controlling foreign transaction risks, including pricing, settlement, forward contracts, leading and lagging, netting, and re-invoicing. A combination of these methods may be the most efficient for a given situation. Their success rests on management's sensitivity to the foreign exchange markets and the needs of its subsidiaries.” p 55.

To summarise, there have been several studies which have sought to associate the perceived effectiveness of one method with that of another or with the use of another. However, there have been no systematic studies to analyze the way in which different methods are used in combination. An exercise to corroborate the findings of Lessard (1990) and those of the few other relevant contemporary surveys is thus urgently required.

### **Relating Corporate Currency Exposure to Exposure Management**

A study of the literature reveals that there is little in either theoretical work or the few empirical studies available to help relate forms of currency exposure directly to exposure management practices. As already observed, much of the literature consists of an examination of the ways individual exposures can be managed. Hedging techniques are frequently discussed in the context of translation and transaction exposures but it is only in the survey work of Blin et al (1980), Broder (1984), Cezairli (1988) and Lessard (1990) that to some degree a more extensive exercise has been attempted both for economic exposure

and for currency exposure as a whole. Srinivasulu (1983a and 1983b) Earl (1984), Walker (1985), Lessard (1986) and Donaldson (1987) in particular have raised and discussed in this context the matter of linkage between exposures and the danger of ameliorating one exposure at the expense of increasing vulnerability to another.

Only Buckley (1992) sets out a schema, albeit in broad outline, which specifies methods to be used for dealing with different forms of exposure. In so doing, however, he runs the risk of seeming to treat separately those exposures which may be linked to each other in complex ways, ways requiring a composite of methods for their management. Nowhere in the literature is there an attempt to relate the set of exposures to which a corporation sees itself subject to the set of methods it uses to manage its exposures. By not doing so it is more difficult to draw conclusions about how satisfactorily corporations are managing their exposure much less advise them how to do so.

## **2.6 Currency Exposure and its Management in the Context of the Corporation and its Environment**

In order to attempt to understand the nature of currency exposure, its impact on corporations and the corporate response to its exposure, several studies have attempted to identify those factors which are believed to influence or determine it. Such factors must exist within the context in which corporations operate and by definition are to be found either external to the corporation, i.e. in its regulatory and market environments or within it, i.e. as part of it. The literature was examined in order to catalogue what researchers had identified as these factors.

The only researchers found to specifically address the question of the factors influencing currency exposure management are Lessard and Nohria (1990) and Earl (1985). In a section of their article entitled, 'A descriptive model of the factors influencing corporate response to volatile exchange rates', Lessard and Nohria (1990) stated:

“Three basic factors are at the core of this model: (1) The definition of the problem of coping with volatile exchange rates which is determined by the environmental context, the business strategy, the frames employed by individual

managers, and the broad corporate frame; (2) The organisational context in terms of the formal structure of responsibility and authority and the co-ordination mechanisms that relate to the various components of the overall task; and (3) The information and control system which includes the control, performance appraisal and incentive system for both individual managers and corporate units.

In addition to these three general factors it is important to remember the important influence of the firm's administrative history, its corporate culture, and the particular vehicle it chooses to implement changes in the corporate response to volatile exchange rates....” p 196.

Earl (1985) summarised:

“Differences of approach amongst MNCs seemed to be explained by their product markets and their technology for these influence both the nature and relative importance of the exposures that arise. Details will be affected by the MNC's particular management style, organisation structure and financial management policies in general.” p 46.

The literature relevant to the factors identified by Lessard and Nohria and by Earl is now reviewed.

### **The External Corporate Environment**

The external environment is the sum of the macroeconomic and political forces which shape the markets in which the corporation is located. More specifically, it consists of the regulatory regimes and markets in which the corporation operates.

### **Market Structure**

Given the preoccupation with translation exposure in the early 1970s, there was little perceived need to consider market structure in early studies, although it was recognised that the existence and fortune of overseas subsidiaries and of assets and liabilities could be

determined by the structure of the markets in which the corporation operated. Discussions of transaction exposure were normally considered devoid of their market context except in so far as it was deemed possible to switch the currency of purchase or sale in the market concerned. This view changed in the late 1970s when economic exposure began to attract greater attention. However, adjustment away from this initial emphasis has remained slow.

Even more recent discussions naively announced that the easiest way to avoid currency risk was to invoice in the home currency, see Reiss (1980). Page (1981) commented that data collected by the International Monetary Fund showed that traders preferred to trade in their own currencies, or a restricted range of other currencies, because they wanted to avoid exchange rate risk. Robock and Simmonds (1989) echoed this preference.

Only slowly was attention paid to different alternatives and it was realised that exporting could be made easier by pricing in foreign currency. Pilcher (1987) stressed that UK exporters had to consider two crucial financial elements. First, the pricing of goods in foreign currency enabled the overseas buyer to determine immediately 'true' price levels. Second, many exporters could obtain financing for export services through their clearing banks. Financial advice and support were also available from organisations such as Exfinco, the Export Finance Co., a treasury service which before it went out of business bought exporters' products for cash at the time of shipment and appointed the exporter as agent for the sale of the goods. Its services included forward sales agreements, protecting the exporter against adverse exchange rate movements when they booked orders and agreed prices in currency several months before shipment and foreign currency options.

Javaid (1985) showed that UK exporters tended to shift exchange risk, holding to traditional practices in their choice of invoicing currency. However, risk shifting, like other exposure management techniques, involves a cost. In addition to the cost that UK exporters identify can be the additional cost that becomes apparent to the customer onto whom the risk shifts. In many instances, opportunities to expand overseas markets may have been lost; moreover sterling invoicing may reduce an exporter's bargaining power in negotiations concerning price and credit terms.

Knortz (1978) noted that traditionally the risks and perils of international business had been compensated for by higher margins, but that there was by then currency volatility with no added return. This raises a number of issues. First, are those corporations with high proportions of direct and indirect imports and direct and indirect exports or with high foreign direct investment, (i.e. with a high proportion of their assets outside Britain), differently affected by currency exposure? Second, does the profitability of corporations with either high vulnerability to currency exposure or substantial advantage reportedly gained from it, vary significantly from that of other corporations? Third, are businesses with low profit margins impacted by currency exposure more severely as Flood and Lessard (1986) have demonstrated they should be, and do they deal with their exposure differently?

Finally, what difference does the degree of competition and foreign competition make to the exposed corporation? Lessard and Lightstone (1986) have stressed that the measurement of operating exposure demands understanding of the structure of the market facing a company and its competition. The argument proceeds that managers need to understand that exchange rates can have a significant impact on operating profit, even in companies that have no foreign operations or exports but which face important foreign competition in the domestic market. Real exchange rate changes will have both margin and volume effects. Market leaders usually have lower market exposure and companies that face the same real exchange rates may have opposite operating exposures. The measurement of operating exposure thus demands an understanding of the structure of the markets in which a company and its competitors obtain labour and materials and sell their products.

One aspect of this question is the degree of variety of sources of supply and of competition in supplier markets. Vest (1979) has observed that spreading overseas exposure among several nations will reduce the effects of currency changes as well as small overseas content. The unwritten assumption though, is that the pattern of currency movements are not correlated.

Srinivasulu (1983c) stressed that financial strategy must also be linked to product/market strategies. He highlighted the vulnerability of exporters with costs in one currency and revenues predominantly in others. He gave Rolls-Royce and Laker Airways as examples. In

InterMarket (1989), Aliber said that the first priority for any firm is to find out the likely development of the industry that it is in. It must try to establish how rapidly the demand for its products or types of products will grow in different countries and how its competitors headquartered abroad are likely to expand and grow relative to the growth of its domestic competitors. Firms are likely to expand in markets that are growing rapidly. The currency of a rapidly growing country is likely to fluctuate relative to the value of currency in the country in which the firm is headquartered. These changes in exchange rates have implications for all financing and sourcing decisions. At the same time Meese and Rogoff (1988) have concluded that real disturbances, such as productivity shocks, may themselves be a major source of exchange rate volatility. All in all, future market structure is important for both demand and for competition.

If exchange rates change and customers face foreign currency denominated prices, understanding the price elasticity of demand in a market is an important consideration. But is vulnerability greater for corporations facing a high price elasticity of demand and how is this affected by pass-through? Williamson (1990) has remarked on the propensity for British exporters selling into the United States market to practise rapid pass-through.

Froot and Klemperer (1989) also investigated pass-through from exchange rates to import prices in the U.S. market when firms' future demand was believed to depend on current market shares. It was found that foreign firms priced more aggressively in the U.S. market, attempting to gain market share when the price of the dollar was expected to remain permanently higher. When a currency exchange rate appreciation was thought to be temporary, foreign firms behaved less aggressively. The empirical results indicated that, with a purely temporary dollar appreciation, import prices were increased.

Finally, corporations in markets in which long-term contracts are negotiated face special issues. There are tendering problems which generate quasi-transaction exposures and there are the problems of having to set prices for long periods into the future in the face of increasingly uncertain exchange rates. How does currency exposure impact these companies, do they manage their exposure differently and do they find different methods of

doing so highly effective? Billingham (1986) examined this issue but his evidence is drawn from the experience of one company only.

In summary, although numerous market related issues have been examined, there is a need for further research to evaluate the overall influence of market factors. The theoretical model predictions of von Ungern-Sternberg and von Weizsacker (1990), that it is difficult to give good advice to firms on how to insure themselves against exchange rate risks without explicitly analysing the market setting within which they operate, still require empirical validation.

### **Regulation**

As regards the role of regulations, Blin et al (1980) observed that accounting standards and practices differ across national borders and firms seeking to hedge accounting exposure were found engaging in markedly different practices. In addition these researchers viewed exchange control regulations as having encouraged U.K. companies to manage their exchange risk in innovative ways. Foreign growth strategies, financing and corporate plans were complicated by exchange controls, but this experience, they believed, trained British firms to deal with the heightened exchange risk of the 1970s. Regulation they saw as creating a market for risk-shifting ingenuity. Capital control measures encouraged the use of local capital markets as well as the local accumulation of foreign earnings and it may also explain a greater propensity for British multinationals to allow subsidiaries to deal with currency exposure problems locally. In contrast, American firms were found to have had far less experience in dealing with currency problems.

In the U.K., exchange controls and declining sterling were imperatives during most of the 1970s. The earlier demise of sterling's international reserve role prompted U.K. firms firstly to deal in an expanding array of currencies; secondly to accept the consequent transaction exposure; thirdly to adopt a partially covered foreign-currency financial structure; and fourthly until exchange control liberalization in October 1979, to effect capital flows and foreign investment under restrictive exchange regulations. U.K. firms were consequently

seen to have developed a keen understanding of foreign exchange exposure in both its accounting and economic dimensions.

The conclusion that in the closely regulated U.K. environment, the drive to understand and control exposure gave British companies a lead that prepared them for the erratic exchange markets of the 1970s, should nevertheless be treated warily. This is due to the fact that the survey covers a very small sample of very large corporations. However, both interview and questionnaire responses were reported to indicate an acute sensitivity among these U.K. firms to the exchange risk problem as well as considerable experience in coping with it.

In some cases, issues such as the selection of currencies in which to price have not arisen because of the existence of a set currency of determination. There are the examples of industry wide practices of negotiating in a particular currency - U.S. dollars are used in the oil and computer industries and sterling for some commodities. In other cases market regulations have been designed to compensate for the impact of real exchange rate changes. British corporations in the agriculture industry have prices in European Union markets calculated in green pounds.

Some regulations, such as those of an accounting nature, have hindered or prevented the use of certain exposure management techniques. There has been some discussion of the impact of regulations in determining translation exposure, see El-Refadi (1986) and Kirsch (1986). Andrews (1983) described a number of trends which his research had detected in the United States following the introduction of FAS #52. Many corporations which had hedged or offset balance sheet exposure had reduced or terminated this practice. Overall corporate activity in foreign exchange markets, he found, had subsequently declined. Some companies had begun to focus more on transaction and/or economic exposure. The majority of his respondents thought that some US firms were more willing to or had already moved to arrange more foreign currency loans. Many companies had already centralised or were centralising currency management and more were using or considering a system of netting exposures and foreign exchange options contracts.

Henry and Antl (1989) have stressed that inflexible accounting rules and tax regulations contribute markedly to the difficulties experienced in the management of foreign exchange exposure. George and Schroth (1991) in contrast have claimed that:

“The absence of [the need to report] an accounting result [figure] that isolates the strategic impact of currency movements on earnings is probably the single most important reason that U.S. corporations have failed to use foreign exchange as a competitive tool.” p 113.

Use of some exposure management methods in certain countries has not been permitted by law and exigencies of government policy have had the same effect. For example, in Business Week (1981) there is a description of how France's new government slowed the post election collapse of the franc by imposing new foreign exchange controls. These mandated that within one month of shipment, all those exporting goods from France must exchange, for francs, foreign currency generated by the exports, whether or not payment had been received. Most exporters did not receive payment within that period and were then faced with the choice of borrowing foreign currency or selling the foreign currency receivables forward. The new controls virtually prevented leading and lagging. Business Week (1982) also reported on the whole raft of restrictions on those attempting to do business in Mexico, which meant that they were not likely to get much, if any, cash out of the country. Corporate treasurers were, therefore, compelled to keep abreast of which peso exchange rates applied to their products, in order to know where their company stood on ever-changing priority lists of products that could be imported and dividends that could be converted to foreign currency for transfer out of the country. They also needed to be aware of whether there would be enough money available should they be allowed to repatriate cash. Sometimes management has been so hindered that multinationals have been forced to leave a market altogether. This happened in Turkey when exchange controls were operated. Business Week (1977) reporting on the foreign exchange crisis which occurred in that year, stated that multinationals found it impossible to get hard currency there to finance their critical imports ahead of an expected local devaluation.

Although, exchange controls remain in force in some countries, particularly in third world countries, the legacy of exchange controls in developed countries has been to influence the currency of price of transactions. Llewellyn (1979) noted that abolition of exchange controls had had the effect of encouraging the use of foreign currency in pricing transactions and occasionally even for domestic transactions. Nevertheless, ways have been sought and found to get round these restrictions. Sometimes, even the authorities provide loopholes in their foreign-exchange control regulations. For example, Business Week (1978) again reported on how the French allowed certain types of trade to be financed in currencies other than the franc and called for the prepayment of imports into France in non-franc currencies.

The tax situation can also exert a crucial influence. Teck (1982) has distinguished three levels of taxation that have to be considered; first taxation by the foreign country, second withholding taxes on the flow of funds between countries, and third, taxation by the parent country.

Another obstacle to foreign exchange risk management has been the imposition of tariffs. Tariffs have the effect of fixing an element of cost in the currency of the country levying the tariff, though no studies have examined the impact of high tariffs from the perspective of currency exposure. With goods more prone than services to the imposition of tariffs, the question arises as to whether, as a consequence of this, currency exposure impacts manufacturers and whether manufacturers manage such exposure differently. Why the literature remains silent on this issue, given the significance which Walsh (1986) says is attached to tradability of goods, is uncertain. A lack of research is also surprising given the greater likelihood of international specialisation and vertical integration in manufacturing and the scope which it provides for international transfer pricing schemes which can exploit the advantages offered by very different fiscal regimes. Consequently, a strong case exists for further work on the influence of the regulatory environment.

## **The Internal Corporate Environment**

### **Corporate Structure**

Pugh (1966) saw the continuation of the Weberian approach to bureaucratic structure as preventing organisation theory from attaining recognition as a generalising discipline. The latter could only be achieved if bureaucracy was reconceptualised as a structural variable rather than an ideal type. Pugh and Payne (1978) described the theoretical approach and methodological strategy developed to achieve this task as entailing three aspects. The first of these is the broad acceptance of a systems view of complex organisations. The second is the identification of three separate, but linked levels of analysis in the study of organisations; that is, the organisation proper, the group and the individual. The third was the research methodology on which the study relied.

Research by Pugh et al (1968), all members of the Aston group, suggested that the three primary contextual variables were size,(number of employees and net assets), dependency (degree of external control), and technology (operational control and equipment layout). These were systematically related to or predicted three structural variables: structuring of activities (extent of specialisation, standardisation and formalisation) with size; concentration of authority ( degree of centralisation at the apex of the hierarchy) with dependency; and line control of workflow with technology.

Jennings (1981), discussing the issue of size from an insurance perspective, asserted that multinationals become more vulnerable to currency fluctuations as they grow in size and importance but, despite the importance of the problems, make little apparent effort to find remedies such as the use of computer technology. However, Choi and Czechowicz (1983-4) believed that:

“Most multinational enterprises are relatively sophisticated in obtaining the internal accounting information they use in planning and control.” p 15

It is not clear how corporations deal with the hazard of information overload, highlighted by Arpan and Radebaugh (1985). Difficulties encountered may reflect both the fact that

relevant management information must be sourced from a number of different departments and that much of it must be gathered, according to Simmonds (1981) using strategic management accounting systems which tap sources external to the firm.

In contrast Soenen (1983) found that small staffs and budgets prohibit small companies from developing a coherent approach to currency management. Lack of coherence in the larger corporation may be due to the greater complexity and problems of co-ordinating large companies. If Choi (1989) could demonstrate that real exchange risks and diversification gains affect corporate international investment in a significant way, it is important to analyze how a corporation with many diversified businesses operates, particularly should such diversity be unrelated to corporate size.

It is alleged that corporate organisation structure can define how management perceives its exposure and is able to manage it. Lessard and Lorange (1977) have noted that a marked evolution of corporate structure towards decentralisation has taken place over the last four decades, see Chandler (1962), Stopford and Wells (1972), Channon (1973) and Blin et al (1980).

On the question of reporting systems, Daniels and Radebaugh (1989) noted that:

“As a firm increases in size and complexity, it may have to decentralise some decisions in order to increase flexibility and speed of reaction to a more rapidly changing international monetary environment.” p 654.

“However,” they added, “such decentralization should stay within a well-defined policy established at the corporate level.” p 654.

Yet, the normative models of Lietaer (1970), and the work of Rutenberg (1970), of Robbins and Stobaugh (1973) and of Shapiro (1973) have all suggested that an appropriate response to fluctuating exchange rates, inter alia, requires highly centralised financial decision making.

Daniels and Radebaugh (1989) have said that:

“A central control of exposure is needed to protect resources more efficiently.” p 653.

However, Daniels and Radebaugh (1989) citing Stobaugh (1970) and Aylmer (1970), have also observed that:

“Usually, the longer a company operates in overseas markets, the larger its foreign sales and the greater experience it has in dealing with foreign problems... Studies of financial as well as marketing decisions have found that increased centralization is feasible when a corporate staff large enough and qualified enough has developed. The company with very limited foreign operations cannot afford this centralized expertise and must therefore delegate decisions to the operating managers abroad. However, if the specific foreign country operation is very large, then that operation can afford to have its own specialized staff personnel and be treated differently than operations in some of the smaller countries.” p 531.

There can be favourable and unfavourable organisational vehicles for foreign exchange risk management. Griffiths (1990) believed it must be a co-operative effort between commercial areas, the central treasury group and the local financial management. She found that there were several treasury management vehicles for larger organisations, which could be used to centralize foreign exchange exposure, to concentrate hedging activities and to reduce the transaction flows and costs associated with intercompany trading. The most frequently used of these included the re-invoicing centre and the netting centre.

Lessard and Lightstone (1986) have stressed that open and continuous communication between top executives and operating managers is necessary for effective management of operating exposure. Morsicato (1980) observed that the location of responsibility for such management within the business could define what could be done, and the degree of centralisation or decentralisation of foreign exchange risk management was seen as a significant influence.

Asher (1987) drew attention to the findings of a Business International survey of 1982, that only 9% of firms sampled set budgets in local currency; by 1987 his own survey showed

that this had increased to nearly 75%. Most firms stated that volatility in the foreign exchange markets was a key factor in this shift, removing from them the accountability of a phenomenon local managers could not control.

Powers (1988a) traced the impact of foreign exchange volatility across all segments of a corporation's business and highlighted the nature of information needed in order to manage it. He said that the sources for this information must include the sales, marketing, pricing, legal, tax, and accounting departments. He cited the president of a foreign exchange modelling and consulting firm who contended that foreign exchange managers can be effective only if they become involved in and with other departments. Ankrom (1974) was categorical in stating that control of the foreign exchange position should be centralised and a reporting system established. However, Wihlborg (1981) believed that whether risk management was centralised or not must depend on information collection costs, the costs of establishing the denomination of future cash flows and future purchases. Investigative work into the exposure management function in the U.K. carried out by Earl (1984 and 1985) found that initial centralisation of the function within several corporations he examined was later to be followed by greater devolution of operating responsibility. Nevertheless, Teck (1982) has argued that generally the merits of centralised exposure management far outweigh the advantages of decentralised control. As Powers (1988b) has emphasised, effective management of foreign exchange requires integration of information gathering in the firm.

There is also the issue of whether or not subsidiary management are held responsible for the impact of currency on their results. Lessard and Lorange (1977) noted that managers will select the most appropriate currencies for their own purposes. Internal forward rates can also be used. But, there is a strong belief that local managers need to think in terms of the parent currency. As Smith (1984) observed, this is particularly important in some parts of the world, such as Latin America, because of special regional problems and market constraints and conditions. US subsidiaries of foreign companies were increasingly found to have executive remuneration based on parent currency results. Podszus (1989) remarked that U.S. executives were facing the challenge to achieve and sustain profitability when their operating currency results were consolidated. However, it was the opinion of Arpan and

Radebaugh (1985) that if it is the parent who manages exposure and subsidiaries are not permitted to do so, on the grounds that managers should only be assessed on controllable costs, there is a greater case for them to be judged in terms of the local currency only.

It is also instructive to document which departments become involved in currency issues. Ankrom (1974) long ago maintained that currency was an issue for top management and there is indeed, some evidence of a growth in senior management involvement. Powers (1988a), for example, wrote that for some corporations, responsibility for risk management had been transferred from treasury departments to top management adding that the jobs of treasury groups had been changing from passive to active and from defensive to offensive as risk management was becoming as much a marketing strategy as a financial strategy. But the research by Broder (1984) confirmed that risk management has become largely the preserve of the finance function and the treasurer. Cezairli (1988) reported that whilst 70% of finance functions were rated as being very important in the management of foreign exchange exposure, this could only be said of 17% of departments responsible for sourcing and of 14% of marketing departments. However, Ross' (1990a) view that treasurers will interact mainly with marketing and those responsible for competitor analysis may be more of an aspiration than a reality.

One way of gaining an insight into the importance of corporate structure is, it is alleged, to examine whether or not management are giving more attention to currency exposure in their procedures and particularly in the computerization of currency management. Hoesel (1979) noted that monitoring exposure demands development of reporting systems which furnish timely and accurate data from which quick coverage responses can be made. George and Klein (1976) said that both policy and operating decisions can be effectively made only after a detailed reporting system is established to monitor the exposed position of all domestic and foreign entities of the company. Automation is frequently required to perform the calculation of consolidated after tax exposure.

To summarise, the importance of the influence of corporate structure in determining currency exposure and its management is both empirically and normatively far from clear, some of the evidence is contradictory and a number of assertions still await corroboration.

## **Attitudes and Strategies**

Maslow (1943) has drawn attention to competing human objectives and the circumstances in which one objective will assume greater importance than another. In the same way the importance that currency exposure is accorded in determining strategies will depend on the importance attached to this issue in relation to other issues or objectives. It is therefore important to establish whether managers believe that currency exposure is of lesser importance than other objectives. If currency exposure management is perceived as a primary objective, corporate strategy may be very different from where market or technological factors are given higher priority. Where this is the case, currency exposure can become a constraint and may be important if the achievement of other objectives is frustrated by currency exposure.

Among their survey findings on objectives and strategies of foreign exchange risk management, Blin et al (1980) reported that 40% of U.K. companies and 30% of U.S. companies affirmed that avoidance of major loss was their most frequent objective. The U.S. firms expressed concern about economic exposure more frequently than U.K. or Canadian companies and also tended to have more complex objectives in foreign exchange management. The British were more concerned with maximizing home currency equivalent income than the Americans, which may reflect their longer experience with currency devaluations. While U.S. firms displayed disparate objectives, those of U.K. firms were more focused. However, it was conceded that the wording of the survey question posed might have accounted for this difference in response.

While the absolute importance of currency exposure and its management, as has already been argued, has received considerable attention in the literature, there is little by contrast, except in the work of Srinivasulu (1983b), which remarks on or examines its importance relative to other corporate objectives. The only exception is where it is established that in the view of an individual corporation its currency exposure is insignificant. It may thus be too sweeping to assert as Witzky of Allied Signal does in *InterMarket* (1989), that:

“foreign exchange risk management is everybody's business.” p 36.

but, currency management is undeniably recognised as an important strategic issue, see Glaum (1990) and George and Schroth (1991).

Attention has focused more on what corporate attitudes to currency exposure are or what they should be. Teck (1982) has said that after forecasting the company's exposures, the treasury manager must express opinions on the currency outlook and consider a protection strategy. He identified three categories of strategy: the first to elect to remain exposed, the second to change the foreign currency asset and liability mix at any location, and the third to hedge with offsetting contracts in the forward exchange markets.

Kenyon (1990) interviewed nineteen corporations in order to assess their attitudes and strategies and discerned three ideal types of management strategy. He denoted as “dealers” those managers who are willing to make money from exchange rates in the same way as they do from their other activities; as “smoothers”, those who wish to smooth out the impact of exchange rate changes on corporate results; and as “lockers”, those who wish to remove the uncertainty that currency exposure creates. However, Kenyon did not expect corporations to have strategies which approximated to any one of these ideal types and in practice he identified corporate strategies combining elements of all three. Nevertheless, even relative differences may be significant. Dillon (1979), for example, has described Dow Corporation as seeing itself predominantly as a “dealer”.

Dann (1986) exhorted businesses to consider carefully when to time the repatriation of currency in order to obtain the best rates, implicitly assuming that corporations will form a view of future exchange rates. Regardless of whether future exchange rates can be forecast, some corporations have set up treasuries as profit centres to benefit from foreign exchange dealing. In contrast, Canon Inc and other Japanese companies have allegedly joined with trading companies to set up foreign exchange departments, not for this purpose, but to help cut losses. Ross (1988a) has asserted that the main responsibility of corporate treasurers with respect to foreign exchange is to minimize risk. Rodriguez (1979b) reported obtaining evidence that treasurers were prepared to hedge away currency risk whatever the cost.

However, not all currency exposure can be hedged, though short term contractual exposure can. Aliber and Stickney (1975) have drawn attention to the importance of considering the planning horizon. Aggarwal and Soenen (1989) observed:

“If maximizing reported short-term after tax earnings per share is the goal, reacting to transaction and translation exposure takes on prime importance.” p 61.

echoing Einzig (1979),

“If management's goal is to maximize long-run stockholder wealth, protection against economic exposure is a first priority. If management feels that its performance is judged mainly on short-term results, it will give priority to protection against transactions and translation exposure.” p 117.

Fixed asset exposures can also be hedged but financial hedging is not always as attractive as Levi (1979) and Eckl and Robinson (1990) have illustrated. Other options may also be open to the corporation. Jacque (1979) noted that multinationals tend to be smoothers. They can balance their assets and liabilities in particular currencies using the natural hedge in order, as Ross (1988a) exhorted, to keep the issue simple and according to George and Klein (1976) they should watch out for natural hedges also in correlated currencies. A corporation may also decide not to deal with currency exposure at all, either because to do so could put it at a competitive disadvantage if the competition decided not to do so, or because, although it may suffer tolerable losses from its exposure, it may also experience gains of a similar magnitude to enable it to take a “swings and roundabouts” philosophy. As a variation on this theme it can be those who do not minimize risk of losses who also allow themselves to take advantage of favourable swings in exchange rates. As already reported, Belk and Glaum (1990) found very few corporations which claim to be totally risk averse acting as if they were so.

Other attitudinal and strategic issues concern the perception of the competitive situation. Kirsch (1986) observed that if management's objective is primarily economic based, priority will be given to economic exposure, if it is accounting based, priority will be primarily given to transaction and translation exposure. Understanding the way a corporation analyses

its competitive situation, and the extent to which it monitors competitors' operations, can help to predict its attitude to exposure and its likely actions. This may also be judged, according to Ohmae (1990) citing the case of Komatsu Corporation, by examining to what extent corporations assess the likely impact of exchange rate changes on their costs and revenues or assume future exchange rates in setting their prices.

The association between attitudes and strategies and foreign exchange risk management has however, become something of an enigma. Broder (1984) was unable to find significant associations between the attitudes expressed by managers and the exposures they faced. This finding was echoed by Soenen (1986) who reported observing a lack of systematic approach to exchange risk management in the corporations he surveyed. While accepting that some corporations do not espouse formal currency exposure management objectives but profess to informal ones, it is of great concern to be unable to detect consistency in them. Quinn (1989) reported that large numbers of companies were still not putting risk management programmes in place. Nevertheless, Belk and Glaum (1990) observed that a number of companies reported giving greater attention to the issue in their policies. If as Baldoni (1987) has claimed, foreign exchange risk management strategy depends on corporate philosophy and that philosophy contains inconsistencies, there will be implications for the importance of attitudes and strategies as an independent variable. However, Broder (1984) identified only one type of corporate objective for managing economic exposure and two each for transaction and translation exposure, expressed either in terms of benefit maximization or risk minimization. This simplification may itself explain his inability to relate corporate objectives to the exposures identified.

What, therefore, emerges from the literature is an ambiguity as to the role and influence of attitudes to currency exposure and strategies designed to manage it, a situation which urgently needs exploring and clarifying.

### **Management and Experts**

In the tradition of behavioural theories of the firm, articulated by Simon (1947) and developed further by Cyert and March (1963), the work of Aharoni (1968) on the nature of

management experience of, and of learning to deal with, complex phenomena has received much attention. Though, his work has emphasised the importance of experience and the learning process in determining investment appraisal behaviour, there is little evidence to confirm or question whether his findings are equally relevant to currency exposure and its management. It is in this context that Earl (1984 and 1985) has put forward his own stage model of managing foreign exchange exposure containing four stages of learning: gestation, realisation, systematisation and reconciliation.

The impact of currency exposure is one of many influences on a corporation experienced by managers. Yet, just how influential that experience is, and just how important is the learning process itself is questionable. Clearly many managers are never conscious of currency issues and are not called upon to consider them. Many who are involved are rarely involved on a regular basis. Very few face the impact of exposure on a continuous basis and particular managers may recognise or concern themselves with only certain aspects of that exposure. For example, accountants may deal only with translation exposure, see Kemp (1984).

As previously stated, Soenen (1986) has formed the view that foreign exchange risk management has often been based on ad hoc opinions rather than as a result of systematic reasoning. There is also Soenen's (1983) point that small staffs and small budgets may prohibit small companies from developing a coherent approach to currency management and in large companies a specialised treasury or department responsible for currency issues may insulate management from the problem. Aggarwal and Soenen (1989) have found that practices followed in Belgian companies, where most firms were smaller, represented a lower level of sophistication than those in the UK, which had the greatest number of large firms in their sample.

Some firms have been bringing currency exposure management in-house. Gilbert (1987) talking with international corporate finance experts has identified the emergence of a number of basic trends, one being that multinational corporations are taking on many functions previously held by major commercial and investment banks. Managing a multinational corporate finance department was also viewed by many interviewees as the

single greatest business challenge an executive can face, with the possible exception of that of the chief executive.

Particularly influential for management may be the experience gained either from mistakes, failures or frauds or indeed from windfalls. There are a number of cautionary tales. Ingersoll, Treece and Brady (1987) and Rescigno (1987) have described how Volkswagen lost \$263 million on their foreign exchange dealings in 1986 and Rose (1974) and Debs (1975) have reported the speculation at Franklin and Herstatt Bank that led to losses arising from an attempt to redeem the bank from other problems. Other cautionary tales include those corporate examples cited by Shapiro (1992), Rolls-Royce, and Laker Airways and the cases of Allied-Lyons and Jaguar. Where firms have experienced substantial losses, changes in responsibility and in procedures have quickly followed.

Another significant influence on management can be the training and instruction it receives. Even so, old habits may die hard as the survey by Javaid (1985), quoted above, has revealed. Some exposure management techniques, including forward covering, have not been used, mostly due to ignorance. Hardiman (1981) and Edwards (1980) have long maintained that with the potential to export more profitably, British exporters could be criticized for being naive for their persistence in selling in sterling, as well as in continuing to make purchases priced in foreign currencies. As London has the largest and arguably finest money and foreign exchange market in the world, such behaviour, he underlines, has to be the result of ignorance. It is therefore, essential for managers to know how the London foreign exchange market works both if such opportunities are not to be missed and in order for close co-operation to occur between financial/accounting departments and marketing/sales departments.

On a more positive note, Ferrara (1980) detected an increase in Foreign-Exchange Clubs, in which a growing number of financial executives were then participating. These clubs are loosely knit gatherings to discuss currency movements, foreign exchange trading techniques, debt financing, and cash management. The Association of Corporate Treasurers has such clubs throughout the UK with regular outside speakers. There has also been a

modest increase in the number of specialist courses in corporate foreign exchange management on offer.

This review itself attests to the rapid growth in the amount of literature now available on currency exposure which managers can use to help guide them. But the availability of literature is no guarantee that it will be read. It is sobering to see how much of this literature is specialist and/or finance related and how little can be found in standard textbooks on, for example, marketing or corporate strategy. While over a fifth of the international finance textbook by Shapiro (1992), is devoted to currency issues, one of the prominent textbooks in international marketing, by Keegan (1989), devotes just two paragraphs to dealing with the subject, making the point that a company with flexible sourcing alternatives is much better able to adapt to extreme exchange rate fluctuations. There is no mention of the subject whatsoever in the context of pricing. This is unfortunate as it has been observed that currency volatility can induce an unstable and possibly self-defeating marketing strategy. When a currency is strong a business may seek to differentiate its product and concentrate on quality and high value-added solutions. When it weakens it may sell on price. Frequent price changes induced by currency volatility can unsettle customers and clients.

The picture is largely the same for the popular management literature. A notable exception is Kenichi Ohmae's book, "The Borderless World" (1990), which marks a welcome change.

How successful managers believe they are in managing their exposure remains unclear. The rapid growth in management education courses on offer in the last thirty years would argue that insufficient attention has been given to such education in the past, but the continuing absence of currency exposure management from the syllabus of many advanced management courses does not instil one with confidence that the position has changed or is changing appreciably.

Some knowledge of the sophistication of management can be derived from examining management practices. For instance, one can ask how far managers incorporate anticipated or estimated exchange rates in their investment appraisal procedures either by direct amendment of projected cash flows or by adjustment of the discount rate. In the main,

however, it is essential to assess management's own view of its competence and experience and the adequacy of its training and preparation to deal with the issue if the state of management itself in managing exposure is to be evaluated. Relatively little work has been done to research such questions.

Ensor and Clarke (1979) reported that new groups had been entering the business of forecasting foreign exchange rates, particularly merchant banks, whilst others had been closing down. One reason given for the changing nature of the forecasting groups has been the observed shift away from specialist exposure management services towards more broadly-based financial consultancy. A number of banks have found it necessary to broaden their services as the needs of clients have become more diverse. New growth in the U.S. market was identified as coming from overseas. Yet, corporations are found to be showing more and more ability to manage their own resources and less enthusiasm for the banks' own systems of forecasting.

Whilst Gilbert (1987) has drawn attention to the fact that some corporations have been making less use of outside currency exposure experts and some have set up their own dealing rooms, many of these and others still use currency forecasting services (Retwka (1983)). This decline is itself seen to be largely due to the bypassing of the banks' advisory services by multinationals going directly to the commercial paper market and dispensing with bank services in arranging loans, the process of securitization.

Evidence on the forecastability of exchange rates remains mixed. Investigations by Levich (1982) have shown that several forecasters have significantly outperformed the market for short periods but he has concluded that the evidence overall is equivocal. Ferris (1985) nevertheless, reported that the pressures on advisory services to make the right calls at the right time was increasing with the growth in the amount of money at stake in the market. Managers also have the incentive to take out the insurance inherent in seeking the assistance of currency advisors in case they are called upon by shareholders to answer for their actions. One problem alluded to is that the corporate community is not always able to capitalise on the signals given to them even when they believe them to be accurate. Coggan (1984) found that after being seriously hurt in the past few years, foreign exchange advisors were re-

emphasizing their personal skills and the manner in which they could help clients manage their foreign exchange risk, rather than stressing the accuracy of their forecasting models. In 1979 *Chemical Week* reported many companies turning to outside consultants for help with currency forecasting as a consequence of some countries becoming more active in protecting their currencies through the intercession of their central banks, thereby making informed hedging more difficult.

The growth of the treasury specialism and of the treasury function within corporations has been spectacular, particularly in the 1970s. Davis and Collier (1983) reported that 1977 was the peak year for the formation of treasury departments in British corporations. A decade later, Gilbert (1987) recorded chief financial officers, treasurers and comptrollers as all increasing their staffs to handle higher levels of activity and other ramifications of global finance. In addition to finding a greater sophistication in treasury management generally, Soenen (1989) has concluded from the results of his surveys of treasury practice that there is a direct relationship between an international company's sophistication and its size. There is no doubt that it is the larger companies which can most afford to employ treasurers and establish treasury departments.

O'Brien and Burchett (1988) have charted the use of expert systems to help manage currency risks particularly in the light of the proliferation of new hedging instruments which has made the selection of the appropriate hedge transaction very complex. However, they caution that such systems must only be used as an aid in decision making.

Overall, regard for experts is mixed. In *Euromoney* (1979) it was reported that an experiment was conducted in which eight foreign exchange advisors were presented with the identical currency exposure problem and invited to recommend a solution. These eight experts provided eight different solutions.

Another aspect of the comparative survey by Soenen and Aggarwal (1989) which included an analysis of banking relationships in the U.K., the Netherlands, and Belgium has been to show that banks play an important role in the foreign exchange activities of firms in all three nations. However, Lee (1988) cautioned that while foreign exchange has assumed a primary

role in bank profitability, it is the corporate dealers who have become the stars. They serve particular clients but do not usually run positions on their own account. Bankers, they stated, report that there is a trend back to the basics of spot and forward dealing and that the simpler product, the currency option has grown in popularity. Nevertheless, currencies that were once considered exotic are now in more frequent demand. Brawner (1988) observed that banks can strengthen the financial expertise of their small business clientele and improve banking relationships by offering financial options traditionally available only to larger businesses.

As Humphreys (1987) has emphasised, banks have a potential conflict of interest, their own interest in marketing services that generate revenue such as financial instruments, and that of their clients, who may benefit more from strategic advice which banks and indeed other consultants find more difficult to sell and to be less profitable. Allegations that banks foist such instruments on corporate clients is, however, accompanied by other reports that treasurers themselves pressure banks for new instruments. Keller (1989) has found that corporate clients have increasingly assumed a tough, competitive stance in relation to the banks and that clients today know what they want and how to get it. Within this increasingly competitive environment, financial engineering teams have been under pressure to develop more innovative products. Yet, a thriving market for highly structured financing packages has continued to exist. Innovative techniques in demand include second-generation derivative instruments such as the “Down and Out”, the “Up and In”, and Asian options.

Another trend among corporate treasurers is modish talk about a company's macroeconomic exposure management strategy. Warren (1987) alleged that banks have caused confusion as to the appropriate instrument for managing a particular exposure in their eagerness to service customer needs. In contrast, Dowdle (1985) has described how R.J. Reynolds Industries Inc has developed and put into use a highly centralised international banking function to manage its foreign financial operations in more than 50 countries. A computerised system was installed to provide the treasury office at corporate headquarters with continuous information. Regional treasury offices were created on different continents and a company-owned banking operation was set up to act as an intermediary between operating units and major line banks. Through its regional treasury centres, Reynolds says it

has achieved a much higher level of funds rationalisation involving such activities as use of leading and lagging techniques through re-invoicing vehicles.

The alleged growing sophistication of management argues for a lessening in the influence of and opportunities for outside experts. The dearth of empirical investigation and the need to develop complex systems of exposure management argues the reverse. The relative influence of managers and experts also warrants further examination.

## **2.7 Summary of the Literature Review**

The review of the literature on corporate currency exposure and its management illustrates that:

There is a bias in the literature towards the disciplines of finance, financial accounting and economics. Although increasing attention is given to the subject in the international business literature, there is a marked lack of linkage with the management literature including that of management accounting.

Little attention was given to the subject before the 1970s when currency volatility increased dramatically. The early literature was dominated by accounting issues due to the impact this volatility was having on corporate accounting profits. Responsibility for currency exposure management was increasingly concentrated in the finance function and within that the fast growing treasury discipline. Discussion focused largely on the nature of currency exposure and different criteria were developed for classifying exposures, which produced competing taxonomies and little detailed agreement on definitions. To an extent, the convention of using the threefold classification of currency exposure as transaction/translation/economic exposure, one which has been increasingly adopted, has masked the lack of consensus with an untidy compromise.

The few surveys of practice, all without pretension to comprehensiveness, mirrored the narrow focus adopted by those examining methods of currency exposure management. The growing availability of financial hedging instruments was matched by an explosive growth

in their use, but a dearth of discussions of the relative merits of these and other operational and strategic management options.

The unsuitability of the available taxonomies of currency exposure for measuring the way the phenomenon affected corporations, despite an overwhelming preoccupation with the threats currency exposure poses, has resulted in an inability to measure how well corporations see themselves managing the problem, though the predominant perception is one of a complex subject, not always well understood and not well managed.

There have been few attempts to establish the determinants of the nature of a corporation's currency exposure or of the way a corporation configures its strategies and structures and resources to deal with the phenomenon. Nevertheless the literature is rich in speculation as to what these determinants might be, providing numerous leads to the researcher.

Despite a recognition in the theoretical literature that economic exposure must be the major element of currency exposure, all surveys have found a paradoxical management preoccupation with more easily measurable transaction and translation exposures. Only gradually was it realised that the linkage between the three conventionally recognised forms of exposure might require a concerted approach. However, the continuing absence of attention to taxonomies of currency exposure management methods and the matching of methods to exposures, has largely deprived managers of insights into the relative value of different methods for managing individual and combinations of exposures. The few surveys of currency exposure management which have provided some insight into the pattern of use of methods to manage currency exposure have rarely focused on method effectiveness. Consequently, it is difficult to comment on how effectively managers deal with their corporate currency exposure.

## **2.8 Conclusions**

This chapter has reviewed the literature on corporate currency exposure and its management. The different perspectives from which the subject has been researched have been mapped. What the literature says about the forms the phenomenon takes and how it is dealt with have been summarised. The discussion has put corporate currency exposure and

its management in the context of the corporation and its environment, and presented the salient features of the literature and its contribution. The review has drawn attention to weaknesses of previous research which further research must address.

Much painstaking theoretical work has been carried out to define the nature of corporate currency exposure and to determine whether it is a serious issue which managers should address. Attempts have been made to distinguish discrete forms of currency exposure and these attempts have been documented above. The difficulty in defining a number of forms of exposure, so that they can be considered to be mutually exclusive, has been highlighted as has the concomitant problem of their measurement. In contrast, there has only been a modest amount of empirical work to test how currency exposure affects corporations in practice and how corporations actually manage it. Almost no work has been done to establish the determinants both of the shape of the phenomenon and of management's response to it.

Survey findings have not always confirmed theoretical expectations. For example, the prediction that economic exposure is the most prominent currency exposure has not been empirically confirmed and, paradoxically, survey after survey has stressed that managers concentrate their efforts on managing transaction exposure.

No attempt has been made to produce a comprehensive taxonomy of the ways corporations can manage their exposures, how these relate to each other, and how they can be used individually or in combination to manage the specific ways currency exposure impacts the corporation. In consequence, little has been and can be said about the appropriateness and effectiveness of the methods available to manage currency exposure and the methods actually used to do so.

The contrast between the wealth of theoretical writings and the dearth of empirical work has further underlined the issue of quantification. Currency exposure is a phenomenon which corporations are faced with both measuring and managing. They deserve more help in doing so. The following chapter sets out the research model and describes how the research in this thesis has been carried out to that end.

## **CHAPTER 3 - RESEARCH MODEL, HYPOTHESES AND METHODOLOGY**

### **3.1 Introduction**

This chapter sets out the research model which informs this thesis, identifying the framework used in the research. The rationale for using this model is explained. The constituents of the model, the dependent, intermediate and independent variables are described and defined. Relationships between the dependent intermediate and independent variables are proposed and the hypotheses to be tested are set out. The methodology used in order to test the hypotheses is described and its choice justified. The methods of data analysis used are described and the strengths and weaknesses of the research design and methodology adopted are discussed.

### **3.2 The Research Model**

This thesis examines the way managers report that they deal with the impact of currency exposure. The review of the literature has revealed a large number of methods of currency exposure management available to them. Methods used by one corporation are reported to be different from those used by others and various combinations of methods are used. Prima facie it appears that different methods may be appropriate for use in different circumstances and there is no case for believing that any one method is appropriate for use in all circumstances. A strictly universalist approach to the understanding of foreign exchange risk management would, therefore, appear out of place. If the use of methods to manage currency exposure are contingent upon the circumstances in which the corporation finds itself, a model which relates the management of currency exposure to those circumstances must be employed.

#### **The Contingency Approach**

Contingency theory stems from the work of Burns and Stalker (1961), reinforced by Woodward (1965) and strongly influenced by the Aston school in a series edited by Pugh et al (1978). Luthans and Todd (1977) observed that recent formal recognition of situational influences on the management of complex organisations has led to an increasing number of

contingency models. Moreover, as the rate of change in, and the associated degree of complexity of, business continues to accelerate, it is asserted that the influence of environmental variables will be increasingly significant to effective management.

Contingency theory, Wood (1979) argues, states that there is no one best way of organising and that there is no universal principle of management. There is, in other words, no universally appropriate system which applies equally to all organisations in all circumstances. Organisational affairs are consequently influenced if not determined by the situation or problem the organisation is trying to address.

Lawrence and Lorsch (1967) see organisational effectiveness as a function of the “goodness of fit” between organisational structure and its environment. Evan (1976) also affirms that effectiveness or performance can be seen as a principal dependent variable.

Factors within the environment are identified by Burrell and Morgan (1979) as key contingencies which organisations have to respond to in the appropriate manner if they are to survive long-term. Donaldson (1985), for example, asserts that change in external factors is likely to exert considerable pressure for the organisation's production system to realign its goals and structures. The corporation, he believes, is under pressure to adjust to its environment: if it does not do so at best it is unlikely to be successful, at worst it will fail altogether.

Brian (1979) noted that contingency theory is a useful tool in defining relationships between managerial work and behaviour, and training and development strategies. He asserts that the particular management technique employed in a particular organisation is dependent on the environment and the technological variables characteristic of the organisation.

Otley (1980) distinguishes contingent variables as those the business corporation cannot influence directly, though it is recognised that organisations may try to influence some exogenous variables, for example, government regulations or the shape of product markets. He believes that the corporation tries to adapt to the contingencies it faces by arranging the factors it can control into an appropriate configuration that it hopes will lead to effective performance.

Wood (1979), contends that contingency theory, in contrast to systems theory, has a more limited view of the organisation and is less effective as an explanatory device. This is because the organisation is examined within the framework of a particular problem rather than within its total environmental situation where many factors are present. Yet, it is within the discretion of the designer of a model to define the contents of that model. In the context of this thesis it is argued that the limitation placed on the constituents of the model is a strength, because one problem and only one problem, that of currency exposure, is being examined.

### **The Framework**

The focus of this thesis is the management of currency exposure. The methods managers use to do this are the variables round which the model is designed. The primary issue is what determines the way currency exposure is managed, therefore the use and effectiveness of the management methods are designated as dependent variables in the model.

The predictions of a contingency model are that the dependent variables will be determined by the corporate environment. Factors in the corporate environment include both those external to the corporation and those operating within it. External factors include the immediate product market environments in which the corporation operates and the regulatory environment. The internal environment of the corporation comprises, inter alia, the structure of the corporation, the people who are associated with it and their purpose.

The external environment in which a business operates can be a determinant of its internal environment, and in a dynamic situation the internal environment can be such as to influence the corporation to act in ways which can also shape the external environment. In the context of the management of corporate currency exposure, a prima facie case exists for assuming that the external environmental factors relevant to determining currency exposure are a more important influence on internal corporate factors than vice versa.

Nominal and real exchange rates impact the external environment and through the external environment impact the corporation from the outside. The external environment is, therefore, identified in the model as providing the independent variables which affect the

corporation's response to its currency exposure through its internal environment. There are many ways in which the environment exposes the corporation through changes in the domestic currency value of its cash flow and assets and liabilities, however expressed. These ways are defined in this thesis as forms which currency exposure takes and are referred to as forms of exposure for convenience. Each of these forms is designated as an intermediate variable in the model.

Forms of exposure, in the context of a contingency model, can be seen as influencing the shape of the internal environment of the corporation which concerns itself with currency exposure, the other group of intermediate variables, as well as directly determining the methods used to manage that exposure.

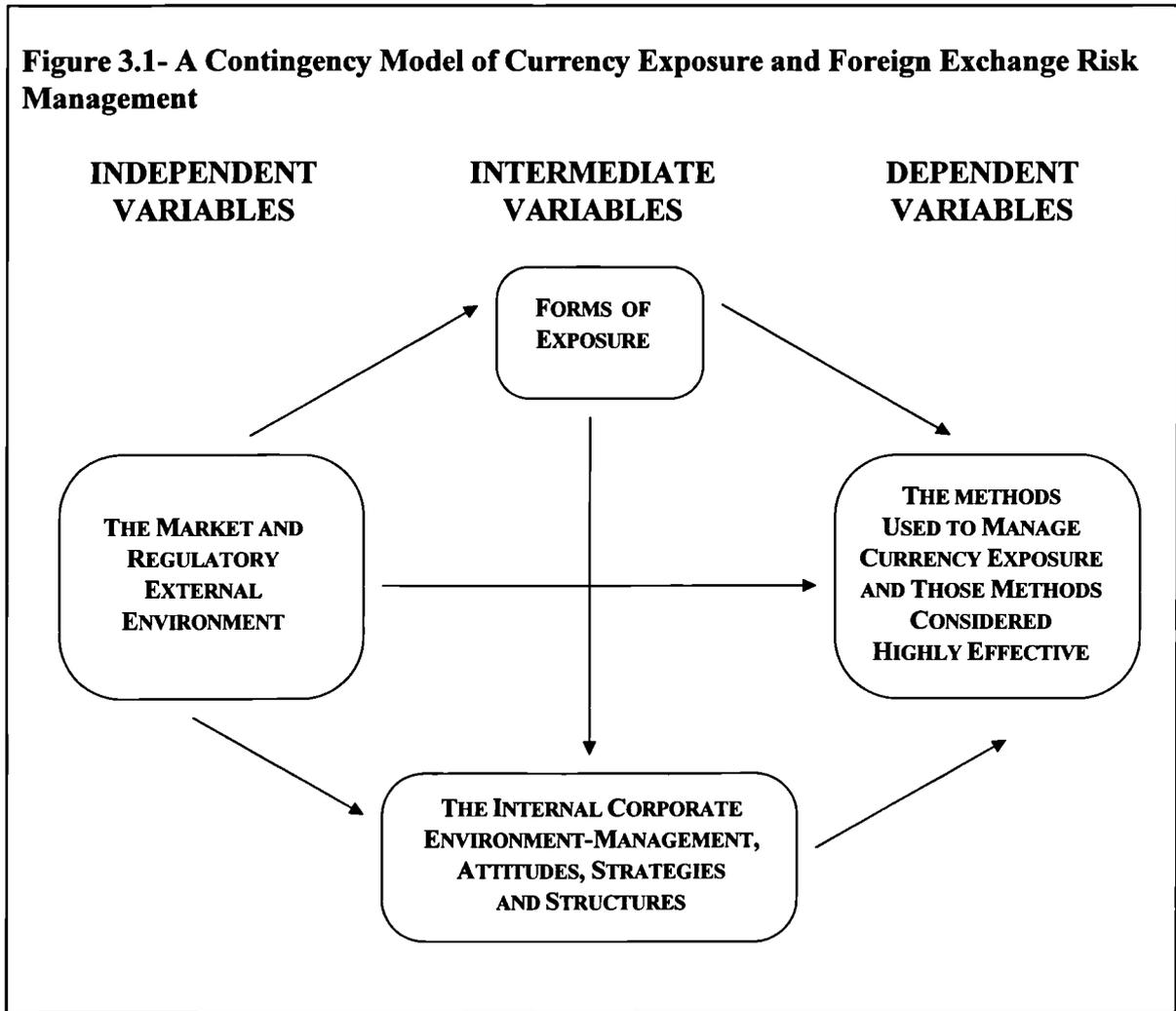
To summarise, external market and regulatory factors in the environment, external to the corporation, are the independent variables which a contingency model predicts will determine directly the dependent variables i.e. methods used to manage currency exposure. The model also predicts that the environment will influence indirectly the choice of methods used by determining the way in which currency exposure will impact the corporation; through the intermediate variables i.e. forms of exposure; and through the internal environment of the firm and its impact on the way the corporation organises to manage its exposure.

The model adopted and developed in this thesis is a very restricted one. A number of variables measured in the course of the research are not included in the model. A number of variables have been omitted which relate to a variety of organisational features other than the management of currency exposure. Introducing unnecessary complexity into an already complex issue could obscure identification of underlying contingent relationships.

The model has also been restricted in the sense that the existence of feedback loops is ignored. This is not to deny that feedback exists or that influences are bi-directional in practice. However, as the scope of a thesis faces externally imposed limits it is judged necessary to impose this restriction.

The model is set out in pictorial form below:

**Figure 3.1- A Contingency Model of Currency Exposure and Foreign Exchange Risk Management**



### 3.3 The Variables Used in the Model

#### The Dependent Variables - Methods Used to Manage Currency Exposure and Methods Considered Highly Effective

As the literature makes clear and interviews with executives tasked with managing currency exposure confirm, there are many ways managers respond to their currency exposure. It is also apparent that what may seem to be a method to one executive or academic may be classified as a variant by another. For example, is an option-on-an-option a discrete method or is it a variant of an option and should all methods which allow an option to be exercised be classified as one method? Any quantification of the ways managers deal with their currency exposure must resolve this issue of classification. Furthermore, if the search for a logical classification system is unsuccessful no alternative to an arbitrary system remains.

In the research reported here the conventional way of classifying ways of dealing with currency exposure was taken as a starting point and from it a framework was derived with logical appeal. Accordingly, all the ways of managing currency exposure identified in the literature and in surveys of practice have been drawn together and decisions taken as to what constitutes a discrete method and what a variant. A list of forty-five methods was derived.

Some methods are commonly referred to as financial instruments or hedging devices. These include spot market transactions, forward and futures contracts, swaps, collars, parallel loans, inconvertibility and other forms of export insurance. Proportional hedging of risk though associated with a number of financial instruments is also identified separately as a distinct method of managing exposure due to its prominence.

Other methods are designed to impact directly on the operations of a corporation. Some directly influence corporate cash flows, for example leading or lagging payments and receipts; speeding up or delaying purchases and sales; and judicious timing of dividend remittances. Others impact corporate cash flows indirectly by influencing the domestic currency value of the cash flow. Examples of such methods include the use in contracts of indexation; pricing by reference to a basket of currencies or a stable currency; the use of international transfer pricing; switching to a different currency of price; and introducing and including in the price an amount which reflects the risk of exposure. Other operational devices or techniques insure that operating cash inflows and outflows are balanced and netted out before other methods are employed.

Other methods can be classified as reflecting the way managers organise to deal with their exposures. Measures may be taken, for example, to centralise the treasury function in order to obtain an overview of currency exposure throughout a group of companies or use may be made of re-invoicing centres and bank clearing intergroup cash flow systems. Measures such as currency sensitivity analysis in planning may also be employed.

A final category of ways of managing currency exposure may loosely be described as strategic methods. This comprises measures which determine in which countries the corporation sources its inputs and sells its outputs and where it locates its assets and

liabilities. These methods include selective subcontracting; selective overseas plant location; matching competitor sources; undertaking productivity improvement programmes; ceasing to source from countries with strong or strengthening currencies and moving into those with weak or weakening ones. They also include shifting to markets in strong or strengthening currency countries and out of those with weak and weakening currencies; undertaking product differentiation and promotional programmes; matching competitor markets and seeking the help of others in the supply chain to reduce exposure.

Strategic methods further include selecting assets in currencies with a low level of correlation; the acquisition and/or disposal of businesses; obtaining local currency denominated debt; more general matching of assets and income with liabilities and expenses in the same currency; and matching expenses with capital liabilities, and revenues with capital assets, in low correlation currencies. Strategic methods include the use of fiscal and royalty schemes and invoking government assistance.

No consensus exists on how methods should be classified. The taxonomy of ways managers use to manage their currency exposure employed in the research reported here, like those employed by others to which attention has been drawn in the literature review, is to some extent arbitrary. However, since different groups of methods are only distinguished to simplify analysis, the consequences for this research are not severe.

Of greater concern is the issue of definition and quantification of use and effectiveness of these methods as seen by corporations. Definition of the term use presents little difficulty in the context of whether a corporation does or does not employ a method. Quantification of use presents greater difficulty. In this research only those methods used by more than a minimum proportion of corporations surveyed are included in the model. Indications of frequency of usage of a method do not necessarily measure the importance of usage. Other surveys of currency exposure management, none of which attempt to define use, implicitly equate frequency of usage with importance of usage. Neither practice is an entirely satisfactory measure of extent of use. Confidence in the measure used can be increased by comparisons of the results of surveys using these different measures.

Both defining and quantifying effectiveness is problematic. Again, other surveys of currency exposure management do not address the issue. In this research, effectiveness of a method measures the ability of the method to achieve the purpose for which it is used. If it achieves that purpose completely its effectiveness needs no qualification. In practice, judging whether employment of a method achieves the purpose for which it is used is an evidential issue, given subjectivity of purpose and attribution of causality. These methodological issues are examined later in this and subsequent chapters. A taxonomy of methods is set out below:

<b>METHODS USED BY CORPORATIONS SURVEYED TO MANAGE CURRENCY EXPOSURE</b>			
<b>FINANCIAL INSTRUMENTS</b>	<b>OPERATIONAL TECHNIQUES</b>	<b>ORGANISATIONAL MEASURES</b>	<b>STRATEGIC METHODS</b>
<b>individual instruments</b>	<b>individual techniques</b>	<b>individual measures</b>	<b>individual methods</b>

### **The Intermediate Variables**

Two groups of intermediate variables are identified. The first group are defined as the ways a corporation is affected by currency exposure, referred to for convenience in the thesis as forms of exposure. The second group are variables which measure the environment internal to the corporation. Each group is now considered in turn.

### **Forms of Exposure**

The first group are the ways in which a corporation is impacted by currency exposure. Measurement of this impact requires its quantification. In the context of currency exposure this means calculating changes in the value of corporate cash flow and/or profits and changes in the value of assets and liabilities expressed in the currency in which the corporation accounts.

It is clear that asking managers to quantify the different ways a company will be impacted **in the future** by nominal and real exchange rate changes which have either already taken place or may occur in the future is to ask managers to speculate on an almost infinite number of alternative outcomes. Even though assessing a corporation's currency exposure is an ex-ante exercise involving the prediction of a range of outcomes, the complexity of what is involved suggests that actual assessments of exposure are largely based on extrapolations ex-post of how exchange rate changes have impacted the business in the past. In other words, managers like punters assess future form from past form.

Looking back at the way in which exchange rate changes have impacted a business in the recent past is a much easier task. In doing so the manager can compare the impact of actual exchange rates with those forecast or perhaps budgeted at the outset of the period under review. In the strictest sense there can be no ex-post currency exposure since there can be neither risk after the event nor uncertainty about exchange rates. However, it is legitimate to look back to gauge exposure if the assumption that volatility of exchange rates is largely unchanging is made explicit.

Such a proxy is used in this thesis. What is put forward here is a taxonomy of the ways a corporation has been affected by the differences between actual exchange rates and best expected or budgeted exchange rates. The ways the business is affected are thus expressed as a set of exchange rate variances. This taxonomy is one based on management accounting principles which examine an expected or budgeted outcome and make comparisons with the actual outcome. The variances derived act as indicators of what the impact of currency exposure is likely to be in the future if the future pattern of exchange rate changes is little or no different to that experienced in the past.

The survey in this thesis measures currency exposure by using a surrogate budgeting device. Managers are asked how they are affected by currency fluctuations and how they have been affected in the past, **not** how they will be affected in the future. They are not asked to forecast exchange rates. They are looking back at the way exchange rate changes which have already occurred have affected them. Were they asked to forecast their economic

exposure they might well do so by extrapolation. Error will therefore result if the past pattern of exchange rate changes is not largely maintained.

The classification or taxonomy of exposures which is put forward here thus avoids a degree of complexity in quantification which would be required if managers were asked to assess the impact of the variability of future exchange rates on uncertain cash flows, as distinct from certain amounts of foreign currency denominated money.

Other recent surveys of currency “exposure” have all effectively compelled managers to look back at what has happened in the past as a guide to what is likely to happen in the future. This same process is carried out in this thesis. A taxonomy can be constructed based on variance analysis; the discreteness of different forms of “exposure” can then be tested by ensuring that each is computing a different variance. Srinivasulu (1981) said:

“Opportunity losses caused by an exchange rate change are difficult to compute. A good variance accounting [system] is needed to isolate the effect of exchange rate change on sales volume, costs and profit margins.” p 15.

The taxonomy put forward here owes much to taxonomies developed by others and in particular to the taxonomy developed by Donaldson (1987), which is described in the literature review, but it includes in it those elements which were observed to be absent. The taxonomy, set out below, draws on the literature to rationalise and illustrate the nature of the individual forms so distinguished and sets out the variances which need to be calculated. However, it makes no claims as to the ease of quantification of the impact of exchange rate changes or the accuracy of variances quantified by survey respondents.

## **Economic Exposures**

### ***A: Conventional Economic Exposures***

Four sets each of two forms of what are conventionally classified as economic exposure can be distinguished. These are respectively supply, value chain, revenue and competitive exposures. Each is considered in turn.

## ***1: Supply Exposures***

Cash outflows will include all expenses and purchases paid for, the quantity of items purchased multiplied by their price. Prices may be in local currency or foreign currency. If in the local currency exchange rate changes will alter the supplier's currency equivalent of the price. If the supplier seeks to compensate for this change, local currency prices will alter and new local currency prices of purchases will have to be substituted.

The first of these two forms of currency exposure are exposures which impact the cost of supplies to the corporation in terms of its domestic currency.

### ***1a: Local Currency Supply exposure***

The first of these exposures is exposure of the corporation to price changes of supplies priced in its local currency which reflect a devaluation or a revaluation of the local currency as the supplier attempts by pass-through to adjust prices and hence the margin on his or her own costs and revenues that are reckoned by reference to foreign currency. A corporation which believes that supplies priced in its own currency are unaffected by currency volatility because it does not recognise the origin of such supplies, compounds the problem.

There is little in the literature to suggest how thoroughly corporations track the origin and the foreign content of their inputs. The survey reported here set out to establish if corporate respondents could accurately specify the proportion of inputs not originating domestically. It was anticipated that considerable ignorance would be displayed. A supplier may be a domestic corporation but itself an importer faced with a strengthening currency in the country from which the imports are obtained. As this importer's own cost of supply increases, his margin will come under pressure unless his local currency sales prices are adjusted. This effect was charted in Business Week (1982) when an unexpected strengthening of the U.S. dollar impacted on the foreign currency prices of U.S. corporate customers, because these corporations expecting a weaker dollar had not considered hedging. However, Koch, Rosensweig and Whitt (1988) have calculated that a permanent 10% decline in the dollar was ultimately followed by a consumer price index rise of 4.85%.

Golob (1988) notes that in the era of the falling dollar some importers switched to purchasing in U.S. dollars, though how higher dollar costs were avoided is not made clear. Also interesting is the practice of manufacturer and customer splitting the difference when currency exchange rate fluctuations are experienced. In the detailed interviews conducted for this research a British importer reported that its Japanese supplier adjusted sterling prices according to a formula to share the burden when the Yen strengthened or weakened: see also Shapiro (1992).

Local Currency Supply impact is quantified as follows:

Ex-post the local currency supply impact = (the budgeted amount of local currency denominated purchases x the budgeted local currency price) - (the actual amount of local currency denominated purchases x the exchange rate adjusted local currency price.)

The remainder of the purchases the company makes will be at prices denominated in foreign currencies. Here the manager will need to adjust the foreign currency price for the exchange rate changed domestic equivalent.

***1b: Foreign Currency Supply exposure (Supply Margin exposure).***

The second supply exposure is to supplies priced in a foreign currency, where the foreign currency price does not change. However, the cost to the corporation of that foreign currency in terms of its domestic currency does change as a result of a devaluation or a revaluation of the domestic currency. For example, the exposure of Cordis Brent Inc (Canada) which purchases its inputs in the U.S. market and sells them in the Canadian market was reported in InterMarket (1986). The devaluing Canadian dollar resulted in Cordis Brent having to pay more Canadian dollars for its unchanged U.S. dollar priced inputs.

It is less likely that a corporation will fail to identify the cause of price changes consequent upon currency volatility when those prices are denominated in a foreign currency and the price has changed because a different amount of the domestic currency is now needed to buy that foreign currency. For instance, some disadvantage from a strong U.S. dollar was

reported by Business Week (1986) citing that accruing to customers of Bendix Corporation. As the currency of determination in the aircraft industry is \$ U.S., Bendix naturally denominates the prices of its aircraft parts in U.S. dollars. Bendix benefits at the expense of these foreign customers who have no alternative source for these “essential” products.

Supply Margin impact is quantified as follows:

Ex-post the foreign currency priced purchases impact = (the budgeted amount of foreign currency denominated purchases x the domestic currency budgeted equivalent foreign currency price) - (the actual amount of foreign currency priced purchases x the domestic currency equivalent of exchange rate change adjusted foreign currency prices.)

Both the volume purchased and the price paid may diverge from budget here.

## ***2: Value Chain Exposures***

Two forms of value chain exposure can be identified. One is to those firms earlier in the corporate value chain, the other to firms later in the chain situated between the corporation and the final customer.

Purchases and sales may be affected by value chain effects. On the purchase side, for example, the amount purchased and the domestic currency equivalent price may alter from budget consequent upon the impact of action taken by those in the supply chain affected by exchange rate changes which alter the situation of a direct supplier. In the sense that the direct supplier passes on this effect it is an element of local currency priced and foreign currency priced supply exposures that needs to be distinguished.

### ***2a: Supply Chain exposure***

The first of these economic exposures is the exposure of direct suppliers of the corporation to that corporation's indirect suppliers, that is suppliers to the direct supplier including all those in the supply chain of the direct supplier to the corporation. The exposure of the latter may or may not result in an attempt by them to shift the consequences of this exposure onto

the corporation's direct supplier and from there onto the corporation itself. This form of exposure has not been identified elsewhere in the literature but has been recognised in the context of the value added concept of business or supply chain concept, popularised by Porter (1980).

In essence, the concept recognises that the corporation is one link in the chain of supply to the final consumer and may be affected by anything impacting upon any of the other links. The relationship among economic actors is thus more complex than that often portrayed in classical economics. Moreover, as Drucker (1989) described, business has been shifting from a multinational to a transnational basis with design, manufacture and assembly taking place in different countries shaped and driven by the force of money flows that have their own dynamic. The growth of international intra-industry trade charted by Ruggie (1982) may be one response to this exposure. International diversification may itself also be a response to currency exposure and, as Vest (1979) argued, spreads overseas exposures among several nations thereby reducing the effects of currency changes. This strategy works on the assumption that the relative strengths of different currencies involved are not correlated.

Nevertheless, the impact of currency volatility on international trade flows may not have been substantially blunted by these changes. Koray and Lastrapes (1989) found that the impact of volatility on imports increased over time as world trade has gone from a period of relatively fixed currency exchange rates to one of flexible exchange rates. Although they saw its effect on imports to be weak, increased volatility has had a tendency to depress imports. Corporations seeking greater control may have been tempted to pursue vertical integration across national borders, both backwards to control supplies and forwards to increase control over markets. Williamson (1975) has identified internalisation as a transaction cost effect. It is relevant in this context to chart the extent of intra-company international trade flows. This effect can impact volumes and prices.

Supply Chain impact is calculated as follows:

Ex-post the supply chain impact = (budgeted supplier pass-through volume x the budgeted supplier local currency equivalent pass-through price effect) - (the actual supplier volume pass-through effect x the actual supplier price pass-through effect.)

### ***2b: Demand Chain exposure***

As a corollary, there is an exposure experienced by those further down the supply chain, the direct customers of the corporation and all indirect customers, the customers of customers, but it does not arise as a direct consequence of action taken by the corporation itself. Such exposure should be termed demand chain exposure but the term demand chain remains to be popularised and this exposure may be classified as a chain exposure or, seen from the perspective of the final customer, as a general supply chain exposure.

The exposure of customers may or may not result in attempts by customers to shift the consequences of their exposure back up the supply chain onto the corporation, but the consequence to demand for their products and services can have a knock-on, (knock-back would be more appropriate), effect on the corporation. If, as Lessard and Lightstone (1986) observe, the measurement of operating exposure demands an understanding of the structure of the markets in which a company obtains its inputs and sells its products, this is true by extension of the markets of indirect suppliers and indirect customers, notwithstanding the genuine difficulties of charting the many such links.

Demand Chain impact is calculated as follows:

The ex-post demand chain impact = (the budgeted volume of business generated by indirect customers x the domestic price equivalent at budgeted exchange rates) - (the actual volume of business generated by indirect customers x the domestic price equivalent at actual exchange rates.)

### ***3: Revenue Exposures***

Cash inflows will include all revenues and sales paid for, the quantity of items sold multiplied by their price. Prices may be in local currency or foreign currency. The local

currency priced transaction finds its equivalent in an Elasticity of Demand exposure, the foreign currency priced transaction in the Sales Margin exposure.

For every de facto supplier there is a customer and the supplier can be exposed to the consequence of currency impacted prices on customer demand. The next forms of exposure shift attention from input costs to output prices.

### *3a: Elasticity of Demand exposure.*

The first of these revenue exposures is the exposure of the corporation to changes in its revenues resulting from a change in demand. Buckley (1987a) has observed that the first step in foreign exchange risk management is to identify what items and amounts a firm has exposed to risk associated with changes in exchange rates. Adding that economic risk is also referred to as a cash flow risk, he observes that assessing it necessarily involves a substantial amount of work on elasticities of demand in the face of price changes. This also requires, as Aliber (1978) has commented, the assessment of the future evolution of the corporation's markets. In newly established markets, demand is likely to be sensitive to unsettled prices. This price induced change in demand is to be distinguished from market share changes arising from competition, which are dealt with separately below.

The Bendix example is an appropriate one to re-examine in this context because the company has no competition for its aircraft spares. Its exposure is therefore only to the possibility that customers will simply be unable to afford its products and will be left with unserviceable aircraft. Elasticity of Demand exposure may occur where the corporation prices in its domestic currency but as a result of a devaluation or a revaluation the price in the customer's currency is altered. For instance, the demand of visiting tourists can be influenced by this form of exposure. As a consequence of this price change, depending on the price elasticity of demand, demand changes.

This exposure may also occur where the corporation prices in a foreign currency and the foreign currency price is adjusted for a devaluation or revaluation as the corporation seeks to maintain its margins. This price change impacts on foreign demand. Kaminarides and Ford (1988) who studied the impact of currency exposure on corporations in the American state

of Arkansas, for example, reported that demand for Arkansas products in foreign markets tended to be relatively elastic, and the volume of Arkansas exports was negatively affected by an increase in the price of exports. It was reported in Ad Forum in 1984 that the strength of the U.S. dollar would mean that foreign “marketers” able to drop their prices in U.S. dollar terms and still maintain local currency equivalent revenue would find American consumers receptive to their products. Some of these were products which had not been exported before and products previously considered specialty goods for which there was now a broader market. An increasing Europeanisation of taste was also detected.

Less obviously, the demand from customers in the domestic market for products where the currency of determination is a foreign currency can also be affected. Petrol affords one example for British motorists facing \$ U.S. denominated petrol prices. As Lessard and Lightstone (1986) have identified, there is both a margin effect and a volume effect to economic exposure and the concern here is with the volume effect. Not that this form of exposure is easy to ascertain, as Choi (1986) observed describing his econometric model which considers the firm's economic exposure in terms of output and input demand elasticities.

Elasticity of Demand impact is calculated as follows:

Ex-post elasticity of demand impact = (the domestic price x customer demand (elicited at the pre- exchange rate change foreign equivalent of the domestic price)) - (domestic price x customer demand (elicited at the post- exchange rate change foreign equivalent of the domestic price)).

### ***3b: Demand Side Margin exposure.***

This exposure is the exposure to margin changes on foreign currency priced revenues resulting from a revaluation or devaluation. This is the second type of margin exposure encountered, that on costs has already been examined. Here, there is an assumption that the foreign currency price is not, or cannot be adjusted in line with the exchange rate change, such that the domestic currency revenue from the receipt of foreign currency will alter. The margin on foreign currency denominated sales, following a revaluation of that foreign

currency, will increase in terms of the domestic currency of the corporation. Incidentally, corporations which insist on selling in the domestic currency forfeit any opportunity for margin exposure gains, which according to Paulden (1977) are effortlessly acquired. Millman (1990b), however, shows how this strategy can increase vulnerability to a weakening foreign currency even though it helps to keep local prices from fluctuating. He extols the virtue of hedging with options to limit the vulnerability and still retain the opportunity should the foreign currency strengthen. Quoting in foreign currency permits corporations to take advantage of subsidised export insurance, particularly in developing countries, see Pilcher (1987). Exchange rate insurance was reported by Gordon (1992) to be worth 12% of sales for Israeli exporters in 1989.

Mexico's Industrias Penoles provides one example of the benefit which can accrue to corporate margins. A report in *Business Week* (1983) described how the world's largest refiner of newly mined silver had benefited from increased margins as a result of the devaluation of the Mexican peso against the U.S. dollar in which it received a majority of its revenues, because it exported to a world silver market with a U.S. dollar currency of determination.

Many companies experience margin exposure on both costs and revenues simultaneously. If the domestic currency appreciates against the currency in which it purchases and depreciates against the currency in which it sells, clearly its margin will increase in two directions. Alternatively, if the domestic currency devalues against the currency of its costs but revalues against the currency of its revenues, margins will come under pressure from both directions. However, if the foreign currency of costs and revenues are both the same or are correlated, margin losses from a devaluation against the currency of cost may be offset against the margin gains from the devaluation against the currency of its sales. Similarly, losses from any revaluation against the currency of sale can be offset against gains from revaluation against the currency of costs. Seeking such a balance may be the only effective solution for the corporation with the bulk of its costs in one currency and revenues in others. Ford Motor Co., by acquiring Jaguar, the British motor manufacturer, enabled the latter's sterling cost and U.S. dollar denominated revenue position to be somewhat better balanced by its own predominantly dollar cost and more modest sterling revenue position.

Alternatively, the benefit secured from a reduction in the cost of imported inputs due to a revaluation of the domestic currency can be used to subsidize a margin reduction as exporters maintain, or even reduce, their foreign currency denominated prices which have weakened in terms of their domestic currency. Mervosh (1979) has noted Swiss and German companies passing through the benefits of cheaper raw material costs, particularly oil, as their currencies appreciated. Japanese companies experiencing strong Yen revaluation against currencies of markets in which they operate have sought to mitigate this margin exposure by purchasing from South East Asian countries with currencies weak or weakening against the Yen. This allows their input margins to increase as effective Yen costs fall to make up for output margin losses as sales prices fall in Yen terms. To the extent that Japanese corporations have been able to source offshore, they could act to avoid a squeeze on margins. The amount of local currency value-added is consequently usually a significant measure of a corporation's propensity to be affected by this form of exposure. Japanese companies with high local value added have suffered disproportionately in periods of Yen revaluation. Conversely, corporations which have high value added in depreciating local currencies have benefitted.

Demand Side Margin impact is calculated as follows:

Ex-post demand side margin impact = (the domestic price equivalent of the pre-exchange rate change foreign currency price - the domestic price equivalent of the post-exchange rate change foreign currency price) x volume of sales.

#### ***4: Competitive Exposures***

Purchases and sales may also be affected by competitive effects. The final two forms of conventional economic exposure arise as a result of competitive activity. These are exposure to supply side competition and demand side competition respectively. Lessard and Lightstone (1986) as noted earlier, have stressed that a corporation does not need to have any foreign operations to have currency exposure. It just needs foreign competition in its domestic market. Nevertheless, the founder of a firm that designs technical models and exposure management strategies could still inform InterMarket (1989) that there could be no

foreign exchange exposure for a U.S. company that reports in no currency other than dollars and has no sales in other than dollars. Ironically, however, Aliber interviewed by the same publication that same year, InterMarket (1989), stressed that a corporation must find out how its competitors headquartered abroad are likely to expand and grow relative to the growth of its domestic competitors.

The common belief of corporations as domestic operators that they are not exposed is, indeed, paralleled by definitions of exposure which ignore any competitive exposure. Hekman (1983), for instance, identifies only two basic components to economic exposure: financial exposure and natural exposure. To measure financial exposure, she says, one must look at the extent to which financial hedges, such as debt service on foreign currency debt and forward foreign exchange contracts, reduce foreign exchange exposure. This calculation can be made from the data available in financial statements. Natural exposure in contrast, she says, depends on the extent to which a devaluation is commensurate with foreign relative inflation as well as the extent to which net foreign currency cash flows can be adjusted to inflation. No mention is made of competitive effects even though these are a direct consequence of the failure of purchasing power parity to hold. Nevertheless, in some markets domestic companies may enjoy substantial protection from competition, see Millman (1990a).

Crawford (1982) has emphasised that fluctuations in international competitiveness, manifest in a change in relative prices, can occur even if nominal exchange rates do not change. Real exchange rates will have changed, even if these real changes are different for specific markets, industries and companies. Subsequent adjustment of nominal exchange rates will only restore the status quo ante in so far as the nominal changes compensate for inflation.

Luehrman (1990) has modelled the exposure of operating cash flows to an exogenous exchange rate change for a firm operating internationally as a multimarket oligopolist or global competitor facing demand that depends in a general way on exchange rates. The model itself is a simple bimarket duopoly in which an exogenous exchange rate shock has both direct and indirect effects on firm value. In it he found exposure to be the sum of a base case exposure identified in other studies with a further two components: terms associated

with exchange rate induced demand shifts and terms associated with competitors' re-optimisation following the exchange rate shock. Luehrman has calculated the magnitudes of these additional terms to be generally significant, particularly in the presence of asymmetries across markets and firms. Empirical support for this is provided by Froot and Klemperer (1989) who, in investigating the pass-through from exchange rates to import prices, calculated that foreign firms price more aggressively when an exchange rate adjustment is expected to be permanent.

#### ***4a: Competitive Supply exposure***

This form of competitive exposure relates to competition on the purchasing or expense side of the business. A corporation is exposed to changes in its market share which result from having a different currency profile of costs from that of its competitors. Exchange rate changes alter the costs of the corporation relative to the competition. These are cost changes which the corporation cannot or does not absorb or treat as a margin exposure. The price adjustment it is compelled to make may result in a change in its market share. One article which appeared in Forbes Magazine (1978) alleged that too many economic experts had claimed that higher import prices had had little impact. However, it pointed out that Japanese car sales had dropped from 14% to 9% of total vehicle sales due to their high relative Yen costs. These costs had necessitated increases in Japanese car prices making them less competitive. As another example, the relative success of American and British chemical companies has been alleged to fluctuate in line with the U.S. dollar/sterling exchange rate. As the dollar strengthens against sterling, the dollar costs of the American companies make them less competitive than their British counterparts with sterling costs. As it weakens the reverse effect has been observed and an increase in profits of the U.S. firms has been documented, [see Chemical Week (1978)]. Stopford (1986), who examined this phenomenon in the UK paper industry has observed,

“Thus solely due to the over-valuation of the currency in the Autumn of 1982, the UK costs rose 14% higher than the German costs. When labour costs are, say, 18% of total costs and energy 17%, it is obvious that a 14% disadvantage between

two equally efficient mills is disastrous - no way can such a difference be eliminated by reducing, for example, labour and/or energy costs.” Exhibit 4 (p10).

The impact of Competitive Supply exposure which is also examined by Kogut (1985) and Yip (1992) is calculated as follows:

Ex-post competitive supply impact = (budgeted competition related volume of supply x budgeted competition influenced local currency equivalent denominated prices) - (actual competition related volume of supply x actual competition influenced local currency equivalent denominated prices.)

#### ***4b: Competitive Demand exposure***

The second form of competitive exposure occurs when a corporation has a currency profile of sales different from that of its competitors. Exchange rate changes produce price realignments which may alter the corporation's market share, either increasing it or reducing it.

Disadvantage or advantage may result either because a corporation prices in a currency different from competitors operating in the same markets or because its scale of operations differs from that of the competition in particular markets, even though it prices in those markets in the same currency as its competitors.

What is important here is the customer's perception of the price in particular markets. Two competitors may operate out of the same country but, if they price in different currencies, currency volatility will alter their price competitiveness. For this reason Piercy (1983) drew attention to the invoice currency decision as a vital aspect of international pricing. Competitive advantage may well accrue to the competitor pricing in a currency which weakens relative to the currency in which its competitors price. However, Lessard and Lightstone (1986) have also observed that market leaders usually have lower market exposure, which is true here in the sense that the market leader may be able to dictate the currency in which its competitors price.

In contrast, the strengthening of a currency may increase demand from a market in which one competitor is stronger than another or in which one competitor operates and the other does not and which allows that competitor to realise a sales advantage. That advantage can be used to cross-subsidise sales in other markets in which there is active competition. The weakening of a currency in which a business operates may conversely put that business at a competitive disadvantage to a competitor who does not operate in that market. It is such circumstances that may have led Lessard and Lightstone (1986) to qualify their observation that market leaders will have lower market exposure, by saying that this is only usually the case. The exposure to a change in competitiveness of not operating in markets in which the competition operates, or being in markets the competitor does not operate in, is thereby underlined. The competitive advantage of companies which are able to operate in strong-currency protected domestic markets is clear as Hamel and Prahalad (1985) argue.

To manage competitive exposures, Perkins (1982) has recommended that multinationals and exporting companies operating in a strong domestic currency environment, make a number of adjustments to their international strategies when exporting. These include: billing in foreign currency, matching with foreign borrowing and, if matching is not possible, selectively hedging the net difference. When importing, he recommends that they: renegotiate existing local currency priced supply contracts to secure a lower price; contract new liabilities in the local currency; and attempt to borrow local currency to finance the imports at lower interest rate costs. However, such action will not address all competitive exposure. Saudagaran and Black (1990) deceive themselves when they say that economic exposure, which can affect the competitiveness of a company across markets, can be minimized by using simple hedging techniques to lock in a sales or purchase transaction at a predetermined exchange rate. Hedging can be achieved at a cost but if the competitors do not hedge and exchange rates move in a favourable direction, they will sustain a competitive advantage. In this sense, having a certain price does not guarantee a competitive price.

Competitive Demand impact is calculated as follows:

The ex-post competitive demand impact = (budgeted competition related volume of demand x budgeted competition influenced local currency equivalent denominated prices) - (actual

competition related volume of demand x actual competition influenced local currency equivalent denominated prices.)

### ***5: Quasi-Economic Exposures***

Two forms of what is conventionally classified as quasi-economic exposure can be distinguished. These are quasi-economic because there is a quasi-contractual situation or a contract exists but does not specify its elements to enable the contractual amount or timing of payment to be calculated with certainty. Each is considered in turn.

#### ***5a: Long-term Contract exposure***

Long-term contracts could be construed as a series of transaction exposures. However, the contractual amounts payable are a function of the uncertainty as to when a particular stage in the contract is reached. The amount payable may itself be a function of that uncertainty. For this reason long-term contractual exposure has been distinguished and is also identified separately in this thesis. Kumar (1978) examined the effects of fluctuating currency rates on an international construction project and found that exchange risk could dramatically affect its profitability. He observed that a commonly adopted solution was a minimization of the risks by hedging.

Long-term Contract impact is defined as follows:

Long-term contractual impact = (the budgeted purchase or sales volume of long-term contractual type transactions x the budgeted local currency or local currency equivalent price) - (actual purchase or sales volume of long-term contractual type transactions x the actual local equivalent or local currency price.)

#### ***5b: Quasi-contractual exposure***

Quasi-contractual exposure arises because the corporation may be bound to a contract by the decision of another party and not by any further decision on its own part. For example, the corporation can be involved in a tendering situation in which it is bound to a contract if its

tender is accepted. Kenyon (1981) has examined this exposure. A corporation may also be bound by its own published price lists and be exposed to exchange rate changes which occur on orders contracted before such lists are updated. This exposure is distinguished from the sticky price exposure identified by Walsh (1986) where stickiness is related to corporate policy. Lord (1983) advocated estimation of future spot rates, analysis of forward rates and required minimum exchange rates for achievement of desired margins. A premium in the price for incurring the exposure or for hedging it might be justifiable.

In 1991 Professor Stonehill informed this writer that he had recently researched currency exposure of Danish companies and found price list exposure highly significant. This work is as yet unpublished. Quasi- and pre-contractual exposures normally generate vulnerability. A corporation not required to enter into quasi- and pre-contractual situations of this sort may avoid being disadvantaged. The benefits of this exposure, when they do not accrue as competitive advantage as in the case of price lists are considered too elusive to be accurately quantified in a survey of this nature and have, accordingly, been ignored.

Quasi-Contractual impact is defined as follows:

The ex-post quasi-contractual impact = (the budgeted purchase or sales volume of quasi-contractual transactions x the budgeted local currency or local currency equivalent price) - (actual purchase or sales volume of quasi-contractual transactions x the actual local equivalent or local currency price.)

### ***B: Currency exposure which can be Classified as Economic Exposure***

#### ***1: Transaction Exposure***

Davis (1986) defined two types of foreign exchange exposure: economic exposure and accounting exposure. The latter, he said, appeared on the balance sheet, was quantifiable and came in the form of either translation exposure or transaction exposure. However, a transaction exposure may never appear on a balance sheet if the transaction is completed between two balance sheet dates. Only when a company draws up a balance sheet daily as

the Black and Decker Corporation did at one period are transaction exposures always accounting exposures.

Until recently currency exposure has often been articulated in terms of translation and transaction exposure only. For instance, Kemp (1984) chooses to see currency exposure in this way, despite noting that multinationals have been forced to survive in a competitive environment made increasingly uncertain by the volatility of exchange rates since the Bretton Woods system of fixed exchange rates was rejected.

This thesis has also accepted transaction exposure as a distinct element of corporate currency exposure, defined as exposure to sums of foreign currency a corporation is legally contracted to pay or receive, which include not only trade payables and receivables, but also debt service and redemption. Transaction exposures can be outstanding for long periods of time. If the amount of a transaction exposure is known, the timing of payment may not be. Payments can be delayed even if delays cause breach of contract. The time of payment of contractual transactions may be less predictable than future transactions occurring in the normal course of a corporation's business which have not yet been ordered in the contractual sense. Transaction exposure is often considered indistinguishable from economic exposure when only two categories of exposures are distinguished e.g. accounting as distinct from economic. Transaction exposure is also said to exist if a corporation holds foreign currency deposits or cash and an exposure exists until these deposits or funds are disposed of for domestic currency or for value.

Despite the finding of the majority of surveys that corporations devote more attention to managing transaction exposure than any other exposure, and sometimes than all other exposures added together, it attracts relatively modest attention in the literature beyond being defined. Perhaps this reflects the fact that, as Bradford (1976) observed, individual transaction exposures can be fairly easily measured. But it is more inexplicable to see currency exposure continue to be defined so narrowly. Bennett and Vaughan (1990) say that a company's currency risk can be identified in terms of an exposure cycle. The cycle begins when a foreign transaction is budgeted and ends when domestic cash is paid out or foreign currency is collected and converted. Then the exposure is usually seen as an exposure of

trading receivables and payables. Only occasionally is exposure of interest payments or receipts or the redemption of principal featured, see for instance, Marchand (1989) and Laughlin (1990). With some long-term transaction exposures stemming directly from long-term investment projects which predicate the relevant markets and competition, the link with economic exposure, particularly of off balance sheet items, needs to be stressed.

Transaction risk is occasionally divided into trading risk, for example risk relating to debtors and creditors and non-trading risk, for example, risk relating to foreign currency denominated debt service and redemption. This distinction was not seen as important enough to warrant it being made in this taxonomy.

Transaction impact is defined as follows:

Ex-post transaction impact = (contracted for foreign currency denominated future cash flows + current foreign currency cash balances) x (the exchange rate at contract or current date - the exchange rate experienced on date of conversion.)

### ***C: Currency Exposures which are not Economic Exposures***

#### ***1: Translation Exposure***

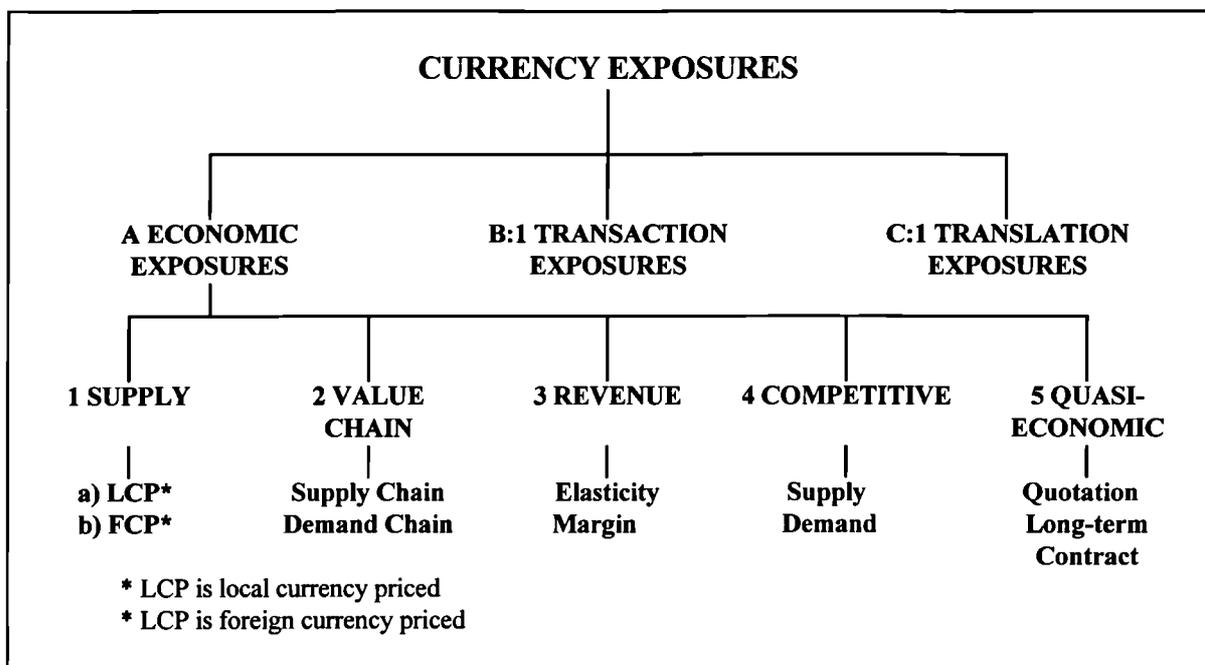
Translation exposure is strictly an accounting exposure which only arises for a corporation with foreign currency denominated assets and liabilities at its accounting date and with foreign currency revenues and expenses in its accounting period. The value of net assets and profits is affected by differences in the exchange rates employed to translate different assets and liabilities and different exchange rates relevant to the timing of transactions during the accounting period which affect the value at which they are translated. There is thus a balance sheet and an income statement element to translation exposure. In practice, these two elements are linked in the same way that balance sheet and income statement are inextricably linked. Conceptually it is possible to separate them but this taxonomy does not do so on due to the practical difficulties involved.

Translation impact is defined as follows:

Ex-post translation impact = the sum of (the actual volume of foreign currency denominated revenues and expenses x (domestic currency equivalent prices at budgeted exchange rates - domestic currency equivalent prices at actual exchange rates)) and the actual value of foreign currency valued assets and liabilities x (budgeted exchange rate at the balance sheet date - actual exchange rate at the balance sheet date.)

### Summary of the Forms of Exposure

A Summary of the hierarchy of exposures outlined above is set out below:



### Forms of Exposure in the Model

The way currency exposure affects corporations is measured by two sets of variables. One set recognises that variances can be favourable. These are forms of exposure which generate advantage. The other set are forms of exposure which are disadvantageous and are negative variances. These are termed forms which generate vulnerability. The distinction between vulnerability and advantage is made because positive and negative impacts may not be symmetrical. One form of exposure which generates vulnerability, namely precontractual exposure to foreign currency quotations, does not have a counterpart which generates advantage where no option is required to hedge a situation in which there is no

precontractual exposure to foreign currency quotations and flexibility in pricing strategy remains.

A summary of the twelve forms of vulnerability to currency exposure and eleven forms of advantage accruing from it and their abbreviated identifiers are set out below. These are shown in the way and in the order in which they have been listed in the survey questionnaire. The need for user friendliness and limitations of space in the survey questionnaire dictated that these descriptions of the exposures identified involved some simplification. They are described in the survey questionnaire as follows:

### **Forms of Currency Exposure that Generate Vulnerability**

Failure of suppliers or those supplying them to tackle their own vulnerability.  
(Supply Chain)

Price rise of imported purchases (priced in local currency) due to local devaluations.  
(Local Currency Priced)

Price rise of imported and local purchases (priced in foreign currency) due to local devaluations. (Foreign Currency Priced)

Currency induced price change reducing customer demand (local currency priced sales affected by revaluation or foreign currency priced sales where prices have been adjusted as a consequence of local/foreign currency exchange rate movements). (Elasticity of Demand)

Market share lost to competitors with less currency exposure as the competition does not have purchases in the same mix of currencies. (Competitive Supply)

Market share lost to competitors with less currency exposure as the competition does not have sales in the same mix of currencies. (Competitive Demand)

Loss of margin on sales (priced in foreign currency) after revaluation of own currency.  
(Demand Side Margin)

Those further down the supply chain fail to deal with their vulnerability. (Demand Chain)

The impact on the business of consolidating foreign currency assets and liabilities (and income and expenses), the translation exposure. (Translation)

The impact on the business of having exposure to foreign currency receivables (debtors) and/or payables (creditors), the transaction exposure. (Transaction)

Precontractual exposure to foreign currency quotations. (Quasi-Contractual)

The existence of long-term contracts with preset price structures. (Long-term Contract)

### **Forms of Currency Exposure that Provide Advantage**

Action by suppliers or those supplying them to reduce the impact of currency volatility on their customers. (Supply Chain)

Price reductions of imported purchases (priced in local currency) due to local revaluations. (Local Currency Priced)

Price reductions of imported and local purchases (priced in foreign currency) due to local revaluations. (Foreign Currency Priced)

Currency induced price change increasing customer demand (local currency priced sales affected by devaluation or foreign currency priced sales where prices have been adjusted to reflect local/foreign currency exchange rate movements). (Elasticity of Demand)

Market share gained from competitors with more currency exposure as the competition does not have purchases in the same mix of currencies. (Competitive Supply)

Market share gained from competitors as the competition does not have sales in the same mix of currencies. (Competitive Demand)

Gain of margin on sales (priced in foreign currency) after devaluation of own currency. (Demand Side Margin)

Those further down the supply chain taking steps to deal with their vulnerability. (Demand Chain)

The impact on the business of consolidating foreign currency assets and liabilities (including income and expenses), the translation exposure. (Translation)

The impact on the business of having exposure to foreign currency receivables (debtors) and/or payables (creditors), the transaction exposure. (Transaction)

The existence of long-term contracts with adjustable price structures. (Long-term Contract)

### **The Internal Corporate Environment**

The second group of intermediate variables are those which measure the environment internal to the corporation. Goold and Campbell (1987) highlight the way organisation theory recognises a wide range of variables which make up a working, functioning organisation. For example, Peters and Waterman (1982) classified these variables under the headings of strategy, structure, systems, staff, skills, style and shared values (the "7S" Model). The model used in this thesis borrows from this classification. It recognises three broad groups of variables internal to the organisation. One is strategy and the attitudes which mould it. Strategy includes a further two of the 7S's, style and shared values. A second is organisational structure, which combines two others, structure and systems; and a third is the management with its background and its experience, which includes the remaining two, staff and skills. This latter group includes experts, specialists and advisors under what might be described as the S of subcontracting. These three groups are distinguished from the variables which make up the external environment or the "S" of surroundings!

A comparison between the grouping of internal and external environmental variables used in the model in this thesis and both the Lessard and Nohria and Earl models, reviewed in the

previous chapter, reveals a pattern of thinking which has developed along similar lines. Lessard and Nohria (1990) have chosen to group environmental factors, market structure, business strategy and management together in one group; business structure encompasses their other two and Earl (1985) identifies similar groupings in his model.

In the model in this thesis, a number of variables relate to organisational structure. These measure how the corporation is structured to manage its currency exposure and whether it is adjusting that structure. They examine the degree to which different functional departments have responsibility for, involvement in and are consulted upon, currency related issues; whether this responsibility lies with subsidiaries or the parent company; in which currency the performance of companies and of managers is calculated; whether or not the process of managing currency exposure is under review; and the degree to which any international presence has been seen to facilitate currency exposure management.

The variables which relate to attitudes and strategy measure respondents' attitudes and their corporations' policies towards managing currency exposure and whether or not these are under review. The first of these policies relates to propensity to hedge all quantifiable exposures. A corporation prepared to identify with this policy is *prima facie* risk averse and a “locker” in Kenyon (1990) terminology. The second of the policies relates to the propensity to hedge fixed asset exposures where possible to complete the picture of the corporation's attitude to financial hedging. The third of the policies relates to the propensity of the corporation to balance its assets and liabilities in particular currencies. This measures attitudes within the corporation towards the practice of natural hedging. A corporation prepared to identify with this policy is *prima facie* a “smoother”. The last of the policies relates directly to the propensity of the corporation to smooth out the impact of currency influences on the corporation.

The variables which relate to the background of the managers of the corporation measure the source of the expertise used in managing currency matters and the significant influences on the way management deals with currency related issues. The sources of expertise which corporations are asked whether they use or not are: forecasting services; literature on the subject of currency exposure; courses on the same subject; staff trained as treasurers;

professionally qualified staff in business, accounting and/or finance; and management committees set up to manage currency exposure. The influences whose significance corporations are asked to evaluate are: experience of currency related issues; experience of the impact of currency volatility; training received on the subject of foreign exchange risk management; the treasury function; and expertise from outside the corporation.

### **The Independent Variables - The External Corporate Environment**

The recent trend towards recognition of macroeconomic exposures has already been remarked upon by Buckley (1992). However, designating the macroeconomy as a variable becomes impractical because its direct effects are difficult to measure, particularly when it is recognised that it is the world economy and not that of any one nation which is relevant in the context of currency exposure. For this reason regulatory and market structure are taken as a set of variables which include both macroeconomic and political forces mediating through markets. It is recognised, however, that there are secondary effects on markets, such as the general level of economic activity.

Four regulatory independent variables are contained in the model. The first of these measures the extent to which currency regulations are seriously restrictive; the second the extent to which market regulation hinders foreign exchange risk management; the third the extent to which market regulation reduces the impact of exchange rate changes; and the fourth measures the extent to which markets face tariffs and/or duties which are significant enough to link exposure to a particular currency.

A further eight variables measure features of a corporation's product-markets. The rationale for selecting these variables is based on the logical criteria by which a corporation is judged to be exposed to nominal and real exchange rate changes.

If the corporation is in markets in which it imports a significant proportion of its inputs, it is logically more exposed than it would be if the proportion of its imported inputs is negligible. One variable measures the proportion of inputs directly imported. The business will also be more exposed if it not only obtains its inputs from a local source but also purchases inputs which have been imported further back along the supply chain. A second

variable measures the proportion of inputs indirectly imported. A third and fourth variable measure outputs in exactly the same way. One measures the proportion of outputs directly exported and a second those indirectly exported.

A fifth and a sixth variable measure the extent to which a business is able to determine the currency in which it buys its inputs and sells its outputs respectively, on the logical grounds that the more discretion it has in its markets the less exposed it is likely to be. A seventh variable measures the degree to which the business faces foreign competition, since exchange rate changes can impact on the competitive position. Finally, an eighth variable measures the extent to which the business has overseas assets.

### **3.4 The Hypotheses**

Using a contingency model it is expected that the phenomenon of corporate currency exposure will be generated in the external environment. The ways it impacts the corporation will therefore be determined by the shape of the external environment. More specifically, changes in nominal and real exchange rates are expected to change the environment in which the corporation operates. How far they do so depends on the environment specific to each corporation. Each corporation faces a specific combination of regulatory and market environments and these determine the ways in which the corporation is impacted. The first hypothesis to be tested is therefore that:

**The forms of currency exposure to which a corporation is exposed are determined by the external environment. (Hypothesis 1)**

If those who manage corporate currency exposure are aware that corporate currency exposure is generated in the context of the corporation's external environment, it is logical to expect that they will manage their exposure in ways determined by the shape of the external environment. The second hypothesis is, therefore, that:

**The methods a company uses to manage corporate currency exposure are determined by the external environment. (Hypothesis 2)**

Those who manage currency exposure may be unable to see how the environment, in which the corporation operates, determines the shape of their currency exposure and the way they must manage it. Alternatively, it may be too much to ask of management that they understand how the external environment directly shapes corporate currency exposure so that they respond directly to macroeconomic indicators in dealing with their exposure. What managers are more likely to see are the ways the corporation is impacted by the phenomenon. More specifically, they are more likely to identify the ways in which changes in nominal and real exchange rates impact the corporation's cash flows, the domestic currency value of its foreign currency liabilities and its asset values. If they do identify them they will seek to address directly these impacts to try to influence them. The third hypothesis is, thus, that:

**The forms which currency exposure takes will determine the methods a company uses to manage it. (Hypothesis 3)**

Even if managers are not responding directly to the external environment as it shapes their corporate currency exposure, the external environment should impact upon the internal corporate environment. The shape of the corporation, the experiences of its managers and the attitudes and strategies they develop may be expected to be influenced by the nature of the markets and by the regulatory framework in which they operate. The fourth hypothesis is, then, that:

**The internal organisation of currency exposure management is determined by the external environment. (Hypothesis 4)**

Whether or not market and regulatory forces directly shape those parts of the corporation which may be expected to respond to the phenomenon, the ways in which the corporation is affected by the phenomenon should directly stimulate the structure of the corporation, the experiences of its managers, their attitudes to it and strategies to deal with it. The fifth hypothesis is, then, that:

**The forms which currency exposure takes will determine the organisation of currency exposure management within a corporation. (Hypothesis 5)**

Finally, the environment within the corporation, the way managers structure the business to deal with issues, their experience, their employment of resources and their objectives, may directly determine the methods they use to manage their currency exposure, in the same way as the environment influences the way they deal with other issues. Organisational and behavioural influences stimulate this effect. The sixth and final hypothesis is, therefore, that:

**The internal organisation of currency exposure management will determine the methods a company uses to manage its currency exposure. (Hypothesis 6)**

### **3.5 The Research Methodology**

#### **Introduction**

The review of the literature on corporate currency exposure has already demonstrated that theoretical contributions overwhelmingly outnumber surveys of the nature of this exposure and its management. Those who have conducted surveys have, in the main, purposely chosen to sample small numbers of multinational or international companies. Some of these surveys have been comparative studies of corporations having different domiciles, others have been confined to corporations with a single domicile. Few surveys have yet sought to provide a representative sample of a defined group of corporations, much less of corporations of a country as a whole. Many of the surveys have also been confined to limited aspects of the subject without intending to be comprehensive. Few survey have yet set out with the objective of analysing the determinants of corporate currency exposure and of foreign exchange risk management. To do so demands comprehensiveness and a taxonomy of how corporate currency exposure impacts the corporation which permits its component parts to be measured.

This research sets out to establish a taxonomy which permits measurement of and a comprehensive inquiry into corporate currency exposure and its management within the constraints of a doctoral thesis. The methodology employed is influenced by the methodologies of previous work in this field, their limitations and the limitations imposed by the subject matter. The following section documents the methodology used in developing

and interpreting this survey in the light of these limitations and places it in the context of the thesis as a whole.

### **Choice of a Research Design**

There are three principal ways to conduct research on the management of corporate currency exposure: first, personal observation of the operations of individual corporations; second, interviewing of managers to obtain both a personal assessment of currency exposure and the subjective views of management themselves; and third, administration of a postal questionnaire to managers in a sample of companies. Each of these methods has well established advantages and disadvantages.

Personal observation or ethnographic enquiry permits an in-depth assessment of the operations of the corporation investigated by the researcher and does not depend wholly on the subjective assessment and inevitable biases of managers. It does, however, depend on the perceptions of the researcher and the possibility that the latter will only gain partial access to the information needed. Certain phenomena are not easily observable and their analysis depends on the researcher being in the right places at the right times. This makes for a difficult task when the phenomenon being investigated is one involving many managers simultaneously.

Appropriate evidence may also be dispersed in the information system, requiring painstaking investigation. Case by case analysis of this type does not permit timely access to a large population of corporations or the generalisation of findings unless numerous researchers can be employed simultaneously. This format has usually been employed by managers setting out the way their own organisation deals with the subject. e.g. Fiedler (1992) at Eastman Kodak and Lighterness (1987) at Rio Tinto Zinc.

Reference can also be made to more general corporate case studies and other corporate archival data such as annual reports, but official corporate publications provide few references to currency exposure, with only modest statutory requirement to do so. Archival data can nevertheless be a useful supplemental source.

A second alternative is for the researcher to visit a number of corporations to interview managers, to observe as far as is possible management actions and enquire into procedures. The advantage of this approach is that the researcher can cross-examine managers interviewed, reducing the likelihood of misunderstanding on the part both of managers and of the researcher. A larger number of respondents can be included in the research design and unexpected insights can be obtained. Nevertheless, if the relevant population is a large one, it is unlikely that the sample obtained will be a representative one.

A number of interview surveys of this type have been carried out into corporate currency exposure and exposure management and all without exception have warned that the results cannot be assumed to be representative. Examples of this type of survey are those conducted by Belk and Glaum (1990) into the management of foreign exchange risk in seventeen UK multinationals and by Lessard and Nohria (1990), who set out to interview managers in between fifteen and twenty firms. This type of survey can in fact be combined with, and is often preliminary to, a larger scale postal survey, like that conducted by Lessard (1990).

The interview survey design was the one chosen for the preliminary work carried out in this thesis and involved the interviewing of at least two senior managers in each of fifteen different corporations. As the first stage of enquiry, this exercise was in part designed to obtain a broad understanding of the nature of corporate currency exposure and its management from which to develop a questionnaire sufficiently comprehensive to reflect all the issues uncovered at this stage.

The final alternative is the large scale postal questionnaire. This device has the advantage of permitting relatively rapid access to large numbers of corporations and facilitates access to a representative sample of the population targeted. The disadvantages of this research design are inflexibility in gathering information and the danger of misinterpretation by both managers and the researcher of the questions posed and the answers given respectively. Both these disadvantages are minimized in interview administered surveys by the use of follow-up questions and cross-examination. The combining of such surveys with large scale postal questionnaires can therefore strengthen the research design. The main empirical

enquiry in this thesis has, therefore, in its second stage, involved a postal survey designed to be representative of British corporations.

Only a small number of large scale surveys have been carried out. Among the more recent are those by Soenen and Aggarwal in 1989. Their comparative postal survey of cash and foreign exchange risk management encompassed fifty-six companies in Britain, one hundred and three in Holland and fifty-eight in Belgium. Another postal survey was carried out by Cezairli in 1987 who, as part of his doctoral research, surveyed foreign exchange exposure management in sixty-three Fortune 500 multinational corporations. Lessard's 1990 survey obtained one hundred and thirty five individual responses from managers in six different functional areas of forty-eight different large US multinational companies. None of these surveys, however, has made claims to be representative of the population sampled.

The results of a postal survey can be compared to the results of any available contemporary interview surveys and differences highlighted in a validation exercise. Fortuitously, it has been possible to compare the survey results of this thesis with those of the survey interviews conducted by Belk and Glaum (1990) on seventeen corporation, eleven of which participated in both surveys. Comparisons of the findings of the two surveys are reported in Belk and Edelshain (1993). Comparisons were also made with the findings of the Lessard 1990 survey through correspondence with the survey author.

As a further validation exercise, a full-day seminar was held at London Business School in June 1992 to which all survey respondents and selected academics and researchers in the field were invited. The occasion was used in part to check both how respondents had understood the questionnaire and to clarify ambiguities in their responses to it.

Finally, a number of corporations declining to complete the questionnaire have been contacted and interviews with senior managers of four of these were held to examine the nature of non-response and to ensure that lack of response would not reflect a lack of representativeness of the responding corporations.

## **The Detailed Research Design**

The research design chosen for the empirical investigation was a mix of interviews and a postal questionnaire. Interviewing was chosen to minimize the risk of misunderstandings and provide the depth of analysis not available from a postal questionnaire. It was also intended to help to ensure the latter contained the appropriate questions. The postal questionnaire was selected to enable the research to achieve representativeness.

A survey of the literature conducted from October 1988 through September 1989 provided this writer with the basis for a loosely structured questionnaire suitable for face-to-face interviews with corporate managers. The criteria for selecting the corporations to be approached for interview were: likelihood of experience of currency exposure; linked to this, diversity of operations undertaken by the corporation; and pragmatically, the probability of gaining access to the corporation concerned. A conscious effort was also made to include in the interview schedule several small corporations, but ones deemed likely to have experienced currency exposure.

In all fifteen corporations were visited and a number of executives were interviewed in each. A majority of the corporations were accessed through personal introductions and the remainder as a result of prior personal acquaintance. Some ten corporations declined to be interviewed in this phase, invariably pleading pressure of other work.

A draft questionnaire was used to provide a structure for the interviews whose semi-structured nature allowed managers to raise any issues they believed of relevance, thus facilitating the progressive refinement of the questionnaire. All the interviews were conducted with senior managers and access to the executive considered most responsible for currency matters was sought and invariably obtained. The individual was usually the treasurer in corporations large enough to have one, and otherwise was the chief financial officer or chief planning officer. Where possible the chief executive was interviewed to obtain a perspective on corporate policy, and in the seven cases where this was not possible another senior manager reporting to the chief executive was also seen. In all some 30 one-and-a-half to two hour interviews took place. Notes were taken of interviewee responses but

tape recording was not used due to a concern that frank discussion might otherwise be inhibited, particularly when matters of policy were being discussed. Prior written assurance of anonymity and complete confidentiality was given to all participating interviewees.

The interview phase was conducted in the autumn of 1989 and throughout 1990. Simultaneously, the information obtained was used to fashion a comprehensive postal questionnaire suitable for obtaining information on businesses whose diversity would reflect the British corporate sector. Design of the questionnaire was not completed until mid 1991. Previous survey questionnaires were used, where accessible, to help in the questionnaire design. Considerable time was needed to obtain access to senior executives in order to develop the questionnaire.

The objective of surveying a representative sample of the British corporate sector would be costly to achieve by sampling from the entire population of British corporations and in the context of doctoral research the cost would be prohibitive. It was decided to sample the largest British corporations by turnover, to examine as large a proportion of business activity as possible, and include in the research design tests of whether corporate size was a significant variable. The largest corporations operating in Britain, by size of turnover, are classified as the Times 1000 corporations and this group was selected as the sample population. These 1000 corporations each have turnover upwards of approximately £80 million in their accounting year ending in 1990, the most recent complete period prior to the survey. Somewhat over one third of these corporations are subsidiaries of corporations domiciled outside Britain and were excluded from the sample on the ground that their management could have a different currency perspective, thereby raising the issue of comparability. The issue of expense is also relevant in the context of the financially unsupported researcher.

A research design which required sending survey questionnaires overseas would also have dramatically increased the cost in comparison with that of a domestic large scale survey, particularly if visits to respondent corporations proved necessary. Just over six hundred of the Times 1000 are British domiciled corporations and the decision was taken to survey all

of them in order not to bias the sample by, for example, selecting only those believed to experience currency exposure.

Dependence on the uncorroborated subjective assessments of management entailed in postal surveys raises the question of the validity of data obtained. This is particularly the case when management opinions are solicited. There is also the danger that questioning only one individual will provide a response which suffers from limitations of knowledge and/or experience that would be revealed by obtaining a second or a number of responses from the same corporation. If a number of managers in a corporation are involved in currency exposure management it is reasonable to believe that the reliability of information can be confirmed by corroboration. Greater reliability can be obtained, therefore, by surveying more than one manager in each corporation. Managers from a number of different functions can be selected. A previous attempt to obtain multiple responses had met with failure. Broder (1984) had sent his survey to the finance, commercial, production and corporate planning functions in a total of one hundred and fifty companies. However, while he received forty-nine usable replies from the finance function he obtained no more than two replies from any of the others.

Severe data analysis difficulties result if only some functions in each corporation respond to the survey. There is also anecdotal evidence that if managers know that a number of their colleagues are being questioned on the same subject, their participation can be discouraged, reducing the number of responses that can be obtained. Some of these difficulties can be overcome by encouraging sole respondents to consult with colleagues when completing the questionnaire. Another course of action is to compare the responses to the survey with those of any surveys which have obtained multiple responses in order to highlight major differences.

Lessard (1990) was able, with considerable effort, to obtain an average of three responses from each of forty-eight different American corporations. He surveyed six functional areas responsible for: foreign exchange management, corporate planning, marketing/pricing, sourcing, plant siting and capacity utilization. Just under half of those he contacted responded.

In the event, the decision was taken to send the questionnaire to the head of the finance function in each corporation only, but a letter was also sent to the chief executive to encourage co-operation with the survey. Copies of the standard letter to the chief executive and to the head of the finance function are to be found in Appendices 1 and 2 respectively. Although the letter to finance directors did not suggest that the questionnaire be completed by the individual or department head responsible for foreign exchange risk management, the letter did address the issue of the location of this responsibility. In the event, only 37% of the respondents were the finance directors themselves, 40% were treasurers, 5% financial controllers, 5% company secretaries/foreign exchange managers, 4% directors or managing directors, 3% chairmen, 2% accountants and 2% project leaders.

Considerable difficulty was experienced in obtaining up-to-date names of the heads of the finance function in Times 1000 corporations. Numerous sources had to be examined, since for British corporations information on the identity of finance directors is not collated together in any single reference work. Given that the research was carried out in a period of economic recession, it was no surprise that a high turnover of personnel holding the position of head of the finance function was obtained. Data gathered on specific corporations from different sources all published in the preceding three years showed that approximately one in five of the corporations had experienced a change in finance director. This itself has some implication for the span of memory of corporate experience reported by some respondents and for the quality of responses to information sought on other than recent experience and practice.

The issue of validation was addressed by including in the questionnaire tests for consistency, which are explained in a later section. Limited validation was also afforded by comparing results with those of other available contemporary surveys. Belk and Glaum (1990) had independently carried out an in-depth interview survey of the management of foreign exchange risk in British multinationals, the majority of which also participated in this survey. Results were also compared with those of Soenen and Aggarwal, who surveyed fifty-six companies in Britain in 1989. The earlier surveys, for example, those of the British-North America Committee (1980), of Broder (1984) and of Walsh (1986) were also used to

make comparisons available. Surveys of practice outside Britain by Cezairli (1988), by Soenen and Aggarwal (1989) and by Lessard (1990) also offered some scope for validation.

A comparison of the findings of this survey and that of Belk and Glaum shows that the corporations the latter surveyed did not report as great an incidence of economic exposure. Otherwise no major inconsistencies were revealed, see Belk and Edelshain (1993). Taking into account that other surveys were not contemporaneous, sometimes addressed only multinationals and/or limited their scope to translation and transaction exposure, or were not carried out in Britain, the findings of these surveys were very largely consistent with the findings of this survey.

### **The Survey Questionnaire**

The questionnaire sent to the chief financial officers of all British Times 1000 corporations is set out in Appendix 3 and was accompanied by the covering letter to the chief financial officer, reproduced in Appendix 2, together with a prepaid first class envelope for replies. The letter to the chief executive officer was sent under separate cover. Due to postal weight constraints, the decision was taken to restrict the questionnaire to a length of sixteen pages. Instructions on completing the questionnaire occupy the first page. The remaining fifteen pages contain the four parts into which the questionnaire is divided. Broadly, the first part asks about the general structure and environment of the business; the second part about the impact of currency exposure on the business and the nature of the market in which it operates; the third part about the way in which the business deals with currency matters; and the final part about views held by respondents and others in the business concerning these issues. Space at the end of the questionnaire is provided for respondent comments and the latter are invited to append any additional information regarded as pertinent.

Instructions on how to respond to individual questions were given as part of each question. The format was tick-box and largely multiple choice. In some cases all possible responses were specified, in others respondents were requested to specify where a relevant response was not listed and describe their own. In order to enable the researcher to clarify erroneous or ambiguous responses, respondents were asked to give their name and title and provide a

telephone number. In the event only two respondents failed to identify themselves and only four respondents had to be contacted to obtain answers to questions to which a response was not made, usually because two pages became stuck together and were inadvertently missed out. All four respondents then provided satisfactory responses.

The questionnaire was piloted in the summer of 1991. Four finance directors participated. Two of them had been interviewed earlier and had expressed an interest in questionnaire design. The other two had not previously been interviewed. These finance directors completed the questionnaire in the presence of the researcher and were then questioned about the exercise. Several questions were found to be ambiguous and were reworded. No other issues were raised which required adjustment to the questionnaire.

### **The Survey Results**

The raw survey results are set out in Appendix 4 in the format in which they were sent to all participants in the survey. One hundred and nineteen usable questionnaires had been received by the designated cut-off date for receipt of responses set six weeks from the date of despatch of the last batch of questionnaires. A further two usable questionnaires were subsequently received. Since the analysis of the data was under way, they were judged to have arrived too late for inclusion. Almost one third of the population sampled responded and approximately 20% of the total population provided usable responses.

Although, this is not a high response rate, it is not atypical of that experienced by others surveying this complex phenomenon. The questionnaires are lengthy and are addressed to busy executives who frequently complain at the number of requests to participate in surveys they receive each week. The number of responses received was judged sufficient not to have recourse to issuing a general follow-up to non-respondents.

A total of 69 corporations, over 10% of the population, either returned questionnaires insufficiently completed to be used or replied that they were unable or unwilling to take part in the survey. Twenty-seven of these corporations believed that they were totally unaffected by currency volatility, thirteen admitted to having a policy of not responding to any surveys, and eleven advised of their inability to deal with the number of requests they received to fill

out questionnaires. Only four corporations declined to participate on the grounds that they had difficulty in completing the questionnaire. The responding executives were all subsequently interviewed. One, as a consequence of that interview, then agreed to complete the questionnaire. It became clear that the exposure management practices in each of the divisions of the other three were so diverse that their inclusion in the sample could indeed generate misleading information.

The Times 1000 (1990) and (1991) publications report the different industries in which constituent corporations operate. This does not correspond to the Standard Industrial Classification (SIC), which could not therefore be used. The industries in which respondent corporations operate could be set out using the London Business School industry classification system. The results of doing so are as follows:

Industry Codes	Number of companies reported operating in the industry
1. Metals, Mining	8
2. Chemicals, plastics	6
3. Petroleum	7
4. Pharmaceuticals	4
5. Energy	5
6. Mechanical engineering	12
7. Automobiles	5
8. Aerospace	7
9. Electrical engineering, electronics	7
10. Textiles	7
11. Food, Drink, Tobacco	10
12. Cosmetics	2
13. Timber, paper, packaging	5
14. Other products	
steel 4, kaolin 1, gases 2,	
office equipment 1, handbags 1,	
defence equipment 3, man-made fibres 1	
roadstone 1, household goods 1,	
marine 4, radioactive materials 1,	
clothing 4, footwear 3, rubber 3,	30
15. Building, Construction	17
16. Travel, Transport, tourism	7
17. Commerce, retailing	19
18. Finance	6
19. Printing, Publishing, Media	10
20. Advertising, public relations	4
21. Consulting	1
22. Water treatment and provision	4
23. Education	0
24. Conglomerates	N/A
25. Telecommunications	1
26. Information technology	5
27. Leisure	6
28. Health Care	4
29. Hotel, Catering	4
30. Property	1
31. Charitable Organisation	0
32. Agriculture	4
33. Other services	8
34. Other	0
<b>Total number of industries in which the 119 respondent corporations operate:</b>	<b>216</b>

Approximately half of all respondent corporations were reported to operate in one industry only.

The number of corporations admitting to no currency exposure and exposure management among those not providing usable data is, at 40% of the total, greater than the proportion of

those providing usable questionnaires who gave the same response. A bias in response by those admitting to currency exposure and its management cannot, therefore, be dismissed. However, if there is no intention to participate in a survey it is easier, for those genuinely believing a response on their part will be of no use, to say so, than it is for managers in exposed corporations to give reasons for taking the same course. It is logical to expect a greater tendency for those perceiving their corporations not exposed to respond, declining to complete the questionnaire.

### **3.6 Data Analysis**

The data requested in the survey questionnaire is set out in Appendix 3 and the direct and open-ended responses in Appendix 4 and 5 respectively. In recognition of the number of survey responses received, it proved necessary to collapse data obtained in response to two questions in which Likert scales were used from six categories down to three. Comparisons were made between the results of both six and three point classifications. No material differences emerged. However, a small minority of significant associations did become marginally less so when a three point classification was used.

Methods of managing currency exposure were classified according to whether they were used currently or not, whether they had been abandoned or not and whether they were highly effective or not. From an analysis of the responses it is clear that approximately a quarter of all respondents failed to address the question of whether these methods had been used in the past and subsequently abandoned. Analysis of this information has therefore been severely curtailed and the representativeness of the data provided, being incomplete, must be treated with caution.

Data encoding and analysis were carried out using SPSS (Statistical Package for the Social Sciences)/PC+. None of this work was subcontracted. Data entry was verified by crosscasting and use of controls embedded in the SPSS/PC+ data entry package. The nature of the data received is discrete rather than continuous and tests of association are most meaningfully achieved by crosstabulation of this data. The results of all crosstabulations were interpreted by calculating the probability (P) that any crosstabulation could have occurred by chance. A  $P \leq$  (less than or equal to) .0000 indicates the probability that a

crosstabulation is likely to be a chance event is rounded down to 1 in 100,000 cases. The convention that an association is considered significant if the probability of a chance event is less than one in twenty was followed in this thesis, i.e. if  $P \leq .0500$  the association is considered significant. The degree of association normalised on a scale from 0.000, implying no association whatsoever, to 1.000, implying a complete association whether negative or positive, was calculated. This statistic is known as Phi for crosstabulations of two variables with two values only (2 X 2 crosstabulations), and Cramer's V or CV for larger crosstabulations (2 X 3, 3 X 3 etc.). Hedderson (1991) notes that Cramer's V is a transformation of and has the same significance level as the chi-square statistic, which has a known sampling distribution, and it standardises for the number of cells in a crosstabulation table. The advantage of using Cramer's V or Phi in conjunction with a probability estimate results from the fact that  $P \leq .0000$  for all crosstabulations where the association exceeds 0.3. Without knowing Cramer's V or Phi in addition to P it is not possible to know how much stronger than 0.3 any association is.

Logical analysis was employed to examine the data to eliminate extraneous variables. Those variables which can logically be significantly influenced by phenomena other than currency exposure can have their relationship with a single phenomenon obscured. They were thus excluded from the model.

The existence or want of significant associations between the dependent, intermediate and independent variables has been used as the basis for hypothesis testing. It has also been necessary to check that, where relevant, the significant associations are progressive or otherwise meaningful ones.

To determine whether the groups of variables in the model could be simplified to a general variable or factor underlying a large set of variables, the groups of variables were subjected to a factor analysis. The results of this analysis are reported in the concluding chapter. In recognition of the existence of a number of dichotomous intermediate and dependent variables, the robustness of the procedure was confirmed by comparing these results with those obtained from the crosstabulated data and from a logistic regression analysis.

Employing a factor analysis also helped in dealing with the problem of multicollinearity, since the variables in each group were known to be correlated.

The factor analysis uses the technique of principal components which calculates a factor that will explain the maximum variance in all the variables. Then a second and subsequent factors are calculated which explain the maximum amount of the remaining variance until an arbitrary point is reached in the eigenvalue statistic. Given expected correlation among the variables, oblique factor rotations were carried out. This procedure allows for the existence of some correlation among the resultant factors, although the exercise can be frustrated if convergence does not occur within an arbitrary number of iterations. Communality statistics were used to analyze the proportion of the variance in each variable explained by all the factors. The resultant structure matrices which describe the factors underlying the relevant variables are also set out in Chapter 8. Factor correlation matrices provide information on the inter-correlation of the resultant factors.

The factors generated were used to retest the six hypotheses, which relate the elements of the model, and then the model was tested as a whole. Multiple regression technique was employed as it has the advantage of showing the combined effects of a set of independent variables or factors and the separate effect of each independent variable or factor controlling for the others. Although Hedderson (1991) notes that the technique applies best to an analysis in which both the dependent variable and the independent variable are normally distributed interval variables, he also adds that ordinal variables are commonly used as well, and moderate deviations from normality do not bias the results greatly.

The adjusted R squared statistic reported in Chapter 8 indicates the proportion of the variance in the dependent variable associated with variance in the independent variables, adjusted for the number of cases analysed. This is a good indicator of the explanatory power of the regression model. The significance of the impact of independent factors in the regressions is measured by the significance of the T statistic. A T statistic significant at the 5% level indicates that the probability that the distance of a beta from zero would be due to sampling error is five times in one hundred, where a beta represents the effect that a

standard deviation difference in an independent variable has on the value of a dependent variable.

### **3.7 Consistency**

In addition to comparing the survey results with the findings of other surveys and empirical work, data obtained in the survey was checked for consistency. A number of the questions posed were designed to provide answers whose consistency with responses to other questions could be verified.

For example one question asks respondents to agree or disagree with a number of statements concerning attitudes and strategies. Logical inconsistency can be detected from the pattern of responses if, for example, these are made randomly. In the event the pattern of responses did reveal some minor inconsistency, though the pattern of associations found significant conformed to that predicted by logical analysis.

As a further example, responses to the question on vulnerability to specific exposures was compared with responses to questions on overall exposure. For consistency to be confirmed it was necessary for responses to be significantly positively associated. Significant positive associations were found in all cases.

A small amount of inconsistency was however noted in two areas. First, 11% of respondents record in answer to questions about their overall exposure that they were currently not subject to currency exposure in any part of their business. However, in response to a later question only 3% of respondents claim total invulnerability. It is possible that, in reviewing all the different forms of exposure in the earlier question, some of those who had thought themselves not exposed and answered that question accordingly, later realised they were more exposed than they had thought. They then recorded a greater degree of exposure in answer to the later question. This raises the possibility that some degree of systematic underestimation of currency exposure is recorded in response to the earlier question. Alternatively differences in the wording of the two questions could account for this difference.

Tests were conducted then to see what proportion of respondent companies could be expected to have no currency exposure given their reported level of foreign competition, their propensity to import and export either directly or indirectly, and to have foreign assets. A complete lack of exposure which is consistent with a nil rating against all these criteria was found to exist for none of these companies. Some underestimation therefore has almost certainly occurred in response to the earlier question. The data obtained from the earlier question has consequently been only sparingly used in the analysis.

The level of vulnerability to currency exposure reported in response to the question in the survey which obtains information on the taxonomy of currency exposures is some 75% below that recorded in response to a later question on overall vulnerability. However, there is no evidence that this underestimation is other than a systematic one. This underestimation can be and has been compensated for in setting the level for moderate and substantial exposure which is achieved by collapsing the six point Likert scale to a three point classification system. Results from using the three point scale were compared with the same results using the six point scale and no material differences were found.

As noted earlier, each respondent was requested to reveal his or her identity and job title so that he or she could be contacted if necessary by the researcher. This was done in order that respondents would be aware that they would be contacted if questionnaires were incorrectly or unsatisfactorily completed. A further objective in requiring the name of the respondent to be specified was to influence positively the level of care taken in completing the questionnaire. Specification of job title also allowed for the testing of functional bias.

In carrying out this test some functional bias is evident. For example, it was found that treasurers had a significantly greater propensity to consider the centralisation of the treasury function a highly effective method of exposure management. The value of these findings must be qualified accordingly.

The data was analyzed to see what significant associations existed between the functional title of the respondent and particular responses. One of the most significant was one with size. Respondents from corporations with turnover exceeding £ 1 billion (32% of the total)

were most likely to be treasurers, and those from firms with turnover not exceeding £ 200 million (39% of the total) were most likely to be finance directors. This was to be expected since dedicated treasuries are most likely to be found in larger companies.

Not unreasonably, treasurers were more likely to indicate the involvement of a group or subsidiary treasury department in dealing with currency issues and finance directors similarly with group finance departments. More interesting though was the greater propensity for finance directors and the lesser one for treasurers to admit to a philosophy of making money from whatever opportunities presented themselves including currency movements and conversely the greater propensity for treasurers and the lesser one for finance directors to have a policy of hedging all quantifiable trading currency exposures. Also to be expected was the greater propensity for treasurers to admit to the use of forward market and spot market contracts and centralised treasury management. Their greater reported use of matching was, however, a little more surprising.

Finally, it was noted earlier that selecting Times 1000 corporations to examine currency exposure makes the data unrepresentative of British corporations in general and of individual Times 1000 corporations if the nature of responses is found to be significantly associated with the size of the respondent's corporation. Overall, however, size was not found to be a significant variable, corroborating the findings of Abdel-Malek (1976) from his sample of sixty Canadian firms.

The results may be deemed representative of British Times 1000 corporations with the following qualifications. Size was found to be significantly positively associated with vulnerability to only one form of exposure, transaction exposure. Large corporations with turnover exceeding £ 1 billion had a greater propensity to be substantially vulnerable to this form of exposure. Small firms with turnover under £ 200 million were found to be moderately vulnerable. Strangely, medium sized firms had less of a propensity to be vulnerable at all. There was no significant association between size and advantage gained from any form of currency exposure. As expected, there was a positive association between size of firm and use of forward market contracts and use of a centralised treasury. This may reflect the propensity of treasurers, present in large firms, to use these exposure management

measures. Greater use was also made of swaps, leading and lagging, local currency denominated debt and parallel loans, though a number of large corporations had abandoned use of this last mentioned method, most likely in favour of swaps. Collars were less likely to be used by large corporations and more by medium sized ones. Swaps were the only method considered significantly more highly effective by larger firms than by smaller ones.

As already noted, large corporations make significantly greater use of treasurers. This is reflected in group treasury influence and responsibility for currency matters being more marked than for other departments and for subsidiary treasury departments also being more involved in currency issues in the subsidiaries. By the same token, group finance departments have a lesser involvement in the largest corporations and a greater one in smaller concerns.

The largest corporations also had a greater propensity to have formal committees of managers to manage currency issues, to consult peers in other concerns, rely on outside experts and consider their influence in changing currency management as dramatic. They said that they were more likely to hedge long-term asset exposures and less likely to manage currency issues informally. They were also more likely both to admit to the use of a target exchange rate in budgeting for foreign units and to incorporating exchange rate issues into investment appraisal procedures.

All the above should be considered in any attempt to relate the results of the survey to corporations too small to qualify as British Times 1000 corporations. For the latter the findings cannot claim to be representative.

### **3.8 Conclusion**

This chapter has set out the research model which has been derived from contingency theory. The use and perceived effectiveness of methods used to manage corporate currency exposure have been designated as dependent variables. Regulatory and market structure variables in the corporations' external environment have been identified as independent variables. The ways currency exposure affects the corporation and variables which describe the corporation's internal environment for currency exposure management, namely

corporate structure, the background of management and the attitudes and strategies of managers, have been identified as intermediate variables. Six hypotheses which relate these dependent, intermediate and independent variables have been set out. The research design involving detailed interviews and a large scale postal survey was described and the strengths and weaknesses of the research design and the methodology employed reviewed. Weaknesses identified must serve to qualify conclusions drawn from the results of the survey which are reported on in the next and subsequent four chapters.

## **CHAPTER 4 - THE NATURE OF CORPORATE CURRENCY EXPOSURE**

### **4.1 Introduction**

The findings of the survey, conducted in the course of this thesis, on the pattern of currency exposure reported among the sample companies are summarised in this chapter. The relationship among the different forms of exposure is described. Conclusions are drawn about the incidence of corporate currency exposure, and the aspects which can be explained using a contingent approach, and attention is drawn to findings which remain unexplained. It is hypothesised that the pattern of currency exposure is determined by variations in the external environment. The data is used to explain the pattern of currency exposure in terms of variations in the environment external to the corporation.

#### **Quantifying and Classifying Currency Exposure.**

A principal argument of this thesis is that past examinations of the phenomenon of corporate currency exposure have struggled to quantify it and that this struggle stems directly from a failure to define and distinguish its constituents with sufficient precision. One objective of the survey conducted as part of this thesis has, therefore, been to test whether or not the taxonomy of corporate currency exposure developed in the previous chapter has succeeded in enabling survey respondents, the very corporate executives faced with this exposure and with the task of managing it, to quantify it satisfactorily.

#### **Corporate Vulnerability to and Advantage from Currency Exposure**

Respondents in British Times 1000 corporations were asked to describe the overall vulnerability of their business to exchange rate relationships before any steps were taken to mitigate that vulnerability. Their responses are set out in Table 4.1 on the following page.

**Table 4.1 - Perceived Overall Vulnerability to Currency Exposure of British Times 1000 Corporations**

	<b>Percentage Responding</b>
Very Vulnerable	16
Moderately Vulnerable	41
Slightly Vulnerable	37
Totally Invulnerable	3
Other Response Specified	3

Without reference to any taxonomy these findings make two points. First, the degree to which different corporations perceive themselves vulnerable to currency exposure is very variable. Secondly, only a small percentage of corporations see themselves as being totally invulnerable to currency exposure. A theoretical explanation for these findings might be that corporations differ in the extent to which they are naturally hedged against currency exposure, but the case for an empirical examination of its nature is underlined by the perceived pervasiveness of this exposure. British Times 1000 corporations were asked to assess the degree of their vulnerability to and advantage from the different forms of currency exposure identified in the taxonomy put forward in this thesis. The results are set out in Tables 4.2 to 4.9

Respondents, as Section 4.2 below illustrates, overwhelmingly identified with the taxonomy of different forms of vulnerability to currency exposure presented. (The result is the same for the taxonomy of advantage from different forms of exposure set out in Table 4.4 in Section 4.3 below). In no instance did any respondent report failure to classify his or her corporate exposures on the grounds that the taxonomy was not understood, or, if understood, was not considered relevant. Only some 4% of respondents did not report their exposure. Half of them found it was too difficult to do so, one noting:

“Probably each of the above [forms of exposure] apply. We have approaching 500 subsidiaries operating in over 50 countries in up to 10 different types of business.”

The other half did not believe they were sufficiently informed to do so. One respondent noted:

“All of these [forms of exposure] may be relevant at one time or another. Some causes may not be apparent to the business centrally”.

The data provided by this 4% of respondents, who did not know or felt unable to quantify their exposure, has been ignored in the examination of associations between different forms of currency exposure and other variables.

Of critical importance in testing comprehensiveness is to determine if respondents are able to identify any further forms of exposure not listed as part of the suggested taxonomy. Only 2% of respondents identified and rated **what they believed** to be additional forms of vulnerability and only 1% an additional form of advantage.

Nevertheless, most of these responses can be accommodated within the taxonomy without it needing to be changed. Several respondents, for example, wished to identify tax driven exposures. However, it can be argued that matters of taxation simply amplify vulnerability to or advantage from the forms of exposure already identified in the taxonomy and do not change their nature. Srinivasulu (1983b) divides all exposures into a before-tax and an after-tax category in his taxonomy and amplifies his description by saying that with the former exposure is calculated without considering taxes, and with the latter tax impact is taken into account, (See page 38). Nowhere is it suggested that the nature of the exposure has altered in any way as a consequence of taxation. One respondent drew attention to “profit and loss account translation exposure” as relevant to both vulnerability and advantage and another to “translation of profits in overseas subsidiaries” in the context of vulnerability. Both these respondents are making a case for recognising two forms of translation exposure: a balance sheet translation exposure and a trading account translation exposure. Though there is a “de minimis” argument that the change is unnecessary, and the balance sheet and income statement are inextricably linked, two distinct variances can be calculated. Since two respondents find there are apparently important differentiable elements to translation exposure, the taxonomy should logically be enlarged.

Once this single modification has been incorporated, the taxonomy developed in this thesis can accommodate all respondent specified exposures. Since no further forms of exposure

have been identified by respondents, it can be argued that the taxonomy put forward and amended to distinguish both forms of translation exposure is recognised as comprehensive.

The taxonomy also appears, *prima facie*, to be a successful attempt to get managers to quantify perceived **relative** vulnerability to and advantage from different forms of exposure.

#### **4.2 Corporate Vulnerability to Currency Exposure**

British Times 1000 Survey respondents were asked to estimate their overall vulnerability to twelve forms of currency exposure and were given the opportunity to specify their vulnerability to any other forms of exposure not presented. As can be seen from Table 4.2 below, respondents rated Transaction exposure as the most pervasive individual exposure in causing some degree of vulnerability with only 19% of respondents identifying a total absence of vulnerability to it. However, while Transaction exposure was also the individual exposure to which the greatest proportion of corporations considered themselves substantially vulnerable, this table shows that a majority of respondents saw themselves vulnerable to every one of the different forms of exposure presented to them. The picture which emerges is one in which corporations are typically reported to be vulnerable to a number of exposures. However, very different proportions of respondents report substantial vulnerability to the different exposures in contrast to the greater uniformity of proportions moderately vulnerable to these exposures.

Vulnerability to Demand Side Margin exposure the second rated form of exposure, which can occur, for example, when foreign tourist expenditure is adversely affected by a strong domestic currency, was particularly marked for some corporations. Moreover, it is interesting to note that the loss of margin on foreign currency priced sales following a domestic revaluation, Elasticity of Demand exposure, is almost as important as this form of exposure in generating vulnerability. This would indicate that pass-through, (the adjustment by corporations of prices to reflect exchange rate changes), is not as generally widespread as that found by Williamson (1990) for British exporters to the United States. This is not surprising as Williamson's analysis covers the atypical period from 1982 to 1985 when the dollar rose in real terms against sterling by approximately 50%.

**Table 4.2 - Perceived Current Vulnerability to Currency Exposure of Respondents in British Times 1000 Corporations\***

<b>Form of Exposure</b>	<b>Substantially Vulnerable</b>	<b>Moderately Vulnerable</b>	<b>Not Vulnerable</b>	<b>Don't Know/Unable to Say</b>
Transaction	41	36	19	4
Demand Side Margin	37	25	34	4
Elasticity of Demand	34	36	25	5
Supply Margin	34	34	28	5
Quasi-Contractual	30	39	27	4
Translation	27	46	23	4
Local Currency Supply	24	45	26	5
Long-term Contract	17	45	34	4
Competitive Supply	14	47	34	5
Supply Chain	12	47	36	5
Demand Chain	11	44	40	5
Competitive Demand	10	45	40	5
Other	2	0	93	4

\* Percentage of respondents in each category to nearest %

A final observation from Table 4.2 is that respondents perceive British Times 1000 corporations to be comparatively less vulnerable to competitive exposures. This finding is corroborated by Moffett and Karlsen (1994).

Table 4.3 records to which of the three different types of exposure and to how many of the economic exposures in the taxonomy presented, British Times 1000 corporations reported being vulnerable. For example, forty-nine corporations each reported vulnerability to all ten forms of economic exposure, 490 economic exposures in all. The most important finding is that the elements of currency exposure, which are conventionally classified as economic exposures, are reported by British Times 1000 corporations to account for the majority of the exposures to which they are vulnerable.

A further analysis of vulnerability reported showed that 60 of the 119 respondents ranked **one** or more economic exposures as having a greater impact than transaction exposure and only 12 respondents ranked transaction exposure as having a greater impact than any of the economic exposures. Of the balance transaction exposure was ranked equally with one or more economic exposures by 36 respondents as having the greatest impact and six ranked translation exposure as the most important individual exposure. This appears to complement

assertions in the literature that economic exposure has had a greater adverse impact on corporations than transaction exposure and that transaction exposure has had in turn a greater impact than translation exposure, see Belk and Glaum (1990).

**Table 4.3 - Number of Different Forms of Currency Exposure to which British Times 1000 Corporations Report Vulnerability.**

		Number of Corporations	Sum of exposures to which corporations are vulnerable:		
			Economic Exposures	Transaction Exposures	Translation Exposures
12	Forms	49	490	49	49
11	Forms	9	83	9	7
10	Forms	4	35	3	2
9	Forms	4	29	4	3
8	Forms	4	25	3	4
7	Forms	4	21	4	3
6	Forms	4	19	3	2
5	Forms	7	23	7	5
4	Forms	6	16	3	5
3	Forms	4	6	4	2
2	Forms	5	4	3	3
1	Form	1	1	0	0
	No Forms	13	0	0	0
	Not Stated	5	-	-	-
	<b>Total</b>	<b>119</b>	<b>752</b>	<b>92</b>	<b>85</b>

It is therefore puzzling to report that this perceived prominence of economic or operating exposure is not itself apparent in the findings of Belk and Glaum (1992) who, it will be recalled, conducted an interview survey into the management of foreign exchange risk in seventeen UK multinationals in 1990, eleven of which are also surveyed here. This is possibly because they did not employ the same multi-dimensional definition of economic exposure as this survey does. In consequence, it could be argued that the finding is an artefact of the way economic exposure is divided up into a number of separate elements which increases the number of reported exposures.

However, Belk and Glaum (1992) stress that:

“By now it has been established in the literature that the concept of economic exposure is the most appropriate to be used as a basis for defining corporate exchange risk management.”, p 8.

Moreover, there is a crucial difference between being affected by a phenomenon and managing it. Belk and Glaum say they found a greater perception of the impact of transaction than of economic exposure which only two thirds of their sample of corporations reported **managing** while in contrast only one of their sample failed to **manage** transaction exposure.

Lessard (1990), in his survey of corporate responses to volatile exchange rates, after taking into account some overlap in the different definitions of economic exposure which his questionnaire employs, also appears to show that transaction exposure is managed to a greater degree by firms than is economic exposure, sometimes defined as operating exposure. Cezairli (1987) reaches similar conclusions in his survey of foreign exchange exposure management in foreign subsidiaries of Fortune 500 multinational corporations. While also conventionally classifying currency exposure as translation, transaction and economic, he again chooses to measure the importance corporations attach to managing the different exposures rather than to the perception of their impact on the corporation.

Most other surveys ignore economic exposures and thus can provide little enlightenment. Interestingly, a study by de Jong and Ligterink (1991) of fifteen Dutch multinationals has reported:

“The attention for each type of foreign currency risk has changed during the period concerned. Whereas in the 1970s the firm's main concern was with the translation exposure, in the 1980s they implemented many measures in order to cope with economic exposure.” p 1129.

How can the findings of the British Times 1000 survey and those of Lessard, Belk and Glaum and Cezairli be reconciled? If economic exposures are those exposures seen as making the greatest impact, but transaction exposures are the ones given greatest management attention, the British Times 1000 finding can be reconciled with the findings of

Lessard and Cezairli. However, Belk and Glaum (1990) did not focus solely on the management of exposures as a measure of their importance and one is left to question whether the eleven corporations they interviewed which also appear in the British Times 1000 survey, were able to identify all their economic exposures without being prompted to do so consciously. Belk and Glaum (1992) did themselves say:

“In general, foreign exchange rates and foreign exchange risk were not seen as strategic factors. Although most respondents gave reasons for this, a number of companies appeared not to be aware of the important longer term effects of exchange rate changes and the risks involved.” p 8.

### **4.3 Corporate Advantage from Currency Exposure**

There is no reason in theory, and no argument has been put forward in the literature, why currency exposure should not present as much opportunity to corporations as it generates vulnerability. The values which exchange rates take are not bounded and currencies can strengthen or weaken perpetually. However, the strengthening of a currency or for that matter its weakening is neither necessarily an indicator of corporate advantage nor the converse.

The extent of perceived advantage from currency exposure, which Table 4.4 set out below confirms, is surprising, given as noted earlier that only a small number of references to it have been made in the literature. With the benefit of hindsight the survey might have asked the same questions concerning overall advantage that it does about vulnerability.

The degree of advantage secured by corporations as a consequence of currency exposure is considered by British Times 1000 corporations to be almost as great as the vulnerability generated by its adverse effects. Advantage was rated at about 79% of the level reported for vulnerability, see Table 4.7 below. Given the possibility that managers attribute advantage to their own efforts, they may be underestimating the advantage conferred by currency exposure and the degree of advantage may be even greater than this. That being so, the mere handful of references to the advantage conferred by currency exposure in the entire literature

on the subject attests to the importance of understanding the impact, the importance and the nature of perception by managers and academics alike.

British Times 1000 corporations reported obtaining greatest advantage from margin gains on foreign currency priced sales following a domestic currency devaluation, the Demand Side Margin exposure. This both rationalises the popularity of devaluations and reinforces the point that there is an attendant lack of pass-through. Somewhat weaker only is the advantage obtained from Transaction exposure. The relative difference in reported vulnerability to and advantage from this form of exposure is difficult to explain. It is possible that respondents discount the advantage because much of it is eliminated by hedging activity.

Survey respondents were asked to estimate their overall advantage from eleven forms of currency exposure and were given the opportunity to specify their advantage from any other forms of exposure not presented. The findings are as follows:

<b>Form of Exposure</b>	<b>Substantially Advantaged</b>	<b>Moderately Advantaged</b>	<b>Not Advantaged</b>	<b>Don't Know/Unable to say</b>
Demand Side Margin	24	36	35	4
Supply Margin	23	38	35	4
Transaction	20	45	30	4
Local Currency Supply	19	41	35	4
Elasticity of Demand	17	44	35	5
Translation	16	47	33	4
Supply Chain	14	43	38	5
Long-term Contract	13	42	40	4
Competitive Supply	11	42	42	5
Competitive Demand	10	44	41	5
Demand Chain	8	44	44	5
Other	1	0	95	4

\* percentage of respondents in each category to nearest %

The same breadth of effect of currency exposure is found in the case of advantage as was found for vulnerability (see Table 4.3 in Section 4.2 above). For example, forty-one corporations reported being vulnerable to all nine forms of economic exposure. However, no assessments of advantage obtained from different forms of currency exposure, not even

those of a theoretical nature could be found either in the literature or in previous surveys. These novel findings cannot, therefore, be corroborated.

The picture which emerges from Table 4.5 is one in which over 60% of respondents reported advantage from over half the forms of exposure in the taxonomy and just under 20% of respondents reporting no advantage from currency exposure whatsoever.

**Table 4.5 - Number of Different Forms of Currency Exposure from which British Times 1000 Corporations Report Advantage.**

		Number of Corporations	Sum of exposures to which corporations are vulnerable:		
			Economic Exposures	Transaction Exposures	Translation Exposures
11	Forms	41	369	41	41
10	Forms	9	73	9	8
9	Forms	4	28	4	4
8	Forms	6	39	5	4
7	Forms	5	23	6	6
6	Forms	8	34	8	6
5	Forms	1	3	1	1
4	Forms	5	15	2	3
3	Forms	5	9	3	3
2	Forms	6	8	3	1
1	Form	2	1	0	1
	No Forms	22	0	0	0
	Not Stated	5	-	-	-
<b>Total</b>		<b>119</b>	<b>602</b>	<b>82</b>	<b>78</b>

A further analysis of advantage reported, showed that 60 of the 119 respondents ranked **one** or more economic exposures as having a greater positive impact than transaction exposure and only 4 respondents ranked transaction exposure as having a greater impact than any of the economic exposures. Of the balance, transaction exposure was ranked equally with one or more economic exposures as having the greatest impact by 47 respondents and 3 ranked translation exposure as the most important exposure. This indicates that respondents from British Times 1000 corporations believe that economic exposure is having a greater positive impact than transaction exposure.

#### 4.4 Comparing the Positive and Negative Impact of Currency Exposure on Corporations.

The taxonomy of exposures put forward in this thesis purposely distinguishes vulnerability to and advantage from different forms of exposure. This section examines whether doing so can be justified. Table 4.6 shows that despite some overlap there are marked differences in the ranking of vulnerability to and advantage from currency exposure. A Wilcoxon matched-pairs signed-ranks test was carried out to examine whether the two sample distributions could have emanated from the same population. The result  $z = -.0592$   $p = .9528$  indicates that the probability that they did is remote.

Quasi-Contractual exposure is not included in this table since it was considered conceptually too difficult for respondents to measure advantage to this form. It ranked behind Supply Margin exposure for vulnerability.

**Table 4.6 - A Comparison of British Times 1000 Corporate Vulnerability to and Advantage from Currency Exposure**

Form of Exposure	Ranked for Vulnerability	Ranked for Advantage
Transaction	1	2
Demand Side Margin	2	4
Elasticity of Demand	3	1
Supply Margin	4	3
Translation	5	5
Local Currency Supply	6	6
Long-term Contract	7	8
Supply Chain	8	7
Demand Chain	9	11
Competitive Demand	10=	9=
Competitive Supply	10=	9=

Table 4.7 compares the degree of vulnerability to and advantage from currency exposures respondents reported when asked to rate these on a scale from 0, no vulnerability or advantage, to 5, substantial vulnerability or advantage. It can be seen that although, on average, advantage is only rated at 79% of the level of vulnerability, the picture for individual forms of exposure is a varied one. At the extremes, the level of advantage generated from transaction exposure is only seen as 67% of that of vulnerability to it and advantage generated by Supply Chain exposure is rated 8% greater than vulnerability to that

form. Also notable is the finding that respondents rate equally vulnerability to and advantage from both Competitive Supply and Competitive Demand exposures.

**Table 4.7 - A Comparison of Average British Times 1000 Corporate Vulnerability to and Advantage from different Forms of Currency Exposure\***

<b>Form of Exposure</b>	<b>Level of Advantage</b>	<b>Level of Vulnerability</b>	<b>Advantage as a % of Vulnerability</b>
Transaction	1.92	1.28	67
Demand Side Margin	1.75	1.19	68
Elasticity of Demand	1.74	1.38	79
Supply Margin	1.60	1.21	76
Quasi-Contractual	1.57	N/A	N/A
Translation	1.54	1.13	73
Local Currency Supply	1.33	1.10	83
Long-term Contract	1.08	0.98	91
Supply Chain	0.97	1.05	108
Demand Chain	0.95	0.78	82
Competitive Demand	0.91	0.90	99
Competitive Supply	0.91	0.90	99
Overall	1.37	1.08	79

\* Rated on a Scale from 0 (low vulnerability/advantage) to 5 (high vulnerability/advantage).

Table 4.8 shows the distribution of the sum of the rating of vulnerability to and advantage from different forms of exposure. Given that advantage is overall reported to be approximately 80% of vulnerability, levels of advantage as a percentage of vulnerability were calculated. Once again the findings show no symmetry in the ratings. Altogether, Tables 4.6 to 4.8 can make out no case for combining measures of vulnerability and of advantage on one continuum, and not doing so appears justified.

**Table 4.8 - Comparison of British Times 1000 Corporate Currency Exposure Vulnerability and Advantage Levels\***

**Number of Firms in Each Category**

Sum of Ratings	Vulnerability	Advantage	Advantage as a % of Vulnerability
Not Stated	5	9	-
0 - 5	19	26	137
6 - 10	13	18	138
11 - 15	24	28	117
16 - 20	24	19	79
21 - 25	18	12	67
26 - 30	8	3	37
31 - 35	4	3	75
36 - 40	4	1	25
41 - 55	0	0	-
Number of Corporations	119	119	

\* Normalised Sum of Ratings 0-5 for 11 Exposures. Vulnerability to Quasi-Contractual Exposure is Discounted.

Respondents were also asked to rate their currency exposures in the past. The differences between these ratings and their current ratings of vulnerability and advantage, which were reported in Table 4.7 above, are set out in Table 4.9 below. This table sets out the absolute increases (+) and reductions (-) in vulnerability or advantage reported. The overall percentage change for both advantage and vulnerability were also calculated.

To summarise Table 4.9 below, the survey finds “over recent years”, a marked increase in vulnerability to Demand Side Margin and Long-term Contract exposures. The reason for these changes is not clear. It also finds a reduction in vulnerability to and advantage from Translation exposure. The introduction of SSAP 20 (Statement of Standard Accounting Practice) and the realisation by investors that translation gains and losses are “paper” gains and losses and hence of questionable impact in the long term on “real” profitability may explain this. Similar findings have been reported in other surveys.

Otherwise, corporations record little change overall in the extent to which the different forms of exposure have caused them vulnerability or provided them with advantage. Vulnerability is seen to have increased by 2.5% and advantage to have fallen by 1% in comparison to their assessments of the position in the past. This is consistent with the

findings of those that claim that in recent years there has been no dramatic change in the degree of volatility of real exchange rates similar to that which occurred when the early 1980s is compared with the early 1970s.

The increase in vulnerability and advantage of some corporations are found to match the reductions experienced by others. In consequence individual corporations do report marginally more substantial changes in the nature and extent of their exposure than the overall picture suggests. Nevertheless, the reported changes over time were not considered great enough, given the concern over the reliability of past data, to warrant further use of the data on past exposures and these are consequently not commented upon in subsequent chapters in the thesis.

**Table 4.9 - Average Changes in Levels of Currency Exposure of British Times 1000 Corporations [to those reported in Table 4.7]**

	<b>Vulnerability</b>	<b>Advantage</b>
Transaction	+0.01	+0.04
Demand Side Margin	+0.21	+0.01
Elasticity of Demand	+0.04	-0.02
Supply Margin	+0.02	-0.02
Quasi-Contractual	+0.05	N/A
Translation	-0.11	-0.13
Local Currency Supply	-0.04	+0.02
Long-term Contract	+0.08	-0.01
Competitive Supply	+0.03	-0.02
Supply Chain	+0.01	+0.04
Demand Chain	+0.03	+0.04
Competitive Demand	+0.03	No change
Overall	+0.03	-0.01
<b>Percentage Change</b>	<b>+2.5%</b>	<b>-1.0%</b>

#### **4.5 The Relationship between Different Forms of Currency Exposure**

The theoretical literature predicts that the different forms of currency exposure will be highly related. In examining the associations among forms of currency exposure reported by respondents in British Times 1000 Corporations, all forms of exposure are found to be highly significantly associated with all other forms, with  $p \leq .0000$  in all cases. The theoretical prediction is thus dramatically confirmed.

##### **Relationship between Forms Generating Vulnerability**

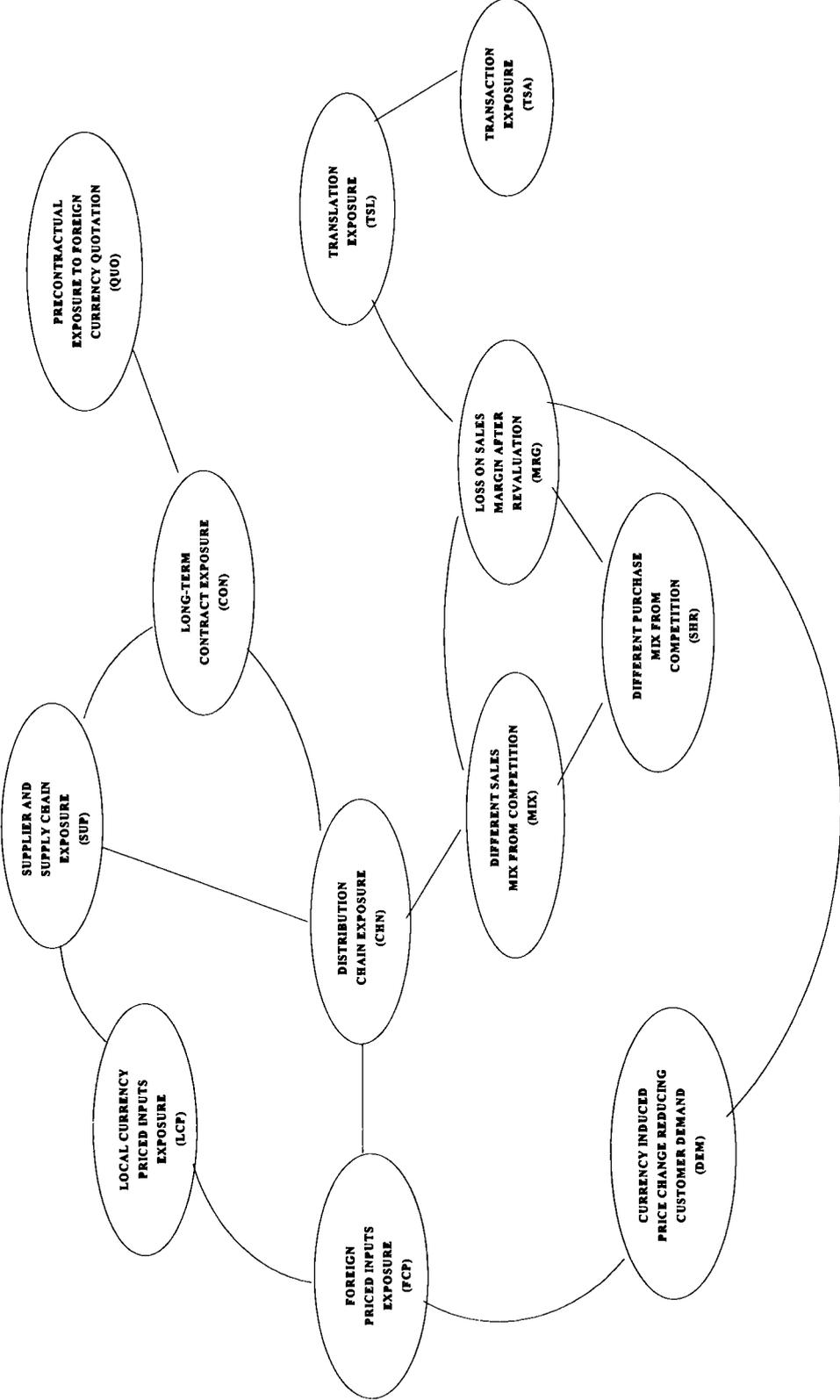
In terms of current vulnerability, these associations vary between 0.341 and 0.714 when measured on the absolute 0.0 to 1.0 scale represented by Phi or Cramer's V , see Table 4.10 below. The principal associations among the different forms of vulnerability are shown pictorially on the next page in Figure 4.1. Here it can be seen that, in the context of a high association amongst all forms, those forms which are economic in nature normally associate more closely with other forms of economic exposure than they do with either transaction or translation exposure. Also these latter two exposures more closely relate to each other than to any of the forms of economic exposure with the exception of quasi-contractual exposure.

**Table 4.10 - Associations among Forms of Currency Exposure Currently Generating Vulnerability**

	Supply Chain	Local Currency Supply	Supply Margin	Elasticity of Demand	Competitive Supply	Competitive Demand	Demand Side Margin	Demand Chain	Translation	Transaction	Quasi-Contractual	Long-term Contract
Supply Chain	X	.538	.573	.446	.465	.497	.413	.671	.380	.452	.451	.511
Local Currency Supply	.538	X	.714	.472	.435	.376	.393	.470	.350	.368	.351	.357
Supply Margin	.573	.714	X	.550	.506	.467	.417	.533	.365	.372	.417	.436
Elasticity of Demand	.446	.472	.550	X	.505	.527	.501	.450	.371	.381	.367	.385
Competitive Supply	.465	.435	.506	.505	X	.660	.546	.479	.342	.427	.424	.417
Competitive Demand	.497	.376	.467	.527	.660	X	.594	.505	.359	.412	.402	.452
Demand Side Margin	.413	.393	.417	.501	.546	.594	X	.511	.451	.397	.392	.454
Demand Chain	.671	.470	.533	.450	.479	.505	.511	X	.386	.377	.464	.513
Translation	.380	.350	.365	.371	.342	.359	.451	.386	X	.456	.341	.393
Transaction	.452	.368	.372	.381	.427	.412	.397	.377	.456	X	.461	.445
Quasi-Contractual	.451	.351	.417	.367	.424	.402	.392	.464	.341	.461	X	.515
Long-term Contract	.511	.357	.436	.385	.417	.452	.454	.513	.393	.445	.515	X

The associations are measured using the Cramer's V statistic. All these associations have p = .0000

**Figure 4.1 - Pictorial Representation of the Most Significant Associations in Table 4.10**



### **Relationship between Forms Providing Advantage**

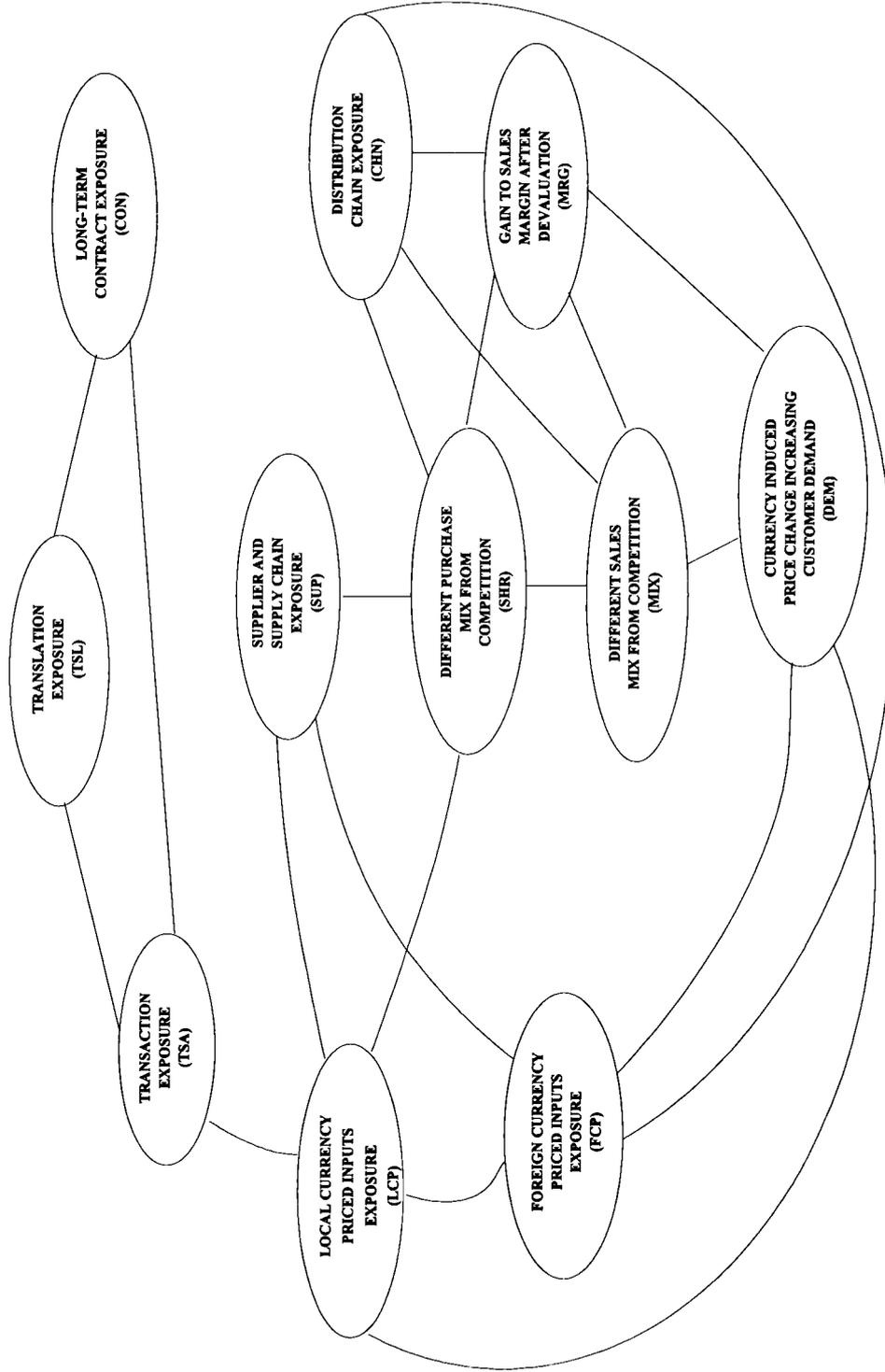
In terms of current advantage, associations are between .350 and .781, again with  $p=.0000$  in all cases, see Table 4.11 below. The principal associations among the different forms of advantage are shown pictorially in Figure 4.2. on the following page. As with vulnerability there is a high degree of association among all forms. Also, the associations among different forms of economic exposure are normally higher than their individual associations with transaction and translation exposure and that between transaction and translation exposure is higher than it is between either of these exposures and any form of economic exposure.

**Table 4.11 - Associations among Forms of Currency Exposure Currently Providing Advantage**

	Supply Chain	Local Currency Supply	Supply Margin	Elasticity of Demand	Competitive Supply	Competitive Demand	Demand Side Margin	Demand Chain	Translation	Transaction	Long-term Contract
Supply Chain	X	.613	.617	.474	.524	.452	.400	.532	.411	.488	.360
Local Currency Supply	.613	X	.781	.523	.504	.450	.466	.481	.453	.498	.362
Supply Margin	.617	.781	X	.520	.558	.454	.446	.548	.454	.514	.367
Elasticity of Demand	.474	.523	.520	X	.545	.540	.540	.475	.453	.482	.350
Competitive Supply	.524	.504	.558	.545	X	.749	.547	.547	.473	.491	.465
Competitive Demand	.452	.450	.454	.540	.749	X	.565	.508	.391	.392	.471
Demand Side Margin	.400	.466	.446	.540	.547	.565	X	.538	.405	.496	.474
Demand Chain	.532	.481	.548	.475	.508	.508	.538	X	.402	.479	.453
Translation	.411	.453	.454	.453	.473	.391	.405	.402	X	.570	.482
Transaction	.488	.498	.514	.482	.491	.392	.496	.479	.570	X	.496
Long-term Contract	.360	.362	.367	.350	.465	.471	.474	.453	.482	.496	X

The associations are measured using the Cramer's V statistic. All these associations have  $p = .0000$

**Figure 4.2 - Pictorial Representation of the Most Significant Associations in Table 4.11**



It might be concluded that altogether the associations between the different forms of currency exposure are sufficiently high to question the value of distinguishing among any of them. Nevertheless, first, translation exposure and transaction exposure are occasionally more strongly associated with some forms of economic exposure than particular forms of economic exposure are with each other. To deny the logic of distinguishing between the different forms of economic exposure, therefore, would be to question that of the distinction between economic exposure, transaction exposure and translation exposure, a distinction which is so often made in the literature. Second, it will be seen later that these different forms of exposure are significantly associated with quite different methods of managing currency exposure and with different methods considered highly effective. Finally, as has already been demonstrated, respondents had little difficulty themselves in distinguishing these different forms of exposure.

There is therefore both danger in simplistically grouping together and classifying individual currency exposures conventionally as translation, transaction and economic, and danger in going as far as differentiating many forms of currency exposure. In the one case there is a danger that the distinctions will be insufficiently sharp and in the other case that the close links between each of the forms will be ignored or underestimated.

The finding of strong associations between levels of vulnerability to and advantage from each of the forms of exposure is in the event to be expected. The linkage simply underlines the fact that many exposures which today are regarded as economic or non-contractual will in the future become transaction and income statement translation exposures, and will then also, if still current at any accounting date, shape the corporation's balance sheet translation exposure. As a corollary, by managing economic exposure the corporation can profoundly influence the shape of future transaction and translation exposures.

The accuracy of respondents' assessments of exposure is inevitably more open to question than that of assessments corroborated by the observations of outside researchers. Reassuringly, however, there are statistically significant associations in every case where overall vulnerability, reported in Table 4.1, is related to responses on vulnerability to the twelve individual exposures reported in Table 4.2.

Overall, confidence that respondents are consistent in their responses is confirmed. Nevertheless, assessing the impact of currency exposure has never been considered an easy task. It can be very difficult in practice to determine, for example, the reasons for a fall or rise in margins, for a loss of or a gain in market share, or for an increase in or a drop in the level of sales. There may also be an inherent optimism, confidence or self-interest in management to make it represent that it is executive action rather than outside events, such as exchange rate changes, which brings benefits to the corporation when this is not the case. Could this be one reason why vulnerability to currency exposure is assessed to be of a greater magnitude than advantage obtained from it?

Subjective evaluations of exposure can also be compared with the exposure which might theoretically be expected given the trading profile of a corporation. In other words, a corporation is likely to be more exposed to currency movements the more it imports directly or the more it does so indirectly, in the sense that its suppliers or a link further back in the supply chain have imported what the corporation eventually purchases. It is also theoretically more exposed if it exports directly or indirectly and/or has foreign based competitors, in the sense that competition may be advantaged or disadvantaged relative to the corporation as a result of an exchange rate change. Also, as a necessary although insufficient condition, to avoid exposure a corporation must have no foreign assets or liabilities.

If the respondents to the survey are analyzed for these traits, only 7% of respondents have altogether under 10% of their purchases directly imported and under 10% indirectly imported, under 10% of their sales directly exported, and under 10% indirectly exported and have foreign based competition in no more than a minority of markets. If the criteria are even more stringent, when the 10% figure is replaced with one of 1% and an absence of foreign based competition is the norm, only two respondent companies fit these criteria. One of these two has over 50% of its assets based outside Britain, the other between 25 and 49%, which should give both these firms some vulnerability.

Nevertheless, while theoretically no respondent should report total invulnerability and no more than 7% only slight vulnerability, the respondents identifying these levels of

vulnerability, see Table 4.1, are 3% and 37% respectively. Even taking account of both differences in the wording of the questions, and in the significance of exposure-related activities in relation to the corporation as a whole, this response would indicate, prima facie, some underestimation of vulnerability to currency exposure. If vulnerability is underestimated however as noted earlier, there appears to be a greater relative underestimation of advantage. A problem underestimated is a problem which may not be given due attention. An opportunity underestimated is one more likely to be missed.

The issue of whether these theoretical predictions, which concern the environment external to the corporation, explain the degree of corporate currency exposure experienced by particular firms is addressed directly in the next section.

#### **4.6 The Environment External to the Corporation**

In order to test the first hypothesis, namely that the forms of currency exposure to which a corporation is exposed are determined by the external environment, data was collected on variables measuring both the regulatory and market environment. A summary of findings of the nature of these aspects of the external environment is set out in Table 4.12 for the regulatory environment and in Tables 4.13 to 4.20 inclusive for the market environment. Associations between these variables and forms of currency exposure are dealt with in the following section.

##### **The Regulatory Environment**

British Times 1000 corporations were asked to specify the nature of the regulatory environment in the markets in which they operated. Noting that regulations seemed to provide little either to help or hinder currency management in a majority of the markets in which they operated, they responded as follows:

**Table 4.12 - The Regulatory Environment of British Times 1000 Corporations**

	Percentage Responding			
	No Market	Minority of Markets	Majority of Markets	All Markets
Market regulation reduces the impact of exchange rate changes	50	40	10	0
Currency regulations are seriously restrictive	49	47	4	0
Market regulation hinders foreign exchange risk management	56	40	4	0
Tariffs/duties exceed 10% of landed cost	57	32	9	2

### The Market Environment

British Times 1000 corporations were also asked to specify the nature of the market environment in which they operated. It is notable that a large percentage of respondents were unable to answer these questions even though the categories were deliberately set broadly.

Table 4.13 shows that only just over 10% of sampled corporations estimate that direct imports exceed 50% of total purchases. More than 40% of them estimated such content at less than 10%. Almost 10% of them were unable to respond to the question.

**Table 4.13 - Percentage of the Inputs of British Times 1000 Corporations Imported Directly**

	Percentage Responding
Under 1%	15
Between 1% and 9%	28
Between 10% and 24%	25
Between 25% and 49%	11
Over 50%	12
Don't Know	9

The pattern for indirect imports is similar. Table 4.14 shows that fewer than 10% of corporations estimate that the average percentage import content of locally sourced purchases exceeded 50%. Almost 40% estimated such content at less than 10%. However, it

must be noted that just over a third of respondents were unable to specify, within a broad range of figures, purchases imported further back in the supply chain.

**Table 4.14 - Percentage of the Inputs of British Times 1000 Corporations Imported Indirectly**

	Percentage Responding
Under 1%	21
Between 1% and 9%	18
Between 10% and 24%	12
Between 25% and 49%	8
Over 50%	6
Don't Know /Impossible to say	35

British Times 1000 corporations were asked if it was true to say that in a majority of business activities the currency in which the business made purchases from third parties located in other countries could be negotiated. Over half of them revealed an inability to negotiate the currency of purchase.

**Table 4.15 - The Determinants of the Currency of Denomination of Input Prices of British Times 1000 Corporations**

	Percentage Responding
Currency of purchase can be negotiated:	
in all cases	16
for purchases imported into Britain only	11
for purchases imported into other countries	4
Currency of purchase cannot be negotiated:	
suppliers dictate use of domestic currency	31
currency of supply is dictated by tradition	21
We have not tried to negotiate on currency	3
Other response specific	12
No response specific	2

Almost two thirds of respondents, when asked to specify the nature of their foreign competition in the markets in which they operated, reported that they either had no foreign competition whatsoever or such competition in only a minority of their markets.

**Table 4.16 - Foreign Competition faced by British Times 1000 Corporations**

	Percentage Responding			
	No Markets	Minority of Markets	Majority of Markets	All Markets
In our business there is significant competition from businesses operating from a foreign base	20	43	24	13

A greater diversity of response was reported for third party worldwide direct exports. Even so, less than a quarter of corporations exported more than 25% of their output and over a third less than 1% of it.

**Table 4.17 - Percentage of the Outputs of British Times 1000 Corporations Exported Directly to Third Parties**

	Percentage Responding
Under 1%	35
Between 1% and 9%	23
Between 10% and 24%	10
Between 25% and 49%	12
Over 50%	10
Don't Know	10

Uncertainty as to the proportion of indirect exports in sales was even more pronounced. Almost a quarter of respondents were unable to quantify the figure. Over two thirds of those able to do so replied that indirect exports were under 1% of sales and for almost 90% it was under 10%.

**Table 4.18 - Percentage of the Outputs of British Times 1000 Corporations Exported Indirectly**

	Percentage Responding
Under 1%	54
Between 1% and 9%	13
Between 10% and 24%	4
Between 25% and 49%	2
Over 50%	4
Impossible to estimate	23

Corporations were asked if in a majority of business activities the currency in which the business exports to third parties could be negotiated. They revealed a greater discretion than with input prices. Nearly half said they could negotiate on currency, a quarter that they could not:

	<b>Percentage Responding</b>
<b>Currency of sale can be negotiated:</b>	
normally the quote is in the currency that suits the corporation	21
the company dictates use of the domestic currency but customers expect a quote in their currency	10 17
<b>Currency of sale cannot be negotiated:</b>	
third party dictate use of their currency	10
tradition dictates currency of sale	16
It is too misleading to generalise	11
Other specified responses	15

Finally, British Times 1000 corporations were asked what percentage of the fixed assets of the business were located outside Britain. Almost one half of them had less than 10% of fixed assets located overseas but almost two in ten did have over half their assets outside Britain.

	<b>Percentage Responding</b>
Under 1%	25
Between 1% and 9%	21
Between 10% and 24%	15
Between 25% and 49%	19
Over 50%	18
Don't Know	2

The above information obtained on the regulatory and market environments of respondent corporations was then analyzed against the degree of their reported vulnerability to and advantage from different forms of currency exposure.

## 4.7 The Relationship between Levels of Currency Exposure and the Environment External to the Corporation

### 4.7.1 Forms Generating Vulnerability

#### *The Regulatory Environment*

The number of significant associations between vulnerability to different forms of currency exposure and regulatory variables reported on in Table 4.21 below, despite the already noted modest degree of regulation reported, is found to be high.

In this and the following three chapters crosstabulated associations with chi-squares significant at the 5% level are printed in bold or heavy type.

**Table 4.21 - Relationship between British Times 1000 Corporate Experience of Forms of Vulnerability to Currency Exposure and the Regulatory Environment**

Form of Exposure	Regulatory Variable			
	Regulated Market	Restrictive Currency Regulations	Regulation Hinders Management	Tariffs High
Supply Chain	<b>.0100</b>	<b>.0039</b>	<b>.0000</b>	<b>.0444</b>
Local Currency Supply	.3616	.1746	.2287	.1235
Supply Margin	<b>.0500</b>	<b>.0345</b>	<b>.0066</b>	<b>.0082</b>
Elasticity of Demand	.4705	<b>.0332</b>	<b>.0017</b>	.2594
Competitive Supply	<b>.0340</b>	<b>.0082</b>	<b>.0036</b>	.0685
Competitive Demand	<b>.0231</b>	<b>.0015</b>	<b>.0061</b>	.1073
Demand Side Margin	.0566	.0537	.3505	.3160
Demand Chain	<b>.0324</b>	<b>.0077</b>	<b>.0088</b>	<b>.0182</b>
Translation	.2262	.1173	.0880	.1272
Transaction	<b>.0387</b>	<b>.0054</b>	.1544	<b>.0167</b>
Quasi-Contractual	.3429	.3492	.0876	.0741
Long-term Contract	.1158	.0617	.4325	.1527

Respondents who say that market regulation reduces the impact of exchange rate changes, that market regulation hinders foreign exchange management, who operate in currencies which lack convertibility and who report facing high tariffs and or duties are found to experience significantly higher levels of vulnerability to Supply Chain, Supply Margin and Demand Chain exposures.

The perceived level of vulnerability to certain forms of exposure is also significantly different, as is to be expected, where companies are operating in countries which are not experiencing overall adjustments to their input and output prices to reflect the level of inflation relative to other countries, i.e. when purchasing power parity does not hold. However, if corporations are vulnerable to real exchange rate changes there is, curiously, no evidence that they also see themselves vulnerable when they are subject to real price changes for their specific purchases and sales, which are not reflected in aggregated country adjustments. Possibly, this finding can be explained by a large (36%) “don't know” response.

A moderately high level of vulnerability to certain forms of exposure is shown to be associated with markets in which tariffs and/or duties exceed 10% of landed cost. This would indicate that, where the element of the price is fixed in the currency of the market concerned, a substantial reduction in the flexibility of choice of currency in which to denominate a transaction significantly affects some forms of vulnerability. Respondents reporting that allegations of dumping occur in their markets experience the same high degree of vulnerability. The survey consequently took the opportunity to test the possibility that real exchange rate changes might so influence the price of imports as to make operators in a market mistake such price movements for dumping. Results indicate that this is a possibility and that at least some allegations of dumping occur because real exchange rate changes take place and importers do not significantly alter their prices in terms of the currency of the foreign market concerned, presumably in an effort to maintain their market share. At the same time, the prices they charge in the domestic market in their own currency are not adjusted.

With a high degree of association between degrees of vulnerability to forms of currency exposure and the nature of market regulation, the degree of currency convertibility and the level of tariffs, there is prima facie evidence that the political element of market structure is important for the way currency exposure impacts. This supports Belk and Glaum (1990) in highlighting political forces. The role of governments both in shaping market structure and in exchange rate determination may thus be crucial. The arguments of Ohmae (1990) and Porter (1990) to this effect are thus pertinent.

### *The Market Environment*

The degree of association between market variables and forms of exposure generating vulnerability is somewhat variable. Respondents with different percentages of international purchases have significantly different vulnerability to all but one form of exposure as Table 4.22 illustrates. Indeed, the survey highlights the fact that, at least for British Times 1000 corporations, direct and indirect imports are a greater proportion of purchases than direct and indirect exports are of sales. It is not inconsistent, therefore, that there may be greater vulnerability to currency for international purchases than for international sales. Consequently, a devaluation may not give the net advantage to a balance of payments trading account that it is conventionally assumed to do.

A more limited level of association is found between the degree of vulnerability to certain forms of currency exposure and the percentage of purchases made locally of goods and services imported further back down the supply chain. It is therefore notable that 35% of respondents do not know, or find it impossible to say, what proportion of their purchases are imported further back along their chain of supply. Respondents, who are principally from finance and finance related departments, may be either unaware of their exposure and the need to know the currencies relevant to their sources of supply or believe it to be too difficult to be worth trying to calculate them. Whichever, there is a prima facie case for alleging that a failure to quantify the problem of currency exposure, however difficult in practice, results in inadequate information on which to base foreign exchange risk management decisions.

Corporations with above average percentages of their worldwide sales exported directly to customers experience greater levels of vulnerability in a moderately strong association. Somewhat unexpected is the finding that there is only minor association between forms of vulnerability and the degree of foreign competitiveness to which respondents are subject. While this is consistent with the finding that forms of currency exposure to competition are seen by respondents as less serious than other forms of exposure, the finding does raise the issue of how far respondents are successful in recognising that foreign competition can be intensified by real exchange rate changes. It could be that when fiercer competition or

keener competitor prices are experienced, they are wrongly attributed to factors other than currency and that the effects of currency exposure remain unrecognised.

Only one association is found between perceived vulnerability to forms of exposure and the percentage of corporate sales of goods and services made locally but which are believed to be exported later. This finding may also be due in part to the difficulty of accurately estimating indirect exports. A substantial 23% of respondents felt unable to estimate this percentage. It is also apparent from the survey response that only a very small percentage of respondents achieve significant sales of indirect exports; only 10% of them report that indirect exports exceeded 10% of sales.

Those businesses operating in markets in which they can set or negotiate the currency of price of their sales, using different methods or bases for so doing, also report significant differences in vulnerability. The latter point gives force to the arguments of Edwards (1980), who bemoans the failure of corporations to try to select the most advantageous currency for their transactions.

There is no association between levels of vulnerability to different forms of exposure and the method used to determine the currency of price of purchases. This finding is unexpected as British corporations are said to be more vulnerable to currency exposure precisely because they are reluctant to negotiate the currency in which they purchase. Either the currency of price is not a significant issue or, possibly, given the emphasis respondents accord to their vulnerability to price rises of imported purchases priced both in local and in foreign currency, corporations are just as vulnerable in whichever currency foreign purchases are priced.

It can be seen that more of the selected aspects of the market environment significantly associate with vulnerability to Quasi-Contractual, Demand Side Margin and Transaction exposures than with other forms of exposure. The reason for this is unclear.

**Table 4.22 - Relationship between British Times 1000 Corporate Experience of Forms of Vulnerability to Currency Exposure and the Market Environment**

	<b>Direct Input %</b>	<b>Indirect Input %</b>	<b>Input Prices</b>	<b>Foreign Competition</b>
Supply Chain	.0235	.0594	.6927	.6685
Local Currency Supply	.0677	.0281	.3707	.6684
Supply Margin	.0124	.0403	.1014	.2969
Elasticity of Demand	.0065	.2059	.0882	.2986
Competitive Supply	.0005	.0934	.5771	.3344
Competitive Demand	.0203	.1462	.6692	.1739
Demand Side Margin	.0107	.4660	.6657	.0480
Demand Chain	.0255	.4137	.2426	.4860
Translation	.0024	.1558	.1321	.3562
Transaction	.0010	.5141	.3853	.2467
Quasi- Contractual	.0021	.0535	.5913	.0185
Long-term Contract	.0407	.0542	.6214	.4930

	<b>Direct Output %</b>	<b>Indirect Output %</b>	<b>Output Prices</b>	<b>Foreign Asset %</b>
Supply Chain	.1418	.5565	.5208	.7164
Local Currency Supply	.1707	.2933	.7782	.0089
Supply Margin	.4208	.0865	.0298	.3918
Elasticity of Demand	.1819	.2312	.0017	.2927
Competitive Supply	.0188	.1638	.0172	.0981
Competitive Demand	.1937	.0691	.0695	.7679
Demand Side Margin	.0460	.5673	.0419	.3372
Demand Chain	.1217	.2161	.4051	.6949
Translation	.5025	.4140	.1107	.0039
Transaction	.0174	.7127	.0159	.0305
Quasi- Contractual	.0001	.0397	.0035	.2886
Long-term Contract	.1313	.2632	.0711	.2733

## 4.7.2 Forms Providing Advantage

### *The Regulatory Environment*

It is apparent from Table 4.23 that there is a very strong association between all regulatory variables and different forms of currency exposure providing advantage. There are strong significant associations between reported levels of advantage from different types of currency exposure and variables which measure the degree to which currency regulations are seriously restrictive, the degree to which market regulation reduces the impact of exchange rate changes, and the degree to which market regulation hinders currency management. Where currency regulations are seriously restrictive in a minority and a

majority of a corporation's markets, respondents invariably report experiencing more than expected moderate advantage. This suggests that where such restrictions exist, they discourage foreign competition. That they experience less than expected substantial advantage may be because currency restrictions can also hamper corporations which would otherwise be able to secure advantage from a strengthening or weakening currency. That moderate and substantial advantage are not positively correlated with a lack of restrictive currency regulations does strongly suggest that the advantage here is seen as the absence of vulnerability.

With market regulations that reduce the impact of exchange rate changes, moderate advantage doubtless arises from the removal of adverse currency movements, explaining the greater than expected moderate advantage reported by those for whom a minority or a majority of markets exhibit these features. A less than expected propensity for these same respondents to experience substantial advantage in some cases indicates that such regulations also remove the opportunities which lack of positive currency movements prevent. Market regulations which hinder currency management may again bring moderate advantage by giving some respondents a competitive edge, perhaps again by deterring competition. Lack of substantial advantage may also signify that some advantage, which might otherwise have been obtained, may not have been capitalised on because lack of satisfactory currency management made the opportunity too risky to grasp.

There is a strong association between levels of advantage from some forms of exposure and the extent to which tariffs/duties exceed 10% of landed cost. The greater the number of markets in which tariffs and/or duties are high, the greater the advantage experienced. This seems to indicate that advantage is accruing to respondents as a result of the deterrent effect tariffs in strong currencies have on competitors. Otherwise one might have expected a greater propensity to experience advantage, the fewer the markets in which a corporation faced significant tariffs and duties.

**Table 4.23 - Relationship between British Times 1000 Corporate Experience of Forms of Advantage from Currency Exposure and the Regulatory Environment**

<b>Forms of Exposure</b>	<b>Regulated Market</b>	<b>Restrictive Currency Regulations</b>	<b>Regulation Hinders Management</b>	<b>Tariffs High</b>
Supply Chain	.0013	.0045	.0028	.0278
Local Currency Supply	.0036	.0021	.0515	.0093
Supply Margin	.0128	.0008	.0435	.0110
Elasticity of Demand	.0025	.0261	.0471	.0716
Competitive Supply	.0079	.0033	.0172	.0101
Competitive Demand	.0613	.0329	.3008	.1770
Demand Side Margin	.0072	.0525	.0888	.1941
Demand Chain	.0045	.0194	.0190	.0062
Translation	.0236	.0542	.0383	.0513
Transaction	.0575	.0244	.0623	.0421
Long-term Contract	.0598	.0572	.0146	.0161

### *The Market Environment*

In contrast, it is equally apparent from Table 4.24 that the strength of association between market variables and forms of currency exposure providing advantage is very variable and weaker than for forms generating vulnerability. There is, however, a strong positive association between levels of advantage from different forms of exposure and the percentage of purchases made by corporations which are accounted for by imports. As has already been noted for British Times 1000 corporations, importing is as significant as, if not more so than, exporting. When sterling strengthens, foreign input prices fall in sterling terms and margins strengthen. The association thus confirms the advantage that a revaluation gives to an importer. It also raises a question mark over British devaluation strategies if importers suffer more than exporters benefit in the process.

Another strong association between levels of advantage and a method of negotiating currency of price occurs for prices quoted to foreign customers when customers expect a quote in their currency (output prices). In the main, lack of advantage is associated with having to quote in the foreign currency and moderate advantage with not having to do so. Overwhelmingly substantial advantage occurs when corporations quote in a foreign currency. British corporations have a propensity to quote in sterling. It seems that when they do quote selectively in foreign currency they allow themselves to benefit from any

strengthening of the foreign currency in which the sale is denominated. Note, however, that this is not the position when there is no discretion in determining the currency in which to quote.

The importance of having the appropriate currency denominated price of sales is confirmed by an association with advantage which respondents experience when particular ways of determining the currency of sale are prevalent in a majority of their markets. Respondents report not being advantaged when third parties dictate use of their currency. This is consistent with there being an advantage if there is discretion to negotiate with customers in a minority of markets when the customer's currency is weakening. Indeed such advantage is confirmed when there is also discretion to negotiate in a majority of markets. Also interesting is the lack of advantage experienced by respondents who usually dictate the use of sterling. British corporations, it seems, are justly accused by Edwards (1980) of failing to sell in currencies other than sterling even when sterling is weakening against other currencies. The 10% of corporations who dictate the use of sterling prices did not experience any increased level of advantage. One other oddity is the propensity for the corporation to be advantaged in purchasing when it has not tried to negotiate the currency in which the purchase is made. One can only conclude this recognises that there are circumstances in which the habitual currency of denomination of purchases is an advantageous one in which to buy.

There are also only two associations with the percentage of world sales directly exported (Direct Output %), and one with the degree of foreign competition in markets. As expected the nature of these associations is more complex. Moderate advantage is found in those corporations with small percentages of export sales and substantial advantage in those with very large percentages of export sales but the picture for those with neither small nor large percentages of export sales is less clear. Moderate advantage is more likely to be experienced given an absence of foreign competition.

There is only one association found between advantage and the percentage of inputs accounted for by indirect imports and no association whatsoever with either the percentage of outputs exported indirectly or the percentage of assets accounted for by foreign assets.

**Table 4.24 - Relationship between British Times 1000 Corporate Experience of Forms of Advantage from Currency Exposure and the Market Environment**

	<b>Direct Input %</b>	<b>Indirect Input %</b>	<b>Input Prices</b>	<b>Foreign Competition</b>
Supply Chain	.0614	.5481	.3495	.9727
Local Currency Supply	<b>.0315</b>	.5721	.5939	.7180
Supply Margin	<b>.0276</b>	.1095	.5668	.7139
Elasticity of Demand	.0594	.0587	.3719	.6939
Competitive Supply	.0770	.3105	.8834	.6118
Competitive Demand	.1443	.2013	.8018	.6062
Demand Side Margin	<b>.0095</b>	.1019	.3157	.2514
Demand Chain	.2039	<b>.0409</b>	<b>.0142</b>	.4443
Translation	<b>.0448</b>	.6855	.6871	.6608
Transaction	<b>.0021</b>	.6931	.2625	<b>.0368</b>
Long-term Contract	.0932	.8794	.3392	.2867
	<b>Direct Output %</b>	<b>Indirect Output %</b>	<b>Output Prices</b>	<b>Foreign Asset %</b>
Supply Chain	.8281	.3606	.1943	.8081
Local Currency Supply	.5477	.1031	.2339	.3066
Supply Margin	.3346	.0703	<b>.0416</b>	.1039
Elasticity of Demand	.9204	.1717	.3536	.4620
Competitive Supply	<b>.0001</b>	.0638	.1781	.4185
Competitive Demand	.5522	.1028	.5284	.8297
Demand Side Margin	.1507	.4224	<b>.0419</b>	.8145
Demand Chain	.5138	.1759	.4769	.1958
Translation	<b>.0322</b>	.3633	.0690	.1588
Transaction	.1324	.2682	<b>.0184</b>	.1044
Long-term Contract	.0895	.6731	.6965	.2098

To summarise, overall many of the associations between forms of currency exposure both generating vulnerability and providing advantage are significant, and the null hypothesis that regulatory and market aspects of the external environment does not determine the ways in which currency exposure affects the corporation should probably be rejected.

In this light, an analysis was carried out to examine whether the nature of a corporation's currency exposure was also significantly associated with the types of products and services provided by the corporation. The reported exposures of corporations operating in only one product market were compared with those of conglomerates, those of corporations manufacturing with those not manufacturing, and those operating in consumer markets with those in industrial markets. However, no significant associations were found, corroborating

the preliminary findings of Batten (1993) who carried out a similar exercise with Australian corporations.

#### **4.8 Summary of the Relationship between Forms of Corporate Currency Exposure and the External Environment of the Corporation**

##### **4.8.1 What is Explained**

The taxonomy of forms of currency exposure used in the survey was accepted by respondents. Only a small proportion of respondents were unable to classify their exposures by reference to it. Few omissions were identified. The need for minor changes to it are apparent. In particular, there is a case for splitting translation exposure into balance sheet and income statement translation exposure. An examination of the pattern of associations between individual forms of exposure and external environmental variables confirms that the latter associate significantly differently with each exposure. This is not unexpected if the exposures are genuinely discrete.

Using the taxonomy, all theoretical predictions were confirmed empirically. The literature stresses that different forms of currency exposure are logically interrelated. The survey of British Times 1000 corporations confirms this. If the external corporate environment determines the forms of exposure a corporation experiences, the inference is that it influences all the exposures in the sense that a greater international involvement heightens exposure and both its opportunities and threats.

As the literature predicts, corporations see economic exposure as impacting them more than transaction and translation exposure. The survey of British Times 1000 corporations found that respondents consider economic exposure to be the most significant element of total currency exposure. An exercise was carried out to determine the proportion of the discounted cash flow of a corporation which would be contracted for at any time given the average profile of survey respondents. Given also average British credit periods and a discount factor of 10%, only 5% of cash flow is found to be contracted for. This figure is still under 10% when a 20% discount factor is used, putting the relative importance of

transaction exposure in perspective. These hypothetical calculations are consistent with the survey findings.

Diminution in the importance of translation exposure over time can be explained in the light of changes in accounting regulations which have reduced the adverse impact on profits. The reason why different companies exhibit different patterns of vulnerability and advantage to currency exposure may be explained by differences in the market environment but more likely by the regulatory environment which corporations face, despite the finding that regulations are not normally pervasive and that international involvement is often small.

#### **4.8.2 What Remains Unexplained**

While it is not unreasonable to expect **individual** companies to be as advantaged as they are vulnerable or as vulnerable as advantaged at any particular point in time, respondents report **overall** being subject to greater vulnerability to currency exposure than advantage from it. In theory, however, currency exposure should confer as much advantage as disadvantage. A behavioural explanation for this finding can be offered. This issue is returned to in a later chapter. It is unclear why patterns of vulnerability and advantage are different and cannot be placed on the same continuum or why many forms of exposure associate differently with external environment variables.

It is also unclear why reported vulnerability to both Demand Side Margin and Long-term Contractual exposure has increased in recent years and why certain exposures are significantly associated with a substantial number of market and regulatory variables and others are not.

#### **4.8.3 Summary of Explanations**

On balance, the examination of the nature of corporate currency exposure using the taxonomy developed in this thesis explains more than it leaves unexplained. The first hypothesis cannot be rejected and corporate currency exposure appears contingent on the external environment.

## **4.9 Conclusion**

This chapter has set out the pattern of currency exposure found among the companies responding to the survey. The relative importance accorded by respondents to the ways currency exposure has impacted their corporations has been examined and attention has been drawn to the relationship among the different forms of exposure which impact in these ways. The pattern of currency exposure has been explained in terms of variations in regulatory and market aspects of the external environment. Conclusions have been drawn about the incidence of currency exposure and both the aspects of currency exposure which can be explained and the findings which remain unexplained have been highlighted. The ways survey respondents report they manage their currency exposure is set out in the following chapter.

## **CHAPTER 5 - METHODS USED TO MANAGE CORPORATE CURRENCY EXPOSURE**

### **5.1 Introduction**

This chapter summarises the survey findings on the pattern of methods of managing foreign exchange risk used by sample companies. The pattern of management methods adopted is described in terms of variations in the external environment of the corporation. The nature of the association found among the different methods used and between the methods used, and the ways respondents report their corporations experience currency exposure, (forms of exposure), is explored. Conclusions are drawn about the nature of currency exposure management, those aspects of management which can be explained using a contingent approach and those which remain unexplained.

### **5.2 Patterns of Usage of Foreign Exchange Risk Management Methods**

The survey of British Times 1000 corporations lists forty-five methods which a review of the literature and the first stage interviews established businesses employ to manage their currency exposure. Respondents were asked to say whether they now use them or not, or had used them in the past for the purpose of managing currency issues but no longer did so. Although invited to add to the list of the forty-five methods, only one respondent did so in the sense of reporting the deliberate non-use of a method. There is thus prima facie evidence that the list of methods used in the survey is a broadly comprehensive one.

In Chapter 3 above, methods used to manage currency exposure were classified into four groups; financial instruments, operational techniques, organisational measures and strategic methods. The pattern of their usage is set out in Tables 5.1, 5.2, 5.3 and 5.4 respectively.

#### **Financial Instruments**

Respondents from British Times 1000 corporations report more extensive usage of financial instruments than that of other methods to manage their currency exposure. This pattern is one found in all other British surveys conducted in the 1980s and in surveys conducted in other countries, but principally in the United States in the 1970s and 1980s. At the same

time corporations reported greater lapse in use of certain of these instruments than of other methods. Use of swaps has replaced that of parallel loans, and futures, denominated in small amounts, tend to be used by small firms and abandoned by growing ones, see Morgan (1983).

**Table 5.1 - Patterns of Usage of Financial Instruments by British Times 1000 Corporations in Managing Currency Exposure**

FINANCIAL INSTRUMENTS	Percentage Responding	
	Used in the past but no longer used	Used now
Forward market contracts	3	78
Spot market contracts	2	74
Option contracts	4	51
Hedging a proportion of the risk	3	46
Swaps	1	40
Parallel loans	6	17
Insurance (Inconvertibility/export)	3	17
Futures contracts	3	15
Collars	3	14

The findings of other surveys are remarkably consistent with those in Table 5.1, though none give any details of discontinued usage of methods. Jilling and Folks (1977) reported that forward market contracts, even at a time when the availability of financial instruments was at an early stage, were used by 82% of their American respondents. Broder (1984), who recorded his British respondents' usage on a seven point scale from 1 (seldom used) to 7 (much used), reported that forward exchange market operations were scored a 5 or greater by 96% of his respondents and 60% of them scored this method with a 7. Money market operations (spot market contracts), currency options and futures were scored 5 or more by 22%, 7% and 7% per cent of respondents respectively. The level of use of options reflects their then recent introduction. Cezairli (1988) reported that of his American respondents, 81% used forward contracts, 24% money market hedges, 19% futures contracts, 49% currency options and 56% currency swaps in operations in managing transaction and translation exposure in developed countries. All these instruments were in lesser use outside these areas. Soenen and Aggarwal (1989) reported that 83% of their Belgian, Dutch and British respondents employed forward market contracts and 47% money market hedges.

Finally Lessard (1990), using the same Likert scale as Broder, found that a score of 5 or greater was awarded by 78% of his respondents for use of forwards up to 12 months, by 38% for forwards beyond 12 months and up to 24 months, and by 42% for options up to 18 months.

### **Operational Techniques**

In contrast to the widespread use of financial instruments, operational techniques are reportedly used less widely. Many of these are techniques more likely to be employed on the initiative of accounting, planning, costing, sales and marketing departments, whilst use of financial instruments is normally the responsibility of treasury and finance departments.

**Table 5.2 - Patterns of Usage of Operational Techniques by British Times 1000 Corporations in Managing Currency Exposure**

<b>OPERATIONAL TECHNIQUES</b>	<b>Percentage Responding</b>	
	<b>Used in the past but no longer used</b>	<b>Used now</b>
Switching to using a different currency	1	34
Netting	1	31
Timing of dividend remittances	0	26
Changing the price to reflect exposure	0	23
Using indexation in contracts	1	20
Leading and lagging payments/receipts	2	20
Using reference to a stable currency	2	16
Delaying/speeding up sales/purchases	0	14
Using reference to a basket of currencies	0	12
Using international group transfer pricing	1	10

The stark contrast of the findings of the Jilling and Folks (1977) survey and those conducted since the mid 1980s occurs in the reported usage of operational techniques. No fewer than 15 of the 21 methods listed by Jilling and Folks are operational techniques. In their survey, 82% of respondents reported accelerating/decelerating subsidiary dividend payments, 71% leading/lagging intra company receivables, 68% adjusting product prices in local markets, 51% leading/lagging local currency external payables/receivables, 49% adjusting product price levels in export markets, 42% netting, 42% adjusting inventory levels, 40% using contractual clauses calling for assumption of exchange rate risk by suppliers or customers, 39% varying the currency of billing to external parties, 32% seeking different credit terms

from suppliers, 29% factoring receivables, 29% adjusting transfer prices, 25% formally altering credit terms to suppliers, 10% leasing rather than buying from suppliers and 7% leasing rather than selling to customers.

Broder (1984) reported insertion of a price escalation clause in contracts as being scored a 5 or more by 45% of respondents as a substantially used operational technique. Similarly 21% reported leading and lagging intercompany accounts. Not a single respondent reported adjustment of accounts payable/receivable with third parties at that level and no other operational techniques are mentioned. Cezairli (1988) recorded that 49% of his respondents used leads/lags, 52% netting and 55% intrafirm transfers to manage transaction and translation exposure and 73% made price adjustments in managing economic exposure in developed countries with less use made of these techniques in other areas. Soenen and Aggarwal (1989) reported that 42% of their respondents varied the currency in which they priced, 37% made credit term adjustments, and 35% practised leading and lagging. Lessard (1990) reported only one operational measure specifically, the adjustment of foreign prices to maintain dollar revenues, scored a 5 or more by 46% of his respondents, the balance being left to be reported as other techniques.

The findings of contemporary surveys unanimously record a sharp drop in the use of operational methods from 1970s levels. This decline, synonymous with the growth in use of financial instruments, suggests that use of the latter has replaced the former. Alternatively, since the vast majority of the former are methods traditionally employed by other than finance and treasury staff, the implication could also be that these functions have abdicated responsibility for currency exposure management to treasurers and finance executives, who then manage currency exposure using the methods they most favour.

### **Organisational Measures**

Table 5.3 confirms the widespread use of centralised treasuries in managing currency exposure. In Britain, the growth of treasury specialisation in currency management is a marked trend of the last twenty years. Most corporations not using a central treasury to

manage currency exposure do not have distinct treasury departments and the finance function manages currency exposure.

**Table 5.3 - Patterns of Usage of Organisational Measures by British Times 1000 Corporations in Managing Currency Exposure**

ORGANISATIONAL MEASURES	Percentage Responding	
	Used in the past but no longer used	Used now
Using a centralised treasury	0	53
Using currency sensitivity analysis in planning	0	22
Using bank clearing intergroup flows systems	0	15
Using re-invoicing centres	1	5

Jilling and Folks (1977) reported that 56% of their respondents rescheduled intra company debt payments but they did not specifically refer to re-invoicing centres. No other organisational measures are reported. Broder (1984) made no mention of organisational measures other than to record that 77% of respondents reported that the treasury department, though not necessarily a central treasury department, was responsible for the exposure management function. Cezairli (1988) recorded 27% of his respondents having a re-invoicing centre, 45% a multi-currency netting centre, and Lessard (1990) has highlighted the rise in the treasury function. Corroboration of this survey's findings with respect to organisational measures is problematical due to definitional differences.

### **Strategic Methods**

Respondents report widespread use by British Times 1000 corporations of two of the strategic methods available to manage currency exposure, but limited use of other methods. A greater use of some of these is apparent than has been identified in earlier British surveys. This picture is consistent with the finding of an increase in the sophistication of exposure management in British companies, which was detected by Soenen and Aggarwal (1989). However, low levels of involvement in the management of currency exposure by corporate planning, marketing, production and general management executives, which is reflected in the reluctance of the latter to respond to surveys on this subject, may account for the limited

employment of many strategic methods. If involvement in the management of currency exposure is dominated by and remains largely within the finance function, use of strategic methods to manage currency exposure, like that of operational techniques, may be and may remain restricted.

Table 5.4 emphasises that only two strategic methods, those of matching and obtaining local currency denominated debt, are widely employed to manage currency exposure. Both are likely to be employed on the initiative of treasury or finance departments whereas this is not the case for the myriad of other strategic methods whose use is reported. A certain amount of reporting bias can only partially rebut further prima facie evidence of there being a functionally driven pattern of methods usage.

**Table 5.4 - Patterns of Usage by British Times 1000 Corporations of Strategic Methods in Managing Currency Exposure**

STRATEGIC METHODS	Percentage Responding	
	Used in the past but no longer used	Used now
Matching assets/income with liabilities/expense in same currencies	0	61
Obtaining local currency denominated debt	0	60
Use of Fiscal (tax) schemes	1	19
Selective subcontracting	0	14
Selective overseas plant location	0	12
Use of royalty schemes	1	10
Seeking/obtaining government help	4	10
Asking others in supply chain to reduce exposure	0	9
Use of Joint Ventures * (see below)	0	9
In different currencies:		
matching expenses with capital liabilities	0	8
matching revenues with capital assets.	0	8
Matching competitor sources	0	8
Acquisitions and/or disposals of businesses *	0	7
Moving to weak/weakening currency input sources	0	7
Selecting assets in low correlation currencies	0	6
Productivity improvement programmes *	0	5
Matching competitor markets	0	5
Moving from strong/strengthening input sources	0	4
Moving from weak/weakening currency markets	0	4
Moving to strong/strengthening currency markets	0	4
Changing level/emphasis of promotional activity*	0	3
Product differentiation programmes *	0	1

\*where primary policy reason was to deal with currency exposure.

Jilling and Folks (1997) identified only four strategic methods. They reported 83% of their American respondents increasing borrowing levels in a currency and 82% decreasing them, 36% financing funding requirements or investing excess cash of third country subsidiaries in [another] currency, and 24% utilising government exchange risk guarantee programmes. Broder (1984) reported that 88% of his respondents affirmed that their choice of currency for borrowing by subsidiaries was influenced by central exposure objectives, but said nothing more about strategic methods.

Cezairli (1988) found that of his respondents, 82% used local currency debt to manage transaction and translation exposures. Some 60% used unhedged long-term foreign currency

borrowing, 68% flexibility in sourcing, 56% adjustment of capacity utilisation, 57% product diversification, 52% geographical diversification, and 62% matching of the currency of determination of costs and revenues to manage economic exposure in their operations in developed countries. Again, less widespread use of all these methods was reported in other areas.

Lessard (1990) with the most recent American survey recorded that 59% of his respondents scored 5 or more, matching revenues and costs, 21% moving sourcing to a low cost region, and 19% siting plants with a view to flexibility in shifting production capacity. The latter two techniques appear to be used more by American multinationals than by British Times 1000 corporations. One explanation of this difference is the proximity of Mexico to the United States. However, the Australian Bureau of Industry Economics report even greater use of these methods by Australian multinationals, with 26% of their respondents establishing offshore operations, and 18% and 21% changing sourcing and selling markets respectively. Perhaps the difference here is precisely the comparative lack of proximity to other countries.

Frequency of use of methods, however, does not necessarily correctly measure the extent of usage or the relative amount of a corporation's exposure dealt with. For this reason subsequent detailed analysis has been carried out on only those methods employed by one fifth or more of respondent corporations. This restricts the analysis to thirteen of the forty-five methods employed. These thirteen do, however, account for two thirds of methods used, and an analysis carried out on all forty-five methods has produced results consistent with those reported here.

An analysis of survey responses shows that in excess of a quarter of respondents did not indicate that use of any method had been discontinued. Some respondents are in a position to look back at their corporation's practices and their response may genuinely confirm that no method has been abandoned. Many other respondents are relative newcomers to their corporations and without consultation with others in their organisation would have had difficulty in answering this question. No respondent, however, reported consulting others in completing the survey questionnaire. The accuracy of the response to this question is

consequently in doubt. The findings of past patterns of usage, therefore, must be qualified accordingly and are consequently not analyzed in detail.

Table 5.5 shows that on average each corporation uses 6 of the 13 most widely used methods and the range is 2 to 10 methods for most corporations. Confining the analysis to the methods most widely employed, over 90% of corporations are using one or more financial instruments, 70% are using one or more strategic methods and 60% are using one or more operating techniques and one or more organisational measures.

**Table 5.5 - Reported Usage of the Thirteen Most Widely Employed Methods of Managing Corporate Currency Exposure by British Times 1000 Corporations**

	Number of Corporations	Number of Corporations using any:			
		financial instruments	operating techniques	organisational measures	strategic methods
All Methods	2	2	2	2	2
12 Methods	2	2	2	2	2
11 Methods	5	5	5	5	5
10 Methods	10	10	10	10	9
9 Methods	14	14	14	12	14
8 Methods	10	10	6	10	10
7 Methods	15	15	10	10	15
6 Methods	11	11	7	8	11
5 Methods	9	9	4	5	5
4 Methods	13	13	9	4	7
3 Methods	5	5	1	2	1
2 Methods	11	10	2	2	3
1 Method	4	2	0	1	1
No Methods	8	0	0	0	0
Not Stated/Don't Know	0	-	-	-	-
<b>Total</b>	<b>119</b>	<b>108</b>	<b>72</b>	<b>73</b>	<b>85</b>
<b>% of Total</b>	<b>100</b>	<b>91</b>	<b>61</b>	<b>61</b>	<b>71</b>

If the vast majority of corporations employ a number of methods to manage currency exposure, an additive effect cannot be ruled out. Consequently, the following section examines the pattern of common usage among the most widely used methods. The literature, including other surveys, contains no analysis of this nature. Consequently, the findings reported below cannot be corroborated.

### 5.3 Interrelationships among Foreign Exchange Risk Management Methods Used

If British Times 1000 corporations on average use ten methods to manage their currency exposure, a strong possibility exists that methods may be used in combination. This section examines the significant associations among the thirteen most widely used methods, looking first at those among the four groups of methods identified. These are set out in Tables 5.6 to 5.9. The associations among methods in the different groups are then examined. These are set out in Tables 5.10 to 5.15.

It was found that all associations significant at the 5% level are positive associations. If particular methods of managing currency exposure were used to manage only particular exposures, corporations not subject to a particular form of exposure would be expected to make less use of a particular method. This would result in a finding of a significant negative association. The same would be the case where the management of one form of exposure amplified the impact of another. Substitutability might also be implied from the finding of negative associations but their absence does not provide any evidence of this effect. It appears, therefore, unlikely that there is a simple relationship between single methods and single forms of exposure and the extent to which methods are employed in combination needs to be investigated.

The use of each of the most widely employed financial instruments, as Table 5.6 shows, was found to be highly significantly associated with the use of all the others. Many corporations were found to be employing all five of the most widely used financial instruments.

	<b>Forwards</b>	<b>Spot Contracts</b>	<b>Options</b>	<b>Prop' Hedge</b>	<b>Swaps</b>
Forward market contracts	x	.0000	.0000	.0002	.0019
Spot market contracts	.0000	x	.0004	.0085	.0012
Option contracts	.0000	.0004	x	.0003	.0018
Proportional hedging	.0002	.0085	.0003	x	.0055
Swaps	.0019	.0012	.0018	.0055	x

In marked contrast this close association was not the case for operational techniques: the use of currency switching, netting and price changing was not associated. See Table 5.7. However, the timing of dividends is associated with other operational techniques.

**Table 5.7 - Interrelationships among Operational Techniques used by British Times 1000 Corporations**

	<b>Switching Currency</b>	<b>Netting</b>	<b>Dividend Remittance</b>	<b>Changing Price</b>
Switching currency	x	.0885	.0019	.2613
Netting	.0885	x	.0132	.6013
Timing of dividends	.0019	.0132	x	.2689
Changing price	.2613	.6013	.2689	x

The use of the two widely employed organisational measures is significantly associated, implying that treasurers are more likely to conduct a sensitivity analysis than others managing foreign exchange risk.

**Table 5.8 - Interrelationships among Organisational Measures used by British Times 1000 Corporations**

	<b>Using a Centralised Treasury</b>	<b>Sensitivity Analysis</b>
Using a Centralised Treasury	x	.0007
Sensitivity analysis	.0007	x

The use of the two widely employed strategic methods is also significantly associated, underlining that use of local currency denominated debt allows corporations with local currency assets to match these.

**Table 5.9 - Interrelationships among Strategic Methods used by British Times 1000 Corporations**

	<b>Matching</b>	<b>Using Local Currency Denominated Debt</b>
Matching	x	.0000
Using Local Currency Denominated Debt	.0000	x

The associations between usage of methods in the four different groups were examined next. Use of financial instruments was found to be associated with use of almost half of the operational techniques, see Table 5.10, and with use of almost all the organisational measures and strategic methods (Tables 5.11 and 5.12 respectively).

**Table 5.10 - Interrelationships between Financial Instruments and Operational Techniques used by British Times 1000 Corporations**

	<b>Switching Currency</b>	<b>Netting</b>	<b>Dividend Remittance</b>	<b>Changing Price</b>
Forward market contracts	.0195	.1116	.0080	.5288
Spot market contracts	.0548	.0372	.0385	.2890
Option contracts	.0199	.1615	.0902	.7727
Proportional hedging	.0690	.0435	.0021	.7277
Swaps	.2323	.0341	.0693	.7836

**Table 5.11 - Interrelationships between Financial Instruments and Organisational Measures used by British Times 1000 Corporations**

	<b>Use Centralised Treasury</b>	<b>Sensitivity Analysis</b>
Forward market contracts	.0003	.0883
Spot market contracts	.0024	.1164
Option contracts	.0004	.0035
Proportional hedging	.0000	.0000
Swaps	.0006	.0167

**Table 5.12 - Interrelationships between Financial Instruments and Strategic Methods used by British Times 1000 Corporations**

	<b>Matching</b>	<b>Using Local Currency Denominated Debt</b>
Forward market contracts	.0070	.0001
Spot market contracts	.0600	.0002
Option contracts	.0023	.0346
Proportional hedging	.0001	.0000
Swaps	.0374	.0002

Although loosely linked to financial instruments, operational techniques were found to be associated closely in use with organisational measures, as Table 5.13 shows, but less so with strategic methods as Table 5.14 confirms.

**Table 5.13 - Interrelationships between Operational Techniques and Organisational Measures used by British Times 1000 Corporations**

	Using a Centralised Treasury	Sensitivity Analysis
Switching currency	.2449	.0404
Netting	.0006	.0039
Timing of dividends	.0283	.0021
Changing price	.9926	.0050

**Table 5.14 - Interrelationships between Operational Techniques and Strategic Methods used by British Times 1000 Corporations**

	Matching	Using Local Currency Denominated Debt
Switching currency	.1143	.3338
Netting	.0003	.2075
Timing of dividends	.0035	.0001
Changing price	.6736	.8624

Finally, organisational measures were found to associate closely with strategic methods as well as with the other two groups of methods, see Table 5.15, with the latter, therefore, only having weak links with operational techniques.

**Table 5.15 - Interrelationships between Organisational Measures and Strategic Methods used by British Times 1000 Corporations**

	Matching	Using Local Currency Denominated Debt
Use centralised treasury	.0019	.0034
Use sensitivity analysis	.0265	.0065

To summarise, a corporation which employs any of the most widely used foreign exchange risk management methods has a greater propensity to use a majority of the other most

widely used methods. There is, thus, strong a priori evidence that methods used are seen as complementary to each other and are employed as a package. Additionally, a number of methods may be considered to be interchangeable. The issue of whether or not use of one method is seen to increase the effectiveness of another is therefore explored further in Chapter 7.

If the external environment determines the way currency exposure affects the corporation, it is possible that, and it is hypothesised that, the external environment also determines or influences the methods used to manage that exposure.

#### **5.4 Relationships between Foreign Exchange Risk Management Methods and the Environment External to the Corporation**

This section examines the association between the use of methods to manage currency exposure and the corporations' external environment thereby testing the second hypothesis that the methods a corporation uses to manage corporate currency exposure are determined by the external environment.

##### **Regulatory Environment**

Only one association significant at the 5% level is found between methods used to manage currency exposure and the regulatory environment. This is a negative association between the use of a centralised treasury and the propensity for market regulation to reduce the impact of exchange rate changes. Logically, where regulation reduces the impact there is a reduced need for treasury involvement to deal with the matter.

Overall it is clear from Table 5.16 that use of specific methods is not associated with the state of regulation in the corporate environment.

**Table 5.16 - Relationship between Foreign Exchange Risk Management Methods Used by British Times 1000 Corporations and the Regulatory Environment**

	Regulatory Variables			
	Regulated Markets	Restrictive Currency Regulations	Regulations Hinder Management	Tariffs High
Forward market contracts	.3473	.9527	.9764	.8677
Spot market contracts	.0584	.3168	.2027	.4733
Option contracts	.0822	.4622	.2334	.7750
Proportional hedging	.5246	.9466	.7287	.7844
Swaps	.1909	.1005	.1190	.1316
Switching currency	.8298	.5390	.4652	.5821
Netting	.5374	.3901	.9581	.4025
Timing of dividends	.8625	.4475	.4668	.4529
Changing price	.2759	.2811	.2211	.8137
Use centralised treasury	.0019	.3650	.4022	.1173
Use sensitivity analysis	.2759	.5169	.8188	.4957
Matching	.0709	.6746	.8263	.3973
Using Local Currency Denominated Debt	.4828	.5167	.4494	.5188

### Market Environment

In Table 5.17 only a small number of significant associations are found between exposure management methods used and variables which relate to the market environment. Several of these associations do not show any clear pattern. If the same is also the case for other market variables not specified in this model, it would be necessary to reject the Earl (1984) hypothesis that differences of approach amongst multinationals in managing their exposure are to be explained by their product markets.

**Table 5.17 - Relationship between Foreign Exchange Risk Management Methods Used by British Times 1000 Corporations and the Market Environment**

	Direct Input %	Indirect Input %	Input Prices	Foreign Competition
Forward market contracts	.2541	.2928	.2970	.7215
Spot market contracts	.6230	.4732	.4280	.8129
Option contracts	.5374	.6828	.2294	.8544
Proportional hedging	.9336	.6898	.6391	.3076
Swaps	.9071	.4700	.3034	.5860
Switching currency	.4349	.6607	.0961	.2162
Netting	.9025	.8994	.7971	.0175
Timing of dividends	.2773	.6241	.9691	.1055
Changing price	.1792	.1184	.2938	.0337
Use a centralised treasury	.9770	.5570	.4356	.3197
Use sensitivity analysis	.6579	.3486	.8430	.1704
Matching	.3653	.5870	.2184	.1221
Using Local Currency Denominated Debt	.1716	.3842	.0599	.4241
	Direct Output %	Indirect Output %	Output Prices	Foreign Asset %
Forward market contracts	.6291	.6681	.0518	.6403
Spot market contracts	.1599	.2807	.5453	.1698
Option contracts	.2092	.3142	.0786	.1232
Proportional hedging	.9833	.9031	.1030	.3660
Swaps	.4873	.9318	.0570	.3803
Switching currency	.0449	.1111	.3930	.7867
Netting	.2943	.5449	.2145	.1969
Timing of dividends	.1650	.0386	.0252	.0158
Changing price	.1673	.0093	.2829	.3491
Use a centralised treasury	.6761	.6077	.0759	.0650
Using sensitivity analysis	.8203	.4216	.7980	.1516
Matching	.8108	.1985	.8908	.0001
Using Local Currency Denominated Debt	.8521	.6606	.1386	.0010

There is an association between two methods used to manage exposure and corporations having different percentages of worldwide sales sold locally but exported further down the supply chain. Those with under 1% of such indirect exports invariably make less than expected use of price changing and timing of dividend remittances, in contrast to those whose indirect exports are between 1% and 9% and between 10% and 24% of sales when the methods are used more frequently than is to be expected. However, those with indirect exports in the 25% to 49% range made greater use of the methods, but those with indirect exports which represent more than 50% of sales made less use of them. Use of dividend remittance schemes was also significantly associated with the basis on which the currency

of sale in the majority of a respondent's markets is determined. It was found that when tradition dictates the currency of sale, greater use is made of the method. Where third parties dictate the use of their currency, respondents make greater use of the method. Where the customers expect a quote in their currency the position is the same. Greater use is made of the method when respondents are able to dictate use of the domestic currency, otherwise use is neither greater nor less than expected. Less use is made of the method only when respondents normally quote in a currency that suits them. Finally where it is too difficult to generalise about the currency of price, greater use is made of the method.

One moderate association is between methods used and the degree of foreign competition experienced by respondents. There is a positive association here with the use of netting and price changing. There is a mainly negative association between use of currency switching and the variable measuring the percentage of worldwide third party sales exported, and a complicated and confusing one between the propensity to be able to determine the currency of sale in a majority of markets and to manipulate the timing of dividends.

Given the very small number of significant associations between usage of methods to manage currency exposure and variables measuring the market environment, a further analysis of the use of methods to manage currency exposure was undertaken to see if corporations operating in one product market only used methods differently from conglomerates, and whether corporations operating in different product markets also used different methods. However no significant associations could be found. The modest degree of assessed regulation and international market involvement of British Times 1000 corporations together with interchangeability of methods used to manage exposure might possibly make the analysis too coarse grained to pick up contingent effects here. However, subject to this possibility, the null hypothesis, that the methods a corporation uses to manage corporate currency exposure are not determined by regulatory and market aspects of the external environment, cannot be rejected.

## **5.5 Relationships between Foreign Exchange Risk Management Methods and Forms of Currency Exposure on Corporations**

If methods used to manage currency exposure are not determined directly by the external environment it is appropriate to examine whether it is the perceptions of the vulnerability to and advantage from different forms of currency exposure on the corporation which dictate what methods are used to manage those exposures. The third hypothesis, that the form which currency exposure takes will determine the methods a company uses to manage it, is now tested.

The associations between financial instruments, operational techniques, organisational measures and strategic methods and forms of vulnerability to currency exposure are set out in Tables 5.18 to 5.21 respectively, and those between these four groups and forms of advantage from currency exposure in Tables 5.22 to 5.25 respectively.

The existence of a significant association here indicates that a method used to manage currency exposure is either in greater or lesser use by respondents who consider themselves affected to a particular degree by a specific currency exposure than can be explained by chance variation. In that sense, the analysis provides an insight into those methods of managing currency exposure that are used or not used by respondents with a specific degree of vulnerability to or advantage from a form of currency exposure.

Most often respondents report making less use of a method when they perceive their corporation not vulnerable to a form of exposure and they make more use of it when they see themselves moderately or substantially vulnerable. Here the implication is that the method is used to manage the vulnerability. When the pattern is similar for advantage the implication is that greater use brings greater advantage.

At times respondents report a different picture, where it is those who see themselves moderately vulnerable who make greater use of a method and those seeing themselves substantially vulnerable less use. The logical explanation here is that when not vulnerable respondents do not need to use the method; as they become vulnerable they see the method as inexpensive, easy or otherwise useful; when they believe they are substantially vulnerable

to a particular form of exposure, the decision is made to switch to more efficacious methods. When it is those who see themselves moderately advantaged who make greater use of a method and those seeing themselves substantially advantaged less use, a lack of advantage together with lack of use may imply that if the method is not used advantage is not secured but vulnerability is not experienced either. As the method is used, moderate advantage is secured. But if respondents see themselves highly advantaged by a form of exposure, they do not see any need to interfere and manage the exposure.

If greater use is made of a method by respondents who see their corporations as neither vulnerable nor moderately vulnerable but less use by those who see themselves as highly vulnerable, greater use by those believing themselves not vulnerable can be explained as an effort on their part to achieve advantage. If greater use is made of a method by respondents who see their corporations as neither advantaged nor moderately advantaged but less use by those who see themselves as highly advantaged, greater use by those believing themselves not advantaged can be explained as an effort on their part to reduce vulnerability.

Two points should be borne in mind. First, usage of methods is related both to vulnerability and advantage. Second, there may be a perceived hierarchy of methods and only certain methods are considered adequate for those seeing themselves as extremely vulnerable. However, if this is the explanation, what are the more efficacious methods switched into and why have no cases of significant negative associations between use of two methods been observed? The point has already been made that nowhere in the literature is there any general analysis of substitutability or ranking of methods. One is left to speculate whether there is sufficient substantial vulnerability to allow either effect to be detected.

### **Vulnerability**

Of the 1080 possible associations between reported vulnerability to the twelve different forms of currency exposure and the use of the forty-five methods of managing currency exposure, only 70 or approximately 6.5% are significant at the 5% confidence level. If data on discontinued usage of methods is used to produce a comparison of past and present method usage, thirteen of the significant associations which existed in the past no longer do

so, and 23 of those which existed in the past persist. A further eleven of the associations were not significant in the past are so now. Notably, 48% or under half of the associations significant in the past are the same as those that are significant today. How this finding would be altered by more accurate reporting of discontinued usage of methods is unclear, but the apparent instability highlighted is not easily explained.

Table 5.18 shows that there are a small number of significant associations between widely used financial instruments and forms of vulnerability to currency exposure. Vulnerability to Supply Margin exposure is associated with forward market and option contracts. Respondents making greater than predicted use of these methods have a greater propensity to be report being substantially vulnerable; those making less than expected use of the methods are more likely to report being moderately vulnerable or not vulnerable at all. Vulnerability to both Competitive Supply and Demand exposures is significantly positively associated with use of spot contracts. Vulnerability to Demand Side Margin exposure is also associated with greater use of spot market contracts by the substantially vulnerable and less use by those not considering themselves so.

<b>Financial Instruments</b>	<b>Forwards</b>	<b>Spot Contracts</b>	<b>Options</b>	<b>Prop' Hedge</b>	<b>Swaps</b>
<b>Forms of Exposure</b>					
Supply Chain	.7036	.2305	.4231	.5281	.1068
Local Currency Supply	.6467	.2600	.1408	.7456	.4050
Supply Margin	<b>.0226</b>	.1566	<b>.0044</b>	.4152	.6437
Elasticity of Demand	.3318	.1183	.0797	.5282	.2699
Competitive Supply	.2841	<b>.0142</b>	.3415	.3792	.6404
Competitive Demand	.2277	<b>.0459</b>	.3319	.6156	.7358
Demand Side Margin	.1065	<b>.0015</b>	.2032	.4516	.4229
Demand Chain	.1323	.0559	.2599	.3732	.7341
Translation	.1426	.2076	.2830	.1911	.2599
Transaction	.6448	.4063	.7782	.1470	.7782
Quasi-Contractual	.3326	.3266	.2235	.2868	.5681
Long-term Contract	.6136	.1988	.5239	.8701	.5620

Table 5.19 below shows that there are an equally small number of significant associations between widely used operational techniques employed to manage currency exposure and

forms of vulnerability to currency exposure. Supply Margin exposure is associated with switching currencies. There is greater than expected use of this method by the substantially vulnerable and less than expected use by those not or moderately vulnerable. Vulnerability to Competitive Demand exposure is associated with changes in price to reflect exposure, a method which is used more than expected by the substantially vulnerable, but less by both the moderately vulnerable and those not considering themselves vulnerable. Vulnerability to Demand Side Margin exposure is associated with switching to use of a different currency. The substantially vulnerable make more use of switching to a different currency: both the moderately vulnerable and those not so use the method less than expected.

Associated with vulnerability to Translation exposure is switching to different currencies and price changing to reflect exposure. Greater use of switching is made by the moderately vulnerable and less by the substantially vulnerable and those not vulnerable. Price changing is used more by the moderately vulnerable and less so by the substantially vulnerable and those not vulnerable. There is one significant association between vulnerability to Transaction exposure and methods used to manage currency exposure: switching is used more by the substantially vulnerable and less by the moderately vulnerable and those not vulnerable to this form of exposure.

**Table 5.19 - Relationship between Operational Techniques Widely Used by British Times 1000 Corporations and Forms of Vulnerability to Currency Exposure**

<b>Operational Techniques</b>	<b>Switching Currency</b>	<b>Netting</b>	<b>Dividend Remittance</b>	<b>Changing Price</b>
<b>Forms of Exposure</b>				
Supply Chain	.4566	.3611	.3228	.2611
Local Currency Supply	.1830	.3171	.5086	.3021
Supply Margin	<b>.0471</b>	.1408	.5066	.5409
Elasticity of Demand	.3400	.1597	.1518	.6627
Competitive Supply	.2093	.1104	.3575	.0819
Competitive Demand	.2004	.0882	.0879	<b>.0470</b>
Demand Side Margin	<b>.0091</b>	.1325	.5563	.0877
Demand Chain	.2526	.6921	.3447	.2561
Translation	<b>.0482</b>	.4515	.2710	<b>.0335</b>
Transaction	<b>.0395</b>	.5762	.5387	.4317
Quasi-Contractual	.0679	.3987	.1140	.0825
Long-term Contract	.2229	.0854	.1147	.7030

Table 5.20 shows that there are only two significant associations between widely used organisational measures used to manage currency exposure and forms of vulnerability. Supply Margin exposure and Translation exposure are positively associated with currency sensitivity analysis in planning.

**Table 5.20 - Relationship between Organisational Measures widely Used by British Times 1000 Corporations and Forms of Vulnerability to Currency Exposure**

<b>Organisational Measures</b>	<b>Use a Centralised Treasury</b>	<b>Sensitivity Analysis</b>
<b>Forms of Exposure</b>		
Supply Chain	.9745	.2022
Local Currency Supply	.5752	.1388
Supply Margin	.9803	<b>.0277</b>
Elasticity of Demand	.1110	.1597
Competitive Supply	.6368	.2608
Competitive Demand	.2610	.1744
Demand Side Margin	.2840	.3746
Demand Chain	.9471	.0787
Translation	.6261	<b>.0202</b>
Transaction	.5725	.1132
Quasi-Contractual	.5781	.0903
Long-term Contract	.8599	.6505

Finally as can be seen in Table 5.21 there are no significant associations whatsoever between any widely used strategic methods used to manage currency exposure and forms of exposure.

**Table 5.21 - Relationship between Strategic Methods Widely Used by British Times 1000 Corporations and Forms of Vulnerability to Currency Exposure**

<b>Strategic Methods</b>	<b>Matching</b>	<b>Using Local Currency Denominated Debt</b>
<b>Forms of Exposure</b>		
Supply Chain	.2937	.2462
Local Currency Supply	.7475	.3768
Supply Margin	.5265	.3947
Elasticity of Demand	.7659	.4479
Competitive Supply	.7228	.5691
Competitive Demand	.7462	.7301
Demand Side Margin	.5628	.6268
Demand Chain	.7690	.3964
Translation	.1486	.0618
Transaction	.9136	.3665
Quasi-Contractual	.9723	.5411
Long-term Contract	.2353	.1405

### **Advantage**

Of the 990 possible associations between reported advantage from different forms of currency exposure and the use of the forty-five methods of managing currency exposure, only 73 or approximately 7.5% are significant at the 5% confidence level. If data on discontinued usage of methods is used to produce a comparison of past and present method usage, ten of the significant associations which existed in the past no longer do so, and 28 of those which existed in the past persist. A further seven of the associations which were not significant in the past are so now. Just over 62% or under two thirds of the significant associations in the past are the same as those which are significant today. Although these findings show a less dramatic change than that recorded for vulnerability, it is still a marked change. It is also not easy to explain.

There is a more marked lack of significant associations between forms of exposure which confer advantage and methods used to manage currency exposure than there is for

vulnerability. Table 5.22 lists only three of these for widely used financial instruments. Advantage from Demand Side Margin Exposure associates with spot market contracts where there is greater use of this method by both the moderately and the substantially advantaged. It is difficult to explain the advantage to be obtained from spot market contracts in this context. Advantage from Demand Chain Exposure is associated with options contracts where it is the moderately advantaged who make more use of the method and those not advantaged and highly advantaged less use. Advantage from Transaction exposure is associated with proportional hedging of risks and it is the substantially advantaged who make more use of the method and the moderately and not advantaged less use of it.

<b>Financial Instruments</b>	<b>Forwards</b>	<b>Spot Contracts</b>	<b>Options</b>	<b>Prop' Hedge</b>	<b>Swaps</b>
<b>Forms of Exposure</b>					
Supply Chain	.9250	.5178	.9037	.1070	.1941
Local Currency Supply	.7594	.3547	.4189	.6107	.5814
Supply Margin	.1507	.3230	.2396	.3540	.6914
Elasticity of Demand	.8027	.2591	.5745	.3854	.5130
Competitive Supply	.3330	.0935	.2699	.1636	.5384
Competitive Demand	.2948	.1114	.1907	.6650	.8163
Demand Side Margin	.3557	<b>.0046</b>	.6150	.3853	.4462
Demand Chain	.1110	.1985	<b>.0290</b>	.3904	.7977
Translation	.7070	.0671	.3985	.2027	.1355
Transaction	.3757	.4448	.6652	<b>.0080</b>	.5920
Long-term Contract	.6867	.4215	.4585	.4034	.4830

There is only one significant association between forms of exposure conferring advantage and operational techniques used to manage currency exposure. Competitive Supply exposure, as Table 5.23 records, is significantly associated with price changing. The substantially advantaged make greater use of price changing and those not advantaged or only moderately so less than expected use.

**Table 5.23 - Relationship between Operational Techniques Widely Used by British Times 1000 Corporations and Forms of Advantage from Currency Exposure**

<b>Operational Techniques</b>	<b>Switching Currency</b>	<b>Netting</b>	<b>Dividend Remittance</b>	<b>Changing Price</b>
<b>Forms of Exposure</b>				
Supply Chain	.7750	.7962	.4567	.8685
Local Currency Supply	.7476	.4017	.2881	.7416
Supply Margin	.6726	.7072	.7919	.7028
Elasticity of Demand	.6461	.2928	.7640	.2682
Competitive Supply	.5059	.7239	.3751	<b>.0015</b>
Competitive Demand	.4673	.1137	.2985	.2089
Demand Side Margin	.1958	.1261	.4121	.7559
Demand Chain	.4762	.8064	.4169	.5719
Translation	.6705	.3158	.6605	.6502
Transaction	.4208	.1809	.3298	.2879
Long-term Contract	.7216	.6486	.4568	.0780

Table 5.24 highlights only two significant associations between advantage from forms of currency exposure and organisational measures. Elasticity of Demand exposure is positively associated with currency sensitivity analysis in planning. Transaction exposure associates with use of a centralised treasury. The substantially advantaged make more use of a centralised treasury, the moderately advantaged and those not advantaged less of one.

**Table 5.24 - Relationship between Organisational Measures widely Used by British Times 1000 Corporations and Forms of Advantage from Currency Exposure**

<b>Organisational Measures</b>	<b>Use a Centralised Treasury</b>	<b>Sensitivity Analysis</b>
<b>Forms of Exposure</b>		
Supply Chain	.3498	.1524
Local Currency Supply	.9909	.7416
Supply Margin	.7080	.2305
Elasticity of Demand	.9734	<b>.0425</b>
Competitive Supply	.6228	.2718
Competitive Demand	.1894	.6073
Demand Side Margin	.8614	.9222
Demand Chain	.4784	.1660
Translation	.3040	.8958
Transaction	<b>.0135</b>	.6337
Long-term Contract	.3301	.7898

Finally Table 5.25 records that there are no significant associations whatsoever between strategic methods used to manage currency exposure and forms of exposure conferring advantage.

<b>Strategic Methods</b>	<b>Matching</b>	<b>Use Local Currency Denominated Debt</b>
<b>Forms of Exposure</b>		
Supply Chain	.5189	.1571
Local Currency Supply	.8534	.6372
Supply Margin	.9401	.7694
Elasticity of Demand	.9031	.5947
Competitive Supply	.9720	.8497
Competitive Demand	.8914	.7781
Demand Side Margin	.4104	.7868
Demand Chain	.4278	.6700
Translation	.9572	.7356
Transaction	.6598	.3755
Long-term Contract	.3273	.3483

In summary, there are only a small number of significant associations between forms of exposure and methods used to manage them. Not every method can logically be expected to deal with every form of exposure. While some methods are suited to managing certain forms of exposure and the finding of a significant positive association would be expected, other methods are not suitable for managing certain forms and a negative association anticipated. The associations found therefore need to be compared with those one might logically expect to find.

An examination of the literature reveals numerous discussions of the suitability of using particular methods to manage forms of exposure conventionally distinguished as economic, transaction and translation. Broder (1984), see Chapter 2 above, assumes that certain methods will be used to manage certain exposures and other surveys make similar assumptions. However, only Srinivasulu (1981) lists and only Buckley (1992) tabulates (his Figure 38.2) what are believed to be appropriate methods for managing different forms of exposure. Srinivasulu (1981) wrote:

“A variety of techniques are available to cope with such [translation] risks. These involve forward market hedging, money market hedging, leading and lagging, changes of inventory practices, and invoicing practices.” p 13.

“Typical techniques to cope with transaction exposure include those discussed in the case of translation exposure and, in addition, techniques such as factoring of accounts receivable, use of foreign exchange risk insurance (provided by some governments as a service to exporters), and currency denomination practices.” p 4.

The primary technique for coping with this economic risk is strategic management in the choice of products, markets, sources etc. On the financial side, appropriate choice of currency of denomination of debt, place of issue, and maturity structure can be additional avenues...” p 14.

While helpful, these sources do not try to develop a comprehensive taxonomy to show which methods are logically usable to manage particular exposures and which are not. It has been necessary to supplement available sources with logical analysis to determine which of the thirteen most widely used methods would either reduce vulnerability to or increase advantage from the full taxonomy of exposures.

A table of the expected significant associations, based on what both the theoretical literature and surveys have had to say about the appropriateness of method usage and supplemented by the results of an analysis of which methods would logically be expected to address particular forms of exposure and which not, is set out below. A star indicates the expectation of a significant association. A cross indicates that no association is expected because the method is not considered appropriate or clearly very appropriate for dealing with a particular form of exposure. The reader must be cautioned that this is a subjective and tentative exercise.

**Table 5.26 - Anticipated Associations between Forms of Currency Exposure and Methods Used to Manage Currency Exposure**

<b>Financial Instruments:</b>	<b>Forwards</b>	<b>Spot Contracts</b>	<b>Options</b>	<b>Prop' Hedge</b>	<b>Swaps</b>
<b>Forms of Exposure:</b>					
Supply Chain	*	X	*	*	X
Local Currency Supply	*	*	*	*	X
Supply Margin	*	*	*	*	X
Elasticity of Demand	X	X	X	X	X
Competitive Supply	X	X	X	X	*
Competitive Demand	X	X	X	X	*
Demand Side Margin	*	*	*	*	X
Demand Chain	X	*	*	*	X
Translation	*	*	*	*	X
Transaction	*	*	*	*	*
Quasi-Contractual	*	*	*	*	*
Long-term Contract	*	*	*	*	*

(table continued)

<b>Operational Techniques:</b>	<b>Switching Currency</b>	<b>Netting</b>	<b>Dividend Remittance</b>	<b>Changing Price</b>
<b>Forms of Exposure:</b>				
Supply Chain	X	*	X	*
Local Currency Supply	*	X	X	*
Supply Margin	*	X	X	*
Elasticity of Demand	*	X	X	X
Competitive Supply	X	X	X	X
Competitive Demand	X	X	X	X
Demand Side Margin	*	X	X	*
Demand Chain	X	X	X	X
Translation	*	X	*	*
Transaction	*	*	X	*
Quasi-Contractual	*	*	*	*
Long-term Contract	*	*	*	X

(table continued)

<b>Organisational Measures &amp; Strategic Methods:</b>	<b>Use a Centralised Treasury</b>	<b>Sensitivity Analysis</b>	<b>Matching</b>	<b>Use Local Currency Denominated Debt</b>
<b>Forms of Exposure:</b>				
Supply Chain	*	*	X	X
Local Currency Supply	*	*	X	X
Supply Margin	*	*	X	X
Elasticity of Demand	X	*	X	X
Competitive Supply	*	*	*	*
Competitive Demand	*	*	*	*
Demand Side Margin	*	*	X	X
Demand Chain	*	*	X	X
Translation	*	*	*	*
Transaction	*	X	*	*
Quasi-Contractual	*	*	*	*
Long-term Contract	*	*	*	*

An exercise was next carried out to compare the significant associations predicted with those actually found. Of the 156 associations a total of 95 were predicted to be significant. Of these only 29 were found to be so. Of the 61 associations not predicted to be significant, six were unexpectedly found to be so. It seems, therefore, largely that methods are not being used where they are not considered likely to have an impact but that where they are expected to have an impact; in only just over 30% of cases is their greater use confirmed.

A number of possible explanations exist to account for this finding. For example, the sample may not be sufficiently large to detect an effect which does exist or respondents may not be reporting back with sufficient precision. They may not be correctly recognising the forms of exposure influencing them. But the evidence points to acts of omission not those of commission. Corporations may be using some methods in preference to others. However, the evidence is that corporations are not using some methods, which if used could help in managing the forms of currency exposure respondents identify them to be facing. Prima facie, there is a case to be made for arguing that British Times 1000 corporations are not making use of many of the methods available to them. What then is driving the choice of methods used, if not the external environment or the forms of exposure themselves? This question is addressed in Chapter 6.

## **5.6 What is Explained**

This chapter has reported on what methods British Times 1000 corporations use to manage their currency exposure. The picture which emerges is broadly consistent with the findings of other surveys. More use is made of those methods which are traditionally employed by the finance and treasury functions.

The majority of corporations employ a number of different methods to manage their exposure. On average six of the thirteen most widely employed methods are used by a corporation and on average each corporation makes use of ten different methods. The use of many methods is significantly associated with the use of other methods. This is not unexpected. A logical analysis shows that a number of methods can be used to manage each of the forms of exposure identified in the taxonomy presented in this thesis.

## **5.7 What Remains Unexplained**

Surveys, including this one, consistently report a rise in the use of newly available financial instruments and a concomitant fall is reported here in the use of operational techniques. It is possible that financial instruments are being employed in preference to operational techniques. Evidence for this assertion would be significant negative associations between use of financial instruments and use of operational techniques. However, use of particular methods to manage currency exposure when significantly associated in use with other methods is always positively associated.

Use of methods to manage currency exposure is found to be determined neither by the external corporate environment nor by the ways in which currency exposure impacts the corporation. When significant associations found between management methods and forms of exposure are compared with those predicted, only just over one quarter of predicted associations are observed. A number of explanations for this finding can be put forward but none can be accepted with any confidence. What determines the use of particular methods remains largely unexplained.

## **5.8 Conclusion**

This chapter has set out the survey findings on the pattern of methods of managing currency exposure reported used by the sample companies. It has sought to explain the pattern of management methods usage in terms both of the forms of exposure corporations experience and aspects of the corporations' external environment. The relationship between the methods used and the way respondents perceive their corporations are vulnerable to and advantaged from different forms of currency exposure have been presented. Conclusions have been drawn about the incidence of methods of management, both the aspects of management which can be explained and the findings which remain unexplained. The pattern of foreign exchange risk management observed remains largely unexplained by both the ways in which currency exposure is reported to affect corporations and the key aspects identified in the environment external to the corporation. In the following chapter the findings of the survey on the relationship between the ways survey respondents say they manage their

currency exposure and the way their corporations organise themselves internally to manage currency exposure are set out.

## **CHAPTER 6 - THE BEHAVIOUR OF THOSE MANAGING CORPORATE CURRENCY EXPOSURE**

### **6.1 Introduction**

The findings of the survey on the background of the managers and experts dealing with currency exposure, their attitudes and articulated strategies and the corporate structure in which they work are summarised in this chapter. The relationship between these elements of the internal corporate environment and both the external corporate environment and the ways in which the corporation is perceived to be vulnerable to and advantaged from different types of exposure is described. Mechanisms are suggested which account for the pattern of relationships between methods used to manage currency exposure and the external corporate environment, forms of currency exposure experienced and the internal corporate environment. Attention is drawn to conclusions about the behaviour of managers responsible for dealing with currency exposure, what can and what cannot be explained, what aspects may be explained by organisation and behavioural theory, and what still remains unexplained.

### **6.2 The Internal Corporate Environment in which Currency Exposure is Managed**

This section reports the survey findings on the internal corporate environment of British Times 1000 corporations relevant to currency exposure management. The three groups of variables which measure the internal corporate environment, namely those measuring corporate structure, management and expertise, and attitudes and strategies, were set out in the contingency model in Chapter 3.

#### **6.2.1 Corporate Structure**

British Times 1000 corporations were asked how their organisations were structured to manage currency exposure. In particular, they were asked which individuals and/or departments within the corporation were responsible for dealing with currency exposure, and which were involved in the process or consulted on the subject as necessary. Table 6.1 shows that responsibility was shared between two individuals/departments in one

corporation in three and was centralised at group level in three out of four of them. On average one further individual/department per corporation was involved at group level and one at subsidiary level. One in every two corporations on average had an individual/department consulted at group level and there was a somewhat lower average level of consultation in subsidiaries.

In just under half of the corporations where responsibility was exercised at group level, it lay functionally with treasury and in another third with finance. The balance of the responsibility at group level was held by the chief executive and directors of the group. Where responsibility was devolved to the operating level, it was exercised in a third of cases by the finance function and in a further third by directors of subsidiaries.

At group level, the chief executive, the group finance department and group directors were each involved in approximately one quarter of respondent corporations and sales/marketing and purchasing departments were similarly involved in 10% of them. At subsidiary level, in a quarter of corporations, operating directors and finance departments were involved as were subsidiary chief executives, treasury, sales/marketing and purchasing departments in one corporation in six. In one in ten corporations, costing/estimating departments were also involved. Where not responsible or involved, group and subsidiary chief executives and directors were most likely to be consulted. The response was as follows:

**Table 6.1 - Participation of Functional Departments in British Times 1000 Corporations in Dealing with Currency Issues**

	Percentage Responding		
	Responsible*	Involved	Consulted
Group treasury department (Dept)	43	14	3
Group finance department	29	24	5
Directors of the Group	16	22	14
Chief Executive (CE) of Group	6	21	22
Group purchasing department	1	12	3
Group corporate planning dept	1	3	3
Group marketing/sales department	0	10	6
Ops/Subsid finance department	11	28	6
Directors of Ops/Subsidiaries	10	25	8
CE of Operation (Op)/Subsidiary (Sub)	7	15	13
Ops/Subsid treasury department	2	14	1
Ops/Subsid marketing/sales department	1	14	2
Ops/Subsid purchasing department	1	13	5
Ops/Subsid cost/price estimating dept	0	10	3
Others departments respondent specified	3	3	0

\* More than one individual or department can share responsibility in some organisations.

Respondents were further asked how currency issues were managed in their businesses. They revealed that currency issues were mainly a headquarters responsibility with subsidiaries often involved in providing information to group level, but rarely having sole responsibility themselves. As Table 6.2 also makes clear, subsidiary managers who have operating performance or their remuneration directly impacted by currency exposure are in a minority.

**Table 6.2 - The Focus of Responsibility for Managing Currency Exposure in British Times 1000 Corporations**

	Percentage responding positively
The group alone manages currency matters	21
The group manages on information from subsidiaries	39
The group uses its discretion to manage or not	43
Subsidiaries wishing to manage must do so through the group	25
Subsidiaries alone manage currency exposure	26
Group treats domestic and foreign subsidiaries differently	13
Foreign subsidiary performance targets are in local currency	57
Management remuneration is based on local currency results	57
Currency gains and losses impact subsidiary managers' pay	22
Treasury department manages currency as a profit centre	9

Respondents were asked about the process of managing currency related matters. The picture of group rather than subsidiary management of currency issues reported by Blin et al (1980) was further confirmed. As Table 6.3 underlines, the trend for responsibility for currency issues to be centralised is continuing and a substantial minority of corporations reported having their procedures for managing currency exposure under review.

**Table 6.3 - Changes in the Management of Currency Related Matters in British Times 1000 Corporations**

	Percentage Responding Affirmatively
Currency responsibility was decentralised in last five years	12
Currency responsibility was centralised in last five years	44
More attention being given to currency matters in procedures	30

### **6.2.2 Management and Experts**

The background of managers and experts and the way they managed currency issues was also surveyed. British Times 1000 corporations were asked whom the business employed or used to provide expertise in dealing with currency matters. The findings, reported in Tables 6.4 and 6.5 below, show that corporations largely depend on their own professional staff and less so on consultants and other outside experts, who in the main are bankers. Indeed, the majority of those who reported using clearing bankers confirmed they were not satisfied

with the service provided. Also revealed is a reluctance of managers to get together, either formally or informally, to deal with currency matters.

**Table 6.4 - Nature of Personnel Employed by British Times 1000 Corporations to Advise on and Deal with Currency Matters**

	Percentage Responding
Own staff with business/finance/accounting qualification	65
Own staff formally qualified as treasurers	48
Clearing Bankers (other than simply for transactions)	45
Forecasting Services	34
Merchant Bankers	25
An informal committee of interested managers	15
Discussion with peers in other firms	14
Consultants specialising in currency issues	10
A formal committee of managers	10
Accountants	7
Academics	4
Others, specified by respondents	4
Management consultants	3

Over half the respondents identified literature as a source of management expertise on currency matters and over a third courses or seminars.

**Table 6.5 - Sources of Expertise Identified by British Times 1000 Corporations Used in Managing Currency Matters**

	Percentage responding
Literature on the subject	52
Courses/Seminars	36

British Times 1000 corporations were also asked about significant influences on the way they dealt with currency related issues. The most prominent influence was reported to be past experience, particularly of volatile conditions, and also, but to a lesser degree, from losses experienced and gains made. Currency related training, and to a lesser extent other training, was seen as influential, and half of the respondents reported treasury department guidance. Only one fifth of them deemed outside experts similarly influential.

**Table 6.6 - Significant Influences which British Times 1000 Corporations Identify on the Way Currency Related Issues are Managed**

	Percentage Responding
Expertise gained by previous experience	91
Exposure to currency volatility	50
Lessons learnt from past losses	34
The past occurrence of windfalls	20
Formal training in dealing with currency matters	41
Other formal training	18
Guidance from the Treasury department	49
Use of outside experts	21
Others respondent specified	2

Finally, respondents were asked if they were able to identify with a number of statements expressing attitudes towards and strategies of foreign exchange risk management.

### 6.2.3 Attitudes and Strategies

Respondents were asked whether they agreed with a number of questions about their attitudes and strategies. About one third of respondents reported active consideration of policy issues, see Table 6.7 below, reflecting a similar amount of attention to currency matters in procedures (see Table 6.3 above).

**Table 6.7 - Changes in Emphasis On Currency Related Matters Identified by British Times 1000 Corporations**

	Percentage Responding Affirmatively
Currency-related policies currently under review	15
More attention being given to currency matters in policies	28

From Table 6.8 it can be seen that the most pronounced attitudes and strategies concern hedging. Over half of respondents had a policy of hedging all quantifiable trading exposures and matching assets and liabilities to minimize net exposures. Almost 40% reported hedging long-term asset exposures, and the same percentage professed a strategy of smoothing the impact of currency exposure on the business. Only ten percent of respondents took a “roundabouts and swings” attitude, or regarded currency matters as too insignificant to

manage and/or as a constraint on other business objectives. However 45% agreed that other objectives were more important than currency related ones, 20% denied pricing policy was sensitive to currency movements and 15% had no formal objectives concerning currency exposure. Only just over a quarter of respondents said their corporations were “dealers” in the sense that they were as happy to make money from whatever opportunities presented themselves including from currency fluctuations, and almost half of respondents emphasised their rejection of this strategy by saying that they were concerned to make profits from operations and not from supporting and non-trading activities.

Finally, although almost a third of respondents professed to be totally risk averse, a majority of them provided other survey information suggesting this is not the case in practice, a finding similar to that of Belk and Glaum (1990). Nevertheless, otherwise the direction of significant associations between avowed attitudes and strategies was found logically consistent.

**Table 6.8 - Attitudes and Strategies Expressed by Respondents from British Times 1000 Corporations**

	<b>Percentage Responding Affirmatively</b>
Policy to hedge all quantifiable trading currency exposures	53
Philosophy opportunistic including profiting from currency	26
Long-term asset exposures are hedged where possible	39
Policy to balance assets and liabilities in each currency	55
Other objectives seen as more important than currency ones	45
There are no formal objectives regarding currency exposure	15
Currency exposure an influential constraint on objectives	11
Philosophy respecting currency is to be totally risk averse	29
Pricing strategy is unaffected by fluctuations in sterling	20
Even gains & losses on currency obviate need to manage issue	11
Currency matters too insignificant to warrant management	11
Strategy of smoothing impact of currency influences adopted	40
Objective to profit from trading, not currency management	47

These survey findings are now analyzed together with those gathered on the external corporate environment, to test the fourth hypothesis: whether the internal corporate environment is contingent on the external environment.

### 6.3 The Relationship between the Internal and External Corporate Environment

It was hypothesised that even if it could not be shown that the methods a company uses to manage corporate currency exposure were determined by the external environment, that environment would still impact upon the internal environment and operate as an indirect influence to determine currency exposure management.

The following section, testing the fourth hypothesis, reports on the results of an examination of the relationship between the regulatory and broad market variables and variables measuring management attitudes and strategies, corporate structure and management background and expertise.

#### 6.3.1 The Relationship between the External Regulatory Environment and the Internal Corporate Environment

It will be seen from Tables 6.9, 6.10 and 6.11 that few significant associations were found between regulatory variables and variables measuring the internal corporate environment. Among attitudinal and strategic variables only the propensity of respondents to report that their corporations attempt to smooth currency influences was positively associated with high tariffs, and both the propensity for currency regulations to be restrictive and to hinder currency management.

**Table 6.9 - The Relationship between the External Regulatory Environment of British Times 1000 Corporations and Attitudinal and Strategic Variables**

	<b>Regulated Market</b>	<b>Restrictive Currency Regulations</b>	<b>Regulation Hinders Management</b>	<b>Tariffs High</b>
Propensity to:				
Attend more to policies	.5093	.8559	.5112	.8290
Hedge quantifiable exposures	.8100	.4622	.4781	.2031
Hedge fixed asset exposures	.2460	.5326	.3551	.4628
Balance Assets & Liabilities	.5493	.9591	.8679	.0839
Smooth Currency Influences	.0589	.0023	.0220	.0044

Only four significant associations were found with structural variables, see Table 6.10 below. Group marketing departments were reported more likely to be consulted when

regulations were said to hinder currency management in a majority of markets. The group chief executive was also more likely to be consulted when currency regulations were restrictive in a minority of markets and to be involved in or responsible for managing currency exposure when the restriction extended to a majority of markets. Subsidiary treasury and group purchasing department involvement and consultation was reported greater than chance would predict when a minority and a majority of markets were regulated and there were high tariffs reported in a majority of and in all markets respectively.

**Table 6.10 - The Relationship between the External Regulatory Environment of British Times 1000 Corporations and Structural Variables**

	<b>Regulated Market</b>	<b>Restrictive Currency Regulations</b>	<b>Regulation Hinders Management</b>	<b>Tariffs High</b>
Subsidiary controls FX	.5659	.2067	.1524	.3456
HQ controls FX	.1590	.0653	.2034	.2067
Local Currency Performance	.7785	.8273	.4061	.6157
Local Currency Incentives	.5125	.2526	.1946	.1877
More attention to Procedure	.4693	.2715	.9657	.6922
Involvement of:				
Group CEO	.1978	.0001	.1274	.6011
Group Treasury Dept	.1758	.1233	.1302	.2837
Subsidiary Treasury Dept	.0289	.3158	.1557	.1149
Group Finance Dept	.5360	.4753	.1921	.2694
Subsidiary Finance Dept	.5916	.9403	.3846	.6259
Group Purchasing Dept	.7266	.9395	.9077	.0221
Group Planning Dept	.9174	.9453	.9753	.9087
Subsidiary Purchasing Dept	.6494	.7889	.8455	.0670
Group Marketing Dept	.5520	.5171	.0015	.0846
Subsidiary Marketing Dept	.5368	.5256	.5254	.2823
Subsidiary Costing Dept	.7407	.7582	.0729	.6489

The one striking area of significant associations between regulatory variables and internal corporate variables, reported in Table 6.11, is that with the employment of treasurers and their perceived influence. Both of these variables were found to be negatively associated with each of: the degree to which markets were seen to be regulated, currency regulations were perceived to be restrictive, and perceived as a hindrance to currency management. It would seem that treasurers do not operate where their room to manoeuvre is limited. Alternatively, regulation may curtail the need for corporations to involve treasurers in this

area. The existence of high tariffs in a minority and a majority of markets was found to associate with a lesser propensity to employ treasurers though with a greater one where there were high tariffs in all markets or in none at all. It is difficult to explain this finding.

Also hard to explain is the positive association between seeing currency volatility as influential and market regulation hindering currency management, though the experience may come from dealing with the constraints rather than with the volatility. The positive association between experience of volatility being perceived influential and the existence of tariffs in a minority of markets is more expected though it is negative when in several instances tariffs are high in a majority of markets. The only other significant association is a positive one between the propensity for market regulation to reduce the impact of exchange rate changes and the use of qualified staff other than treasurers to manage currency exposure. The explanation that, in circumstances of reduced impact of exchange rate changes, treasurers delegate to other staff does not seem to follow from the negative association already recorded and the reason for this association also appears unclear.

**Table 6.11 - The Relationship between the External Regulatory Environment of British Times 1000 Corporations and Variables Relating to Management and Experts**

	<b>Regulated Market</b>	<b>Restrictive Currency Regulations</b>	<b>Regulation Hinders Management</b>	<b>Tariffs High</b>
Propensity to:				
Use Forecasting Service	.1012	.1714	.8011	.2096
Uses Literature	.5246	.5184	.4593	.9073
Uses Courses	.2172	.3404	.3969	.2682
Use Qualified Treasurers	<b>.0170</b>	<b>.0378</b>	<b>.0387</b>	<b>.0186</b>
Use “ non-Treasurers	<b>.0435</b>	.0904	.2235	.1870
Use Formal Committee	.4491	.7231	.7669	.7141
See FX Training influential	.8743	.4434	.6741	.5294
See Other Training “	.1303	.1005	.0705	.2333
See Treasury influential	<b>.0013</b>	<b>.0141</b>	.1660	<b>.0092</b>
See Outside Experts “	.9068	.9527	.9764	.3406
See FX volatility “	.2182	.0651	<b>.0067</b>	<b>.0235</b>

### **6.3.2 The Relationship between the External Market Environment and the Internal Corporate Environment**

It will be seen from Tables 6.12, 6.13 and 6.14 that few significant associations were also found between market variables and variables measuring the internal corporate environment. Among attitudinal and strategic variables again it is the propensity of respondents to report that their corporations attempt to smooth currency influences which most associates with the external market environment.

Table 6.12 below shows there are positive associations between the propensity for a corporation to smooth currency influences and its percentage of indirect inputs, its propensity to have foreign competition and its percentage of assets which are foreign assets. Whether and, if so, why volatility associates positively with these three market variables and not with the others is not clear. More explicable are the positive associations between the percentage of all assets which are foreign assets and both a propensity to hedge fixed asset exposures and to balance assets and liabilities in a particular currency. One remaining significant association is between the determinants of currency of purchases and the reported propensity for corporations to give greater attention to currency related matters in their policies, but there is only a tenuous link between the inability to negotiate the price of supplies and giving the subject greater attention.

**Table 6.12 - The Relationship between the External Market Environment of British Times 1000 Corporations and Attitudinal and Strategic Variables**

	Direct Input %	Indirect Input %	Input Prices	Foreign Competition
Propensity to:				
Attend more to policies	.2150	.5032	.0168	.9799
Hedge quantifiable exposures	.4685	.9257	.0650	.1520
Hedge fixed asset exposures	.7556	.1532	.5696	.1725
Balance Assets & Liabilities	.7935	.8674	.2721	.8270
Smooth Currency Influences	.1594	.0032	.1503	.0413
(table continued)				
	Direct Output %	Indirect Output %	Output Prices	Foreign Asset %
Propensity to:				
Attend more to policies	.2570	.2461	.2245	.0571
Hedge quantifiable exposures	.2259	.1722	.1487	.2989
Hedge fixed asset exposures	.8446	.4610	.3322	.0052
Balance Assets & Liabilities	.3627	.1542	.3391	.0013
Smooth Currency Influences	.4446	.7335	.4437	.0102

There is, in Table 6.13, little pattern in the significant associations between the market environment and the way corporations structure currency exposure management. The latter do not associate at all with the percentage of indirectly imported inputs, the degree of foreign competition or the determinants of the currency of output prices. The significant associations between the percentage of directly imported inputs and the role of both the group chief executive and subsidiary purchasing departments in currency exposure management are largely due to the pattern of 'don't knows'. This is also the case for the associations between the percentage of directly exported outputs and the role of group finance departments and curiously there is a marked propensity for a lack of group planning department involvement when directly exported output is a high percentage of total output. The larger the proportion of group assets which are foreign located, the greater is the involvement of subsidiary treasury departments which is to be expected but it is less clear why this is also the case for the group chief executive or why the consultation of that individual does not follow the same pattern. The one association involving indirect output is heavily influenced by the pattern of 'don't knows'.

**Table 6.13 - The Relationship between the External Market Environment of British Times 1000 Corporations and Structural Variables**

	<b>Direct Input %</b>	<b>Indirect Input %</b>	<b>Input Prices</b>	<b>Foreign Competition</b>
Involvement in:				
Subsidiary controls FX	.4689	.5287	.3710	.6493
HQ controls FX	.5609	.3687	.7396	.2661
Local Currency Performance	.4472	.2524	.5394	.6363
Local Currency Incentives	.1260	.4451	.2191	.8452
More attention to Procedure	.4092	.7014	.2896	.8701
Involvement of:				
Group CEO	<b>.0112</b>	.6991	.6530	.6431
Group Treasury Dept	.7641	.8030	.5139	.9947
Subsidiary Treasury Dept	.2447	.3549	.2527	.2992
Group Finance Dept	.5268	.2923	.5225	.5254
Subsidiary Finance Dept	.8219	.3037	.8381	.6256
Group Purchasing Dept	.8264	.6997	.7541	.1582
Group Planning Dept	.4289	.5413	.6067	.0972
Subsidiary Purchasing Dept	<b>.0339</b>	.8223	.0511	.2746
Group Marketing Dept	.3652	.7813	<b>.0213</b>	.6386
Subsidiary Marketing Dept	.1110	.2452	.1061	.2574
Subsidiary Costing Dept	.3077	.7582	.0563	.4713
(table continued)	<b>Direct Output %</b>	<b>Indirect Output %</b>	<b>Output Prices</b>	<b>Foreign Asset %</b>
Subsidiary has control	.1797	.0619	.5247	.2000
HQ has control	.1096	.1129	.3109	.2661
Local Currency Performance	.2884	<b>.0325</b>	.7694	.6363
Local Currency Incentives	.5339	.8493	.4767	.8452
More attention to Procedure	.6179	.5244	.4631	.8701
Involvement of:				
Group CEO	.2401	.4002	.9361	<b>.0316</b>
Group Treasury Dept	.4001	.3649	.3497	.2966
Subsidiary Treasury Dept	.5603	.6837	.4465	<b>.0000</b>
Group Finance Dept	<b>.0050</b>	.0921	.3990	.7354
Subsidiary Finance Dept	.3239	.9933	.5615	.6241
Group Purchasing Dept	.7768	.9988	.3216	.9344
Group Planning Dept	<b>.0147</b>	.0570	.9389	.6229
Subsidiary Purchasing Dept	.4858	.8651	.7228	.6318
Group Marketing Dept	.2328	.6772	.2899	.9730
Subsidiary Marketing Dept	.5237	.8862	.7560	.8963
Subsidiary Costing Dept	.5234	.1037	.3655	.5621

Finally Table 6.14 examines the associations between the market environment and variables relating to management and experts. The propensity to have foreign competition is

positively associated with both the propensity to see expertise gained from previous experience and currency volatility influential in the way currency related issues are dealt with. The percentages of foreign sales and assets in total sales and assets respectively are also positively associated with the propensity to employ treasury staff. However, the significance of the first of these associations is magnified by the 'don't know' category and the residual category influences that between the determinant of the currency of output prices and the propensity to believe experience of currency exposure is influential in determining the way it is dealt with.

**Table 6.14 - The Relationship between the External Market Environment of British Times 1000 Corporations and Variables Relating to Management and Experts**

	Direct Input %	Indirect Input %	Input Prices	Foreign Competition
Propensity to:				
Use Forecasting Service	.4188	.4030	.7702	.4910
Uses Literature	.8572	.6811	.4238	.1790
Uses Courses	.8137	.7115	.4601	.6910
Use Qualified Treasurers	.7392	.5707	.3937	.9672
Use " non-Treasurers	.8726	.1231	.0291	.1154
Use Formal Committee	.6345	.2011	.4489	.0950
FX Experience influential	.3480	.3848	.5372	.0396
See FX Training "	.9146	.4813	.7193	.9198
See Treasury influential	.6481	.1651	.1162	.4731
See Outside Experts "	.7797	.1862	.8147	.6118
See FX volatility "	.2461	.5157	.8954	.0009
(table continued)				
	Direct Output %	Indirect Output %	Output Prices	Foreign Asset %
Propensity to:				
Use Forecasting Service	.3474	.8445	.7845	.8790
Uses Literature	.5523	.5486	.5782	.9156
Uses Courses	.9600	.7195	.0726	.7818
Use Qualified Treasurers	.0244	.1613	.4629	.0231
Use " non-Treasurers	.7130	.2903	.7480	.3528
Use Formal Committee	.2344	.1673	.1269	.1158
FX Experience influential	.3051	.7393	.0397	.2346
See FX Training "	.6188	.6996	.4275	.7263
See Treasury influential	.3740	.5776	.6487	.1917
See Outside Experts "	.3033	.7785	.1652	.0981
See FX volatility "	.4990	.3828	.6473	.6980

In summary, there are relatively few significant associations between external regulatory and market variables and key internal environmental variables, and the null hypothesis (of

Hypothesis 4), that the internal organisation of currency exposure management is not determined by the external environment, cannot be rejected.

#### 6.4 Relationships between the Internal Corporate Environment and Forms of Currency Exposure on Corporations

This section examines the fifth hypothesis, namely that the forms which currency exposure take will themselves determine the organisation of currency exposure management within a corporation.

The associations between forms of vulnerability to and advantage from currency exposure and variables used to measure the internal corporate environment are set out in Tables 6.15 to 6.20 below. Those relating to attitudinal and strategic variables are set out in Tables 6.15 and 6.16; those relating to corporate structure variables in Tables 6.17 and 6.18 and those relating to management and experts in Tables 6.19 and 6.20.

##### Attitudes and Strategies

The significant associations between corporate strategic and attitudinal variables and degrees of vulnerability to forms of currency exposure are found to be few in number.

**Table 6.15 - Relationship between Attitudinal and Strategic Variables in British Times 1000 Corporations and Forms of Vulnerability to Currency Exposure**

Propensity to:	Give Attention to Policy	Hedge Quantifiable Exposure	Hedge Fixed Asset Exposure	Balance Asset and Liability	Smooth Currency Influences
Supply Chain	.3589	<b>.0493</b>	.7477	.5047	.0982
Local Currency Supply	.0910	.1018	.1361	.3973	.3049
Supply Margin	.1593	<b>.0410</b>	.2447	.9934	.0776
Elasticity of Demand	.2302	.0610	<b>.0338</b>	<b>.0415</b>	.0938
Competitive Supply	.0945	.4619	.5280	.2853	.3241
Competitive Demand	.6115	.7474	.3668	.9633	.1599
Demand Side Margin	.9991	.7891	.1590	.5920	.2797
Demand Chain	.5123	.0693	.5343	.0917	.3200
Translation	.0743	.6773	.1954	.3059	<b>.0071</b>
Transaction	.3612	.4174	.9944	.7448	.0556
Quasi- Contractual	.4724	<b>.0010</b>	.7423	.6894	.4766
Long-term Contract	.7654	.6264	.2384	.9936	.1666

There is a moderate association between vulnerability to certain forms of exposure and the likelihood of espousing the policy of hedging all quantifiable trading currency exposures; and a weak association with adopting/holding a strategy of trying to smooth out the impact of currency related influences on one's business. The degree and type of vulnerability may explain the adoption of a strategy of either "locking" or "smoothing" to use the Kenyon (1990) terminology. The positive association between the degree of vulnerability to certain exposures and the adoption of risk elimination or diminution strategies is consistent with this explanation. A hedging policy could not reduce vulnerability, although such a policy could reduce its impact, at least temporarily, and influence perceptions of it. A smoothing policy could achieve the same result by acting to curb manifestation of the problem if such were indeed influencing or determining perception of the level of vulnerability.

The only marked associations between levels of vulnerability to forms of currency exposure and attitudinal and strategic variables are found with the propensity to adopt hedging of quantifiable exposures for the purpose of risk minimization. Otherwise, there is a minor association between the levels of vulnerability to one form of exposure experienced by respondents whose policy it is to try to balance assets and liabilities and revenues and expenses in each currency in order to minimize net exposures as distinct from those of the 45% of respondents who do not identify with this policy. The same is true when comparing the type of vulnerability experienced by those who say they hedge long-term asset exposures where possible with that of those who do not. Both findings are difficult to explain.

To summarise, there is little evidence that the nature of a corporation's vulnerability to currency exposure influences or determines corporate attitudes and strategies, and, as if to emphasise this, there is a total lack of association between levels of vulnerability and the variable measuring whether or not a corporation is taking more account of currency matters in its policies.

Most striking, in Table 6.16 below, is an almost total lack of association between any attitudinal and strategic variables and forms of advantage. The advantage which is perceived does not translate itself into particular corporate attitudes and strategies. It seems that, such

as they are, they are derived from the perception of currency exposure as a problem or a threat. A lack of clarity and consistency in corporate strategies pinpointed by Broder (1984) is consistent with this finding.

**Table 6.16 - Relationship between Attitudinal and Strategic Variables in British Times 1000 Corporations and Forms of Advantage from Currency Exposure**

<b>Propensity to:</b>	<b>Give Attention to Policy</b>	<b>Hedge Quantifiable Exposure</b>	<b>Hedge Fixed Asset Exposure</b>	<b>Balance Asset and Liability</b>	<b>Smooth Currency Influences</b>
Supply Chain	.8382	.7196	.4393	.6785	.6473
Local Currency Supply	.1862	.4716	.7638	.5258	.1180
Supply Margin	.5580	.7805	.4132	.8265	.3071
Elasticity of Demand	.9320	.9336	.3914	.7305	.2266
Competitive Supply	.6422	.3601	.3474	.4829	.1254
Competitive Demand	.8761	.5086	.3471	.5078	.5175
Demand Side Margin	.9243	.1806	.6942	.7865	.1303
Demand Chain	.8561	.2359	.8205	.3183	<b>.0438</b>
Translation	.8842	.9261	.3316	.4496	.1497
Transaction	.3402	.4444	.4708	.8077	.3899
Long-term Contract	.5089	.2451	.1172	.7282	.3898

### **Corporate Structure**

Table 6.17 below illustrates that there are few associations between levels of vulnerability to currency exposures and corporate structure variables. Whether or not respondents are in the process of giving more attention to currency related matters in their procedures, or whether responsibility for managing currency exposure rests with subsidiaries or is exercised centrally, is not significantly related to any form of vulnerability. There are significant associations between the propensity to judge performance in local currency and vulnerability to Supply Chain, Local Currency Supply and Translation exposures. For Supply Chain exposure the association is negative, as might be expected for the substantially vulnerable but positive for the moderately vulnerable and consistently positive for vulnerability to the other two forms. The association between the propensity to reward managers in local currency and Local Currency Supply exposure is also inexplicably positive.

An analysis of corporate departments which have a say in the management of currency issues presents a slightly more varied picture. Significantly associated with vulnerability to Competitive Demand exposure is the role of the group chief executive, who under conditions of substantial vulnerability, is more likely to be involved and less likely to be consulted - the reverse of the position when there is moderate vulnerability. The Group CEO is less likely to be either involved or consulted when there is no vulnerability.

Inexplicably, the group treasury department is less likely to participate in currency management the greater the vulnerability to Local Currency Supply exposure. The group finance department is more likely to be responsible when moderately vulnerable to Transaction exposure but not otherwise, and more likely to be involved when not vulnerable and consulted when substantially so. The group finance department is likely to be responsible when moderately vulnerable to Long-term Contract exposure, but not when substantially or not at all vulnerable. It is consulted when substantially vulnerable and involved when not vulnerable to this form. Substantial vulnerability to Demand Chain exposure is associated with greater involvement of group purchasing departments, with consultation and involvement of group sales and marketing departments, and with greater consultation but less involvement of subsidiary finance departments. When there is moderate vulnerability the position is reversed for group purchasing and sales and marketing departments and subsidiary finance departments are more likely to be responsible and less likely to be consulted, a situation reversed when there is no vulnerability. Finally, subsidiary finance departments have greater involvement when there is substantial vulnerability to Supply Margin and Long-term Contract exposure, and less of one with no or only moderate vulnerability to these exposures.

**Table 6.17 - Relationship between Corporate Structural Variables in British Times 1000 Corporations and Forms of Vulnerability to Currency Exposure**

	<b>Subsidiary Control of FX</b>	<b>HQ Control of FX</b>	<b>Local Currency Targets</b>	<b>Local Currency Bonuses</b>	<b>More Attention to Procedure</b>	
Supply Chain	.7429	.8341	.1651	.0272	.1521	
Local Currency Supply	.7945	.6951	.0107	.0149	.1741	
Supply Margin	.4618	.3594	.1056	.1056	.1932	
Elasticity of Demand	.8989	.9319	.3442	.1220	.1512	
Competitive Supply	.2705	.7431	.4093	.5188	.3867	
Competitive Demand	.2974	.9496	.5839	.6316	.4160	
Demand Side Margin	.9259	.5987	.1167	.3687	.6220	
Demand Chain	.4742	.8356	.4799	.0563	.3681	
Translation	.8809	.2073	.1188	.0014	.4921	
Transaction	.1215	.7417	.3894	.1837	.3785	
Quasi- Contractual	.2826	.2613	.9458	.9911	.3747	
Long-term Contract	.5392	.4704	.1187	.1187	.7309	
<b>Involvement in FX Management Group:</b>						
(table continued)	<b>CEO</b>	<b>Treasury</b>	<b>Finance</b>	<b>Buying</b>	<b>Marketing</b>	<b>Planning</b>
Supply Chain	.1353	.7743	.6449	.1132	.0693	.2970
Local Currency Supply	.5908	.0273	.1404	.5831	.2668	.5590
Supply Margin	.5942	.7044	.3397	.3671	.2076	.4656
Elasticity of Demand	.2088	.3940	.0948	.7955	.1372	.5029
Competitive Supply	.1192	.7633	.5870	.4096	.0686	.1484
Competitive Demand	.0147	.7399	.4198	.7995	.3734	.0518
Demand Side Margin	.3542	.3915	.6629	.8359	.8330	.2029
Demand Chain	.3502	.7711	.3044	.0267	.0143	.2974
Translation	.1930	.7330	.4029	.9718	.4727	.5676
Transaction	.1675	.5188	.0235	.8837	.6763	.1085
Quasi- Contractual	.4401	.9227	.0872	.5822	.5061	.3079
Long-term Contract	.1554	.6086	.0219	.8080	.1957	.5399
<b>Involvement in FX Management of Subsidiary:</b>						
(table continued)	<b>Treasury Dept</b>	<b>Finance Dept</b>	<b>Buying Dept</b>	<b>Marketing Dept</b>	<b>Costing Dept</b>	
Supply Chain	.0597	.4607	.2007	.9659	.8617	
Local Currency Supply	.1254	.5886	.5757	.1854	.3181	
Supply Margin	.0024	.6058	.3290	.1861	.3835	
Elasticity of Demand	.3571	.6084	.6218	.7811	.7548	
Competitive Supply	.0926	.4287	.5444	.1633	.5910	
Competitive Demand	.1127	.2340	.2138	.3428	.1497	
Demand Side Margin	.0883	.9442	.8651	.7099	.1723	
Demand Chain	.0576	.0381	.1128	.8266	.2710	
Translation	.3401	.9832	.8666	.5243	.4964	
Transaction	.2523	.2414	.3461	.4859	.5916	
Quasi- Contractual	.0235	.7722	.4047	.6228	.2445	
Long-term Contract	.1544	.3490	.2615	.8984	.8176	

Table 6.18 illustrates that there are even fewer significant associations between levels of advantage from currency exposure and corporate structure variables. One such association is a positive one found between the propensity for subsidiaries to have sole responsibility for managing currency matters and advantage obtained from Competitive Demand exposure.

Other significant associations link advantage from Transaction exposure positively with group finance department involvement; Competitive Supply and Transaction exposure positively with group sales and marketing department involvement and consultation; Competitive Supply and Demand Chain exposures positively with subsidiary treasury department involvement; and Local Currency Supply exposure with subsidiary finance departments. Here moderate advantage is associated with less involvement but greater consultation of these departments, and the reverse is the case when there is no advantage from this form of exposure.

**Table 6.18 - Relationship between Corporate Structural Variables in British Times 1000 Corporations and Forms of Advantage from Currency Exposure**

	Subsidiary Control of FX	HQ Control of FX	Local Currency Targets	Local Currency Bonuses	More Attention to Procedure	
Supply Chain	.8985	.5096	.3416	.4487	.7799	
Local Currency Supply	.2815	.2588	.9859	.3527	.2292	
Supply Margin	.6358	.5345	.7781	.2791	.0686	
Elasticity of Demand	.6387	.0816	.6596	.9225	.9378	
Competitive Supply	.2685	.5571	.5127	.9574	.8163	
Competitive Demand	.0251	.7275	.5624	.8289	.8845	
Demand Side Margin	.8697	.2881	.3520	.8095	.6443	
Demand Chain	.4896	.1392	.8326	.7504	.7042	
Translation	.8297	.4410	.7750	.7533	.3988	
Transaction	.2360	.3573	.2142	.3849	.8090	
Long-term Contract	.1076	.9267	.3705	.6940	.7434	
<b>Involvement in FX Management of Group:</b>						
(table continued)	CEO	Treasury	Finance	Buying	Marketing	Planning
Supply Chain	.0677	.3651	.9754	.0653	.1073	.7569
Local Currency Supply	.0630	.1674	.2376	.3473	.1562	.3925
Supply Margin	.3819	.1963	.9679	.3996	.6309	.3754
Elasticity of Demand	.2267	.0898	.9315	.8962	.0950	.2955
Competitive Supply	.5760	.8234	.2080	.1903	.0029	.0784
Competitive Demand	.4235	.8912	.5729	.8040	.6583	.8264
Demand Side Margin	.9138	.8636	.7080	.6591	.2444	.2601
Demand Chain	.5374	.5522	.6191	.3310	.6817	.8834
Translation	.1587	.7387	.9813	.6598	.4412	.7823
Transaction	.2015	.4223	.0128	.5707	.0327	.2984
Long-term Contract	.7065	.2468	.8755	.7137	.6618	.5861
<b>Involvement in FX Management of Subsidiary:</b>						
(table continued)	Treasury Dept	Finance Dept	Buying Dept	Marketing Dept	Costing Dept	
Supply Chain	.4844	.6404	.3592	.6864	.2987	
Local Currency Supply	.1746	.0443	.7646	.0980	.6481	
Supply Margin	.2347	.0982	.6168	.3933	.7162	
Elasticity of Demand	.1713	.4101	.9528	.1108	.2970	
Competitive Supply	.0500	.3022	.7308	.9472	.8884	
Competitive Demand	.5137	.1198	.9214	.9061	.5729	
Demand Side Margin	.2482	.5431	.6359	.5357	.3213	
Demand Chain	.0015	.3155	.2570	.8965	.7500	
Translation	.6179	.0750	.8243	.6671	.8589	
Transaction	.1347	.2028	.2605	.6866	.6713	
Long-term Contract	.2170	.2064	.2548	.8243	.9178	

## **Management and Experts**

An overwhelming 91% of respondents agree that expertise gained by previous experience is a significant influence on the way they and other staff deal with currency related issues. An examination of Table 6.19 shows there is a significant association here with levels of vulnerability to almost all forms of currency exposure. The greater the vulnerability the greater the likelihood that respondents will see expertise as an influence. This is strong support for the Earl (1984/5) model. Nevertheless, before accepting that management deal with their exposures differently, and that management action determines corporate vulnerability to currency exposure, it is as well to note that no association can be established specifically between levels of vulnerability to any form of exposure and management experience of past losses or gains or the lack of it.

**Table 6.19 - Relationship between Variables Relating to Management and Experts in British Times 1000 Corporations and Forms of Vulnerability to Currency Exposure**

	Corporation to manage its FX uses:					A M'gmt Comm'tee
	Forecast Services	Literature	Courses	Treasury Staff	Non Treasury Staff	
Supply Chain	.1437	<b>.0204</b>	.2027	.1699	.4279	.3646
Local Currency Supply	.5455	.9394	.6069	.2636	.1930	.7221
Supply Margin	.6498	.0551	.0560	.3634	.1076	.0541
Elasticity of Demand	.2976	.3195	.2277	.3103	<b>.0376</b>	.7848
Competitive Supply	.4547	.6445	.3875	.1880	.2527	.7984
Competitive Demand	.3960	.2076	.2614	.2266	.2473	.2222
Demand Side Margin	.4867	.1168	.4215	.1481	.2454	.5926
Demand Chain	<b>.0335</b>	<b>.0415</b>	.2087	.1474	.2320	.7045
Translation	.0740	.4034	.4286	.5484	.1830	.1578
Transaction	.1116	.3950	.7577	.4618	.3974	.9046
Quasi- Contractual	.1119	.1684	.2816	.3314	.1730	.8095
Long-term Contract	.1775	.3816	.4269	.3827	.1461	.4436
	Corporation sees as influential in Managing FX:					
(table continued)	Experience of FX	FX Training	Treasury	Outside Experts	FX Volatility	
Supply Chain	<b>.0430</b>	.6801	.7176	.5551	.1989	
Local Currency Supply	<b>.0055</b>	.3026	.0624	.5013	.5918	
Supply Margin	<b>.0049</b>	.1818	.3766	.4781	.1264	
Elasticity of Demand	<b>.0040</b>	.7741	.9508	.4695	.2334	
Competitive Supply	.0956	.1523	.8670	.6405	.2690	
Competitive Demand	<b>.0229</b>	.0706	.9233	.5886	.4460	
Demand Side Margin	<b>.0298</b>	.5825	.1707	.3874	.2568	
Demand Chain	<b>.0311</b>	.4293	.9943	.5554	<b>.0041</b>	
Translation	<b>.0063</b>	.9533	.8621	.0502	.2416	
Transaction	<b>.0079</b>	.7276	.8669	.1477	.3921	
Quasi- Contractual	.0582	.2353	.6875	.0814	.0843	
Long-term Contract	.0505	.5659	.4616	.2953	.2967	

It may be that management, as a result of experiencing vulnerability to currency exposure, has learnt to identify rather than deal or deal adequately with the exposure and that it is the nature of the exposure which influences management. Also, if the nature of currency exposure is an influence on management it seems to be a stronger determinant of management attitude than of management practice. There is a significant association between the level of vulnerability to Demand Chain exposure and responses to the assertion that exposure to currency volatility over the years has given managers the experience to deal with currency related issues. Here it is the substantially vulnerable respondents who have a greater than expected propensity to be among the one half of respondents who are not able

to agree with this contention, perhaps questioning their own ability to manage their exposure.

Unexpectedly, there is no association between the level of vulnerability to any form of exposure and whether or not guidance from treasury departments is considered to be a significant influence on the way currency related issues are dealt with. Moreover, there is no association at all that depends upon whether the business employs its own treasury qualified staff to provide expertise in dealing with currency matters or does not. The same is also the case if, instead of looking at treasurers, one substitutes either staff with business, finance and accounting qualifications or clearing bankers. Even more remarkable, this same lack of association is to be found if one distinguishes both those who use outside experts from those who do not, and those who employ the various categories of specialists from those who do not. This finding must cause speculation as to the degree of influence specialists and advisors have had on management.

Any assumption that the nature of currency exposure influences and determines the behaviour of specialists and advisors may then have to be based on the conclusion that the latter are not influenced by the severity of currency exposure so much as by its nature, and that this is because specialists have the measure of the subject. Alternatively, it is possible that even specialists have an inadequate understanding of the subject and neither they nor the management who employ them can gauge when currency exposures are a significant influence and when they are not.

Turning to management training, there is no significant association between levels of vulnerability to any form of exposure and attitudes to training being a significant influence on the way management handles currency issues, nor one with the propensity to attend courses or seminars to obtain expertise in dealing with currency matters. This is an unexpected finding and a disconcerting one for educators.

Nevertheless, there is a significant association between levels of vulnerability to Supply Chain and Demand Chain exposure and whether or not literature on the subject is used to provide expertise in dealing with currency matters: it is largely the case that the greater is

the vulnerability, the greater the resort to the literature. There is also one association between vulnerability to Demand Chain exposure and the propensity to use forecasting services.

In contrast to vulnerability, when one examines the associations between levels of advantage from forms of exposure and variables relating to management and experts, as Table 6.20 shows, there is no association whatsoever with respondents' perceptions that expertise gained by previous experience is a significant influence on the way they and other staff deal with currency related matters. Yet there is significant positive association between levels of advantage from Transaction and Translation exposure and whether managers perceive that currency volatility over the years has given managers the experience to deal with currency related matters. It raises the issue of whether exchange rate movements have to be volatile before managers realise what is generating that advantage. If exchange rate changes are not that marked perhaps the advantage obtained is not identified with exchange rate changes. The survey finding of a greater propensity for respondents to identify vulnerability to currency exposure than advantage from it was reported earlier and a preoccupation with vulnerability in the currency literature was identified in the literature review.

**Table 6.20 - Relationship between Variables Relating to Management and Experts in British Times 1000 Corporations and Forms of Advantage from Currency Exposure**

	Corporation to manage its FX uses:					
	Forecast Services	Literature	Courses	Treasury Staff	Non Treasury Staff	A M'gmt Comm'tee
Supply Chain	.1698	.1644	.0253	.0173	.4043	.8183
Local Currency Supply	.2947	.2182	.0197	.2502	.3373	.7045
Supply Margin	.3263	.5697	.6081	.5836	.0471	.4029
Elasticity of Demand	.9998	.1152	.9595	.2892	.3138	.2939
Competitive Supply	.7526	.1075	.5010	.2222	.4275	.9061
Competitive Demand	.5609	.0946	.2186	.2019	.4288	.9227
Demand Side Margin	.7218	.0410	.7710	.0982	.7012	.8127
Demand Chain	.2502	.0400	.6273	.2915	.4292	.7225
Translation	.5649	.0486	.4707	.5570	.5468	.7280
Transaction	.7824	.0854	.9295	.5543	.4208	.8617
Long-term Contract	.8398	.3266	.9209	.4853	.5539	.2477
	Corporation sees as influential in Managing FX:					
(table continued)	Experience of FX	FX Training	Treasury	Outside Experts	FX Volatility	
Supply Chain	.6027	.0074	.0832	.8423	.8636	
Local Currency Supply	.6223	.8373	.0390	.9691	.3459	
Supply Margin	.5807	.8404	.0590	.9170	.5369	
Elasticity of Demand	.1670	.4162	.8680	.8527	.1670	
Competitive Supply	.4186	.3042	.5605	.9835	.3188	
Competitive Demand	.4050	.1800	.9493	.6620	.7667	
Demand Side Margin	.5433	.3097	.9642	.8278	.5274	
Demand Chain	.6895	.1044	.3781	.9583	.5741	
Translation	.1204	.6508	.8384	.6541	.0160	
Transaction	.1722	.7765	.5771	.6569	.0451	
Long-term Contract	.3021	.7199	.6283	.9535	.0860	

Nevertheless, there is a largely positive significant association between perceived levels of advantage secured from Demand Side Margin, Demand Chain and Translation exposure and the propensity for respondent corporations to report that literature on the subject is used to provide expertise in dealing with currency matters. However there is also a negative one between Supply Chain and Local Currency Supply exposure and a propensity for courses and seminars to be used for the same purpose. The level of advantage secured from Supply Chain exposure is negatively and significantly associated with the perception that currency related training is a significant influence on the way currency issues are managed. If the influence of literature is positively related to perception of advantage, that of training, it seems, is not.

What can be concluded from the significant negative associations between levels of advantage from Supply Chain and Local Currency Supply exposures and use of treasury staff and perceptions of its influence respectively, and from the positive and significant association between levels of advantage from Supply Margin exposure and use of non-treasury staff, is unclear and needs to be researched further.

To summarise, with one marked exception few significant associations are found between levels of vulnerability to, or advantage from, different forms of currency exposure and key variables measuring the internal corporate environment. The null hypothesis that the internal organisation of currency exposure management is not determined by the forms of currency exposure to which it is subject cannot, therefore, be rejected.

The want of a significant link between the internal corporate environment and either the external corporate environment or forms of currency exposure makes it more urgent to establish what is driving the way corporations manage their exposure. The only contingent possibility remaining unexplored is that currency exposure management is driven by (and possibly drives) the shape of the internal corporate structure set up to manage it.

## **6.5 The Relationship between Foreign Exchange Risk Management Methods Used and the Internal Corporate Environment**

The question now addressed is, if the way corporate currency exposure is managed is not determined by aspects of the external environment or by the way the exposure manifests itself, is it possible to establish what does determine the way currency exposure is managed? The sixth and final hypothesis is that the internal organisation of currency exposure management will determine the methods a company uses to manage its currency exposure.

The associations between methods used to manage currency exposure and attitudinal and strategic variables, and those with variables related to management and experts and with corporate structural variables are set out in Tables 6.21, 6.22 and 6.23 respectively.

## Attitudes and Strategies

As Table 6.21 shows there appears to be a pattern among the significant associations found between exposure management methods used by corporations and corporate strategic and attitudinal variables. The most prominent of these is the association which is found between just over half of methods used and the propensity to hedge fixed asset exposures. Also noteworthy is the association between use of financial instruments and the propensity to hedge quantifiable exposures and that between both strategic methods and three of the five attitudinal and strategic variables, including both of those which cover management of asset exposures.

**Table 6.21 - The Relationship between Foreign Exchange Risk Management Methods Used by British Times 1000 Corporations and Attitudinal and Strategic Variables**

<b>Propensity to:</b>	<b>Give Attention to Policy</b>	<b>Hedge Quantifiable Exposure</b>	<b>Hedge Fixed Asset Exposure</b>	<b>Balance Asset and Liability</b>	<b>Smooth Currency Influences</b>
Forward contracts	.0844	<b>.0010</b>	<b>.0170</b>	1.000	.5271
Spot contracts	.4620	<b>.0219</b>	.1038	.1848	.6770
Option contracts	.8647	.0549	.4696	.5334	1.000
Proportional hedging	.2230	.3046	<b>.0097</b>	.1065	.0997
Swaps	.7044	<b>.0449</b>	<b>.0121</b>	.1213	.2305
Switching currency	.4900	.9987	.9880	1.000	.9057
Netting	.0607	.0724	.0878	.0676	1.000
Timing of dividends	1.000	.6501	<b>.0294</b>	1.000	1.000
Changing price	1.000	.4674	.9774	.6674	1.000
Use a central treasury	.2583	.3218	<b>.0296</b>	.4431	.2255
” sensitivity analysis	.1408	.1090	.0678	.3850	.0859
Matching	<b>.0271</b>	.9760	<b>.0049</b>	<b>.0000</b>	.7970
Using Local Currency Denominated Debt	<b>.0222</b>	.3373	<b>.0007</b>	<b>.0002</b>	.5174

Not unexpectedly, corporations with a propensity to subscribe to a policy of hedging all quantifiable currency exposures are found to make greater use of the financial instruments reported to be used most widely, spot and forward contracts and swaps. This finding, coupled with the propensity, which corporations exhibit, to hedge long-term asset exposures, underlines that the significant associations are preponderantly with policies which seek to diminish risk, and reduce vulnerability rather than generate advantage. This finding of risk aversion echoes the earlier noted finding that vulnerability to currency

exposure is itself more closely associated with corporate strategic and attitudinal variables than is advantage from currency exposure.

It is somewhat surprising that there is no association between methods used and the strategy of trying to smooth out the impact on the business of currency related influences, given that such a strategy indicates some aversion to risk. Perhaps respondents had different interpretations of the term “smoothing” because there is a significant association between those with a policy to try to balance assets and liabilities and revenues and expenses in each currency to minimize net exposures and the two strategic methods used to manage currency exposure. Moreover, those businesses in the process of giving more attention to currency matters in their policies make significantly greater use of the same two strategic methods: matching and local currency denominated debt.

### **Management and Experts**

Concomitantly, a large number of significant associations are found between methods used to manage currency exposure, particularly financial instruments and variables representing management and experts: in particular, those measuring the influence of training in currency issues, the influence of the treasury, use of courses and treasury staff to manage currency exposure and use of the literature.



issues; the other that there is only the one association between use of spot contracts and the propensity of managers to believe that exposure to currency volatility over the years has given them the experience to deal with currency related issues.

The training received however must specifically concern the subject of currency management. Significant associations are not found between methods used and the propensity to see formal training of a more general nature as a significant influence. If the courses are related to using particular methods, further research may be necessary to establish if it is the need to learn how to use methods which is the factor which determines whether or not these courses are seen as influential.

Also, as specialist training courses for management are significantly related to use of many management methods, it is no surprise that respondents identify a strong association between methods used and the propensity to regard courses and seminars as a means to provide expertise. Nor is it surprising that when a corporation employs formally qualified treasurers to use their expertise in dealing with currency matters, greater use is made of a range of methods, but in particular financial instruments, to manage currency exposure. Equally strong is the association when respondents say that guidance from the treasury department is a significant influence on the way management deals with currency related issues. Both treasury variables are themselves significantly linked ( $\Phi = .479$   $p = .0000$ ).

Not only are courses and seminars related to management action, an almost equally strong association is found for those who say they believe that literature on the subject is used to provide expertise in dealing with currency matters. Indeed, there is a strong association between the use of courses and seminars and use of the literature ( $\Phi = .513$   $p = .0000$ ). Additionally, of those methods made more use of by those believing courses and seminars to be influential, over 80% are also more frequently used by those seeing the literature on the subject in the same light.

In contrast with the role of treasurers, only a moderate association occurs with use of particular methods when other professionals, accountants and those with qualifications in business or finance are employed to provide currency expertise and somewhat surprisingly

there is even less of an association which depends on whether or not a formal or an informal management committee meets to deal with this issue.

Greater use is made of only two methods when outside experts are seen as a significant influence and there are no significant associations between methods used and whether or not clearing bankers provide currency advice. There is little evidence that those outside the corporation play an important part in influencing how currency exposure is managed. One apparent exception is where three positive associations can be found between the use of currency management methods and the propensity for respondents' corporations to use currency forecasting services. One paradoxical finding, however, is that there is no association whatsoever between the propensity for respondents to believe exchange rate movements can be accurately predicted and their propensity to use forecasting services. This may evidence use of these services by management as a means of taking out insurance against failure to anticipate adverse future exchange rate changes. Also there is no association between use of currency management methods and the propensity of a corporation's managers to attempt to predict future exchange rates.

### **Corporate Structure**

Given the number of variables relating to management and experts which significantly associate with the use of particular methods used to manage currency exposure, it is not surprising that the nature of the immediate corporate structure in which managers and experts work also relates with these methods although less strongly so. Table 6.23 highlights that use of methods to manage currency exposure is markedly more closely related with nature of involvement of group or corporate headquarters than with subsidiary departments and managers. Most significant is the nature of group treasury involvement and use of a number of methods is related to the degree of attention being given to currency exposure management in procedures.

**Table 6.23 - The Relationship between Foreign Exchange Risk Management Methods Used by British Times 1000 Corporations and Corporate Structural Variables**

	Subsidiary control of FX	HQ control of FX	Local Currency Targets	Local Currency Bonuses	More Attention to Procedure	
Forward contracts	1.000	.2143	.0852	.2841	.0465	
Spot contracts	.5587	.2070	.0088	.0489	.1281	
Option contracts	.7107	.5538	.0853	1.000	.4139	
Proportional hedging	.0500	.9050	.0949	.2035	.0087	
Swaps	.2210	.4120	.0384	.3839	.7839	
Switching currency	1.000	.0630	1.000	1.000	.8661	
Netting	.7058	.4012	.1791	1.000	.0065	
Timing of dividends	.7871	.9100	.1793	.2523	.7123	
Changing price	.8771	.9263	.6356	.5018	.4267	
Use a central treasury	.0050	.6341	.4737	1.000	.0140	
” sensitivity analysis	.5101	.9263	.0717	.1206	.2665	
Matching	.2081	.6992	.0002	.0024	.0264	
Using Local Currency Denominated Debt	.4072	.0884	.0000	.0000	.0567	
<b>Involvement in FX Management of Group:</b>						
(table continued)	<b>CEO</b>	<b>Treasury</b>	<b>Finance</b>	<b>Buying</b>	<b>Marketing</b>	<b>Planning</b>
Forward contracts	.4738	.0925	.9151	.3219	.1867	.7705
Spot contracts	.9867	.0624	.3965	.4582	.2593	.7211
Option contracts	.3883	.1285	.6816	.5219	.0092	.7369
Proportional hedging	.7945	.0344	.7627	.8130	.2006	.6465
Swaps	.8380	.0004	.2147	.8384	.1788	.6477
Switching currency	.6522	.7929	.0841	.5414	.2449	.4493
Netting	.4032	.0274	.6495	.0227	.0499	.0639
Timing of dividends	.6033	.0460	.3122	.2161	.7906	.0187
Changing price	.5073	.4817	.5234	.4639	.1542	.1358
Use central treasury	.3193	.0000	.0477	.1975	.6805	.2190
” sensitivity analysis	.0808	.3597	.4213	.8944	.1446	.0468
Matching	.1778	.5444	.9782	.2390	.5882	.7950
Using Local Currency Denominated Debt	.6640	.4230	.6532	.8964	.7075	.7518
<b>Involvement in FX Management of Subsidiary:</b>						
(table continued)	<b>Treasury Dept</b>	<b>Finance Dept</b>	<b>Buying Dept</b>	<b>Marketing Dept</b>	<b>Costing Dept</b>	
Forward contracts	.0939	.4349	.7428	.5237	.3209	
Spot contracts	.1444	.3388	.4928	.6648	.3407	
Option contracts	.0162	.0786	.3037	.3147	.4102	
Proportional hedging	.0500	.3819	.2976	.7760	.3626	
Swaps	.1833	.9275	.1889	.3713	.7437	
Switching currency	.5013	.6267	.5309	.5013	.7565	
Netting	.0555	.3564	.6089	.3509	.6882	
Timing of dividends	.1645	.3239	.0116	.7973	.7577	
Changing price	.1174	.8109	.1915	.6358	.0344	
Use a central treasury	.3640	.0170	.5143	.4627	.0370	
” sensitivity analysis	.1614	.6139	.0984	.7619	.9215	
Matching	.1866	.5758	.1173	.6194	.2624	
Using Local Currency Denominated Debt	.7680	.7717	.4599	.9239	.9525	

Table 6.23 shows that where respondents report a propensity to give more attention to currency related matters in their procedures they have a greater propensity to use five of the most widely used methods. But when it was reported that subsidiaries alone controlled foreign exchange risk management, it is reported that less use is made of proportional hedging and predictably of the facility of a central treasury. Where corporate performance is measured in a local currency, greater use is reported of spot market contracts, swaps, matching and local currency denominated debt, and with the exception of swaps the same pattern is observed when management performance is rewarded against results calculated in the local rather than the parent currency.

If the group treasury department is responsible for currency issues a corporation makes more use of swaps, proportional hedging, netting and the timing of dividends, as it will when this department is involved but not responsible, though as an exception, there is then a lesser propensity to use netting. If there is no group treasury involvement, which invariably means that the corporation has no group treasury department, less use is made of these methods. The situation, which occurs rarely, when this department is only consulted is too confusing to permit generalisation.

There are significant associations between a number of methods used to manage currency exposure and the propensity for group corporate planning, group treasury and subsidiary costing departments to take part in managing currency exposure, but only one association in the case of group and subsidiary finance and purchasing departments. Lack of any involvement by group corporate planning departments is linked to less use of the timing of dividend remittances and use of sensitivity analysis, but if these departments are consulted there is greater use of them, as there usually is also, when, as rarely, that department actually has responsibility for currency exposure management. If the department is involved on a regular basis the pattern of use of methods is less straightforward. If there is no group purchasing department or if it is not involved in the process, less use is made of netting. Consultation with the department occasionally results in greater use of netting, but when the department is involved no greater use is made of this method than chance would predict.

It can also be seen from Table 6.23 that a small number of methods used to manage currency exposure are related to whether or not subsidiary treasury departments, subsidiary purchasing departments and group marketing departments exist and, if so, if they take part in dealing with currency issues. Corporations have the most pronounced propensity to make more use of certain methods when the subsidiary treasury department is involved in the process rather than when it is responsible for it. This is also the case when the subsidiary purchasing department is consulted as necessary but not usually when it is involved on a regular basis. More use is also made of certain methods when the group marketing department is involved and again with the majority of these methods even when the group marketing department is only consulted.

There is a propensity for a lack of involvement of subsidiary costing departments when there is a centralised treasury and in the same situation less use is made of price changing. Greater use of this method is most associated with both consultation and involvement of subsidiary costing departments. As expected group and subsidiary finance department involvement is significantly negatively associated with use of a centralised treasury.

### **Summary of the Relationship between Foreign Exchange Risk Management Methods Used and the Internal Corporate Environment**

The number of significant associations between different methods widely used to manage currency exposure and the way the corporation is organised internally is substantial. The null hypothesis that the methods a corporation uses to manage currency exposure are not determined by the way the corporation is organised internally to manage that exposure can safely be rejected.

Acceptance of this hypothesis and the rejection of the two hypotheses examined in the previous chapter, which anticipated a link between methods used to manage currency exposure and the corporation's external environment and the forms of currency exposure to which it is subject, is unexpected.

The findings of this section are also set in the context of:

the inability to reject the hypothesis that the external environment determines the forms currency exposure takes, but also an inability to confirm the hypotheses that a corporation's internal environment for managing currency exposure is either directly determined by its external environment or indirectly so by the nature of the forms of currency exposure it experiences. The next section suggests alternative explanations why the second and third hypotheses cannot be confirmed and the subsequent section why the sixth hypothesis cannot be rejected.

## **6.6 The Failure to Explain Foreign Exchange Risk Management in Terms of the External Corporate Environment and the Nature of Currency Exposure Experienced by the Corporation**

Management of currency exposure does not appear to be contingent either upon the external corporate environment or upon the nature of its currency exposure. How can this be explained, if not in terms of the inadequacy of the contingency model? Why it does not attract competing explanations.

The first of these sees the external environment and forms of exposure as obscured and complex. Managers find it hard to understand what is happening in the external environment. There is a lack of clear perception of the factors involved and their relevance, and/or there is too much noise accompanying the signal. The ways in which currency exposure impact the organisation are far from clear. The ambiguities surrounding its conventional threefold definition and the numerous competing taxonomies which have sprung up over the last twenty-five years attest to this. The impact of currency exposure is difficult to measure and with the possible exception of transaction exposure only quantifiable in the broadest of terms. With the difficulty of pinpointing the impact of the phenomenon on the corporation it is all the more difficult to direct the tools available to deal with it in a way which provides feedback on the adequacy of the action taken to manage it.

Additionally, if the impact of the phenomenon cannot be predicted, there may be insufficient time to apply the appropriate tool. Alternatively, the information may simply be unavailable because it is not being collected, management is unable to collect it, or the cost

of buying in expertise or of collecting and processing the information is felt to exceed the benefit of doing so.

Further explanations are supplied by bounded rationality and agency theories. As Bazerman (1994) observes, the rational model is based on a set of assumptions that prescribe how a decision should be made rather than describing how a decision is made. Simon (1957) and March and Simon (1958), he notes, suggested that individual judgement is bounded in its rationality and that we can better understand decision making by explaining actual, rather than normative, decision processes. As Buckley and Chapman (1993) state, objective rationality requires three conditions: (1) that the individual should view (recognise) all the behavioural alternatives; (2) that the individual should consider all the complex consequences which follow from each of the alternatives; and (3) that from the alternatives, one should be singled out using a system of values as the choice criterion.

In practice none of these conditions can be met. First, incompleteness of knowledge and opportunity prevents the individual from viewing all the alternatives. Some British Times 1000 survey respondents, for example, reported not knowing the answer to questions about their market environment. Many management information systems are internally focused for the want of strategic management accounting. The survey finds that sales and marketing departments are reported to be rarely involved in managing currency exposure. The same is true of other functions which would be most likely to employ the operational techniques, whose use is no longer reported to be widespread. Many respondents confirm that they find currency exposure very difficult to manage and few of them perceive that they do it well. There is some evidence that managers underestimate the incidence of currency exposure. Some British Times 1000 corporations declined to take part in the survey on the grounds that they had no currency exposure when this was demonstrably not the case. Few appear to appreciate that apparent dumping is in fact merely the consequence of real exchange rate changes. Respondents say that most managers receive little training on the subject early in their careers. Respondents also indicated that dealing with currency exposure was often confined to particular functional specialisms. Managers who have discretion to change the currencies of price of their inputs and outputs often report that they do not make these

changes, despite saying that they price in currencies which would not necessarily help them manage currency exposure.

Second, there are difficulties in anticipating all the consequences following the choice of methods selected to manage currency exposure. British Times 1000 Corporations on average employ only twenty percent of the methods available to them. Even so, the number of ways these methods can be combined is astronomical. Managers who have a contribution to make on the issue are often not being invited to participate in the process. Respondents report, for example, that managers planning strategy are little involved in the management of currency exposure. This may lead to the underemployment of strategic methods in doing so.

Third, the scope of behaviour possibilities within the organisation is broad and the extent to which the individual's goals are congruent with those of the organisation is variable. As earlier reported, Broder (1984) could not find any consistency or logic in the pattern of currency exposure management objectives expressed by his respondents. Those working in different functions show different propensities to identify with particular objectives. Respondents reveal this in their identification with a range of different attitudes and objectives and in the degree to which a hedging philosophy is espoused. Such concern with hedging seems only explicable in terms of protection of the interests of the managers rather than those of the corporation. In only a minority of British Times 1000 corporations are corporate targets and individual remuneration set by reference to parent currency results, which would reinforce the incentive for managers to pay attention to their currency exposure.

Indeed it is in this third element that there is a link with agency theory, which Kaplan (1982) noted requires a formal specification of the economic agent's preferences and risk attitudes and beliefs as well as possible states of the world, actions and outcome functions. Williamson (1975) wrote that the concept of bounded rationality is often deployed together with that of opportunism and of information impactedness. Although largely developed in the context of finance theory which assumes shareholder wealth maximization, the theory that managers (agents) have different interests from shareholders (their principals) is

relevant in distinguishing the interests of the “corporation” from those of the management, and of individual managers from each other and from management as a whole. Pfeffer and Salancik (1978) observed that even when a manager wants “what is best for the organisation” various managers have differing ideas on what is best for it. Not surprisingly, therefore managers' different views on what is best for the organisation are often correlated with what is best for them, which scenario suggests that managers often form alliances that can later be used to influence organisation decisions and actions. According to Cyert (1988), the profit maximization assumption continues to play a central role in contemporary micro-economic theory, and most economists are singularly uninterested in trying to develop a theory based on empirically more satisfying assumptions about the behaviour of firms.

Employment of agency theory can explain a number of the survey findings. For example, if managers are concerned for their own advancement they are less likely to attribute windfalls to other than their own best efforts. This partly explains why respondents report greater vulnerability to currency exposure than advantage gained from it. The reported prevalence of hedging can be explained by management fear that their own positions will be threatened by losses from exchange rate changes more than they will be advanced by any gains from that source, see Aggarwal (1991). If managers are paid to be in control, they must expect the penalty for disaster to exceed the reward for brilliant achievement. Dobson and Soenen (1993), for example, while admittedly using different arguments which cast the managers' motives in a better light, argue that foreign exchange hedging helps ameliorate three well documented agency problems: underinvestment, risk-shifting and moral hazard.

Elsewhere, concentration on the management of transaction exposures can partly be explained by the greater ease with which performance in managing them can be measured and rewarded. It may also be that managers concentrate on short-term exposures because their time frame is different from that of the organisation they work for. They wish to harvest benefits before they move to other organisations. It was noted earlier that many respondents move organisation frequently.

## **6.7 Explaining Foreign Exchange Risk Management in Terms of the Internal Corporate Environment**

Why the way a corporation manages its currency exposure is directly related to or determined by the corporation's internal structure also needs to be explained. A starting point in explaining this influence logically must begin with an examination of organisation and behavioural theories to determine what insights they can provide.

Organisation and behavioural theories stress that people in organisations are influenced by the structure of the organisation and by the processes going on in it. Departmentation and the degree of centralisation, the culture and philosophy of the organisation, the strategy, and training and education all impact on behaviour. The variables used to measure the internal corporate management of currency exposure are measuring aspects of these elements. Why should people managing currency exposure be influenced any the less by these factors than people managing any other issue? For instance, if managers are found to be less risk averse in practice than they say they are, can this not be explained by the “risky shift” phenomenon found by Stoner (1961), who has discovered that on the whole groups are more risk seeking than individual member's risk preferences would predict?

Until very recently the literature on organisation and behaviour and that on corporate currency exposure have had little dialogue. But if explanations of the way large corporations operate are largely explicable in terms of the organisational and behavioural literature, this isolation must be brought to an end.

## **6.8 Conclusion**

The contingency model presented in Chapter 3 generated six hypotheses, only two of which could not be rejected. In consequence no link direct or indirect can be found between the perceived nature of currency exposure and its management. Attention has been drawn in this chapter to the absence of two links and some tentative explanations largely based on bounded rationality and agency theory have been offered to explain why the links are not observed. Attention has also been drawn to organisation and behavioural theory to help explain why foreign exchange risk management is strongly associated with the shape of the internal corporate environment in which that management takes place. Much further work

needs to be done to test the adequacy of these explanations. There needs to be corroboration from more detailed case study and ethnographic examination of corporate practice.

This chapter has set out the findings of the survey conducted during the course of this research on the pattern of elements in the background of the managers and experts dealing with currency exposure, their attitudes and articulated strategies and the corporate structure in which they work. The relationship between the internal corporate environment and both the external corporate environment and the ways in which currency exposure impact the corporation has been described. Mechanisms which account for the pattern of relationships between methods used to manage currency exposure and each of the external corporate environment, forms of currency exposure experienced and the internal corporate environment have been suggested. Conclusions about the behaviour of managers responsible for dealing with currency exposure, the aspects which can be explained by organisation and behavioural theory and the findings which remain unexplained have been drawn. In the following chapter it remains to examine managers' perceptions of the effectiveness of the methods they use to manage currency exposure.

## **CHAPTER 7 - THE PERCEIVED EFFECTIVENESS OF CURRENCY RISK MANAGEMENT METHODS**

### **7.1 Introduction**

This chapter summarises the findings of the survey conducted in the course of this thesis on those methods used to manage currency exposure perceived by respondents to be highly effective. The relationships between the usage of and perceived effectiveness of these methods and that between the perceived effectiveness of the different methods are described. The chapter examines the relationship between the perceived effectiveness of methods and each of the corporate external environment, the nature of currency exposure experienced by the corporation, and the internal corporate environment. It explains the pattern or lack of pattern between effectiveness of methods and variations in the external corporate environment, the nature of currency exposure, and the internal corporate environment. Finally, conclusions are drawn about perceptions of the effectiveness of foreign exchange risk management methods, and the aspects which can be explained and the findings which remain unexplained.

### **Using Perceptions of Effectiveness to Quantify the Management of Currency Exposure**

Respondents in British Times 1000 corporations were asked which methods used for the purpose of managing currency exposure they regarded as “highly effective” and not simply “effective”. This more exacting measure of effectiveness was employed in the survey because use of certain methods can be seen as effective in achieving a particular task, but may not be seen as effective in a broader context.

Consider the example of hedging instruments. Covering forward a net exposure in a foreign currency will be effective in achieving a hedge of that exposure, but might not be seen as effective in the context of managing a corporation's overall currency exposure. Perception of effectiveness is seen as an alternative measure of the way in which currency exposure is managed because it directly addresses the quality of the response of any method and provides a comparison as between methods. In contrast, measuring usage or non-usage of a

method, or indeed the frequency of usage of a method, does not indicate what degree of impact that usage is believed to have. Although usage is less dependent on opinion than the perception of effectiveness, the measure of usage does not, per se, provide a reliable way of ranking methods. A method seen to be highly effective is one likely to be used more often. Or, if its use is limited, that use is likely to be seen as having a substantial impact.

Nevertheless respondents are being asked to rate the overall effectiveness of a method used to manage currency exposure and are not being asked to rate methods in a specific context. As a consequence, the effectiveness of a method cannot be expected to be contingent on specific environmental factors. Nor if particular methods are effective in managing a number of forms of exposure will effectiveness be easy to relate to the nature of currency exposure experienced by the corporation. Contingent effects even where they exist will be difficult to detect. With this strong qualification, the measure of high effectiveness can be used to corroborate the findings of Chapters 5 and 6, and test with what confidence simple usage of methods can be accepted as an appropriate measure for quantifying currency exposure management. The hypotheses tested in chapters 5 and 6 employing usage of methods as the dependent variables are, therefore, retested in this chapter using methods considered highly effective as the dependent variables.

## **7.2 The Perceived Effectiveness of Each Method Used to Manage Currency Exposure**

Occasionally British Times 1000 respondents report considering a method of managing currency exposure, which they do not record using, as highly effective. Possibly this is because they have experience of using it in a previous employment. However this situation occurs so occasionally that in no instance is a method used by a smaller percentage of respondents than the percentage which regards it as highly effective. An examination of responses to the question of effectiveness of methods also shows that only two of the lesser used methods are regarded as highly effective by all who use them and that, disregarding one residual respondent specified method, all methods listed in the questionnaire are regarded as highly effective by at least a proportion of their users.

Tables 7.1 to 7.4 report respectively the percentage of respondents in British Times 1000 corporations who consider particular financial instruments, operational techniques, organisational measures and strategic methods to be highly effective. All forty-five methods specified in the survey are included. Table 7.5 summarises respondents' perceptions of the effectiveness of the most widely used methods only. Taking into account differences in timing and the ways in which effectiveness of methods is measured in other surveys, their findings are broadly consistent with those of this survey. Exceptionally, respondents in British Times 1000 corporations appear to give a very different rating to certain operational techniques and strategic methods than do the American corporations surveyed by Cezairli (1988) and by Lessard (1990).

### Financial Instruments

With the exception of the last of the methods listed in Table 7.1 all financial instruments are seen as highly effective by over half of those employing them and on average by 65% of respondents who use them. This is a higher ratio than for the other three groups of methods. Forward market and futures contracts and swaps are seen as highly effective by a large percentage of users (effectiveness to usage percentage).

**Table 7.1 - Patterns of Perceived Effectiveness of Financial Instruments in Managing Currency Exposure in British Times 1000 Corporations**

Percentage of respondents and users reporting the instruments highly effective is recorded in the first column:

Financial Instruments	Percentage Seeing Method Highly Effective	Effectiveness/ Usage Percentage
Forward market contracts	67	86
Spot market contracts	44	59
Option contracts	35	69
Hedging a proportion of the risk	30	65
Swaps	29	72
Futures contracts	12	80
Parallel loans	9	53
Collars	8	57
Insurance (Inconvertibility/export)	7	41

Jilling and Folks (1977) ask their respondents to score methods for “usefulness” on a scale of 1 (low usefulness) to 3 (high usefulness). Respondents scored use of forward exchange

contracts on average 2.297, second only to increased borrowing levels in currency with a 2.462. Neither Broder (1984) nor Soenen and Aggarwal (1989) deal with the issue of effectiveness, but Cezairli (1988) does. Distinguishing between practices employed in developing and developed triad countries, he reported 46% of his respondents finding forward contracts, 17% currency options, 11% currency swaps, and 5% money market hedges very effective in managing translation and transaction exposure in the latter, and a lesser effectiveness of all these instruments in the former.

Lessard (1990) tackles the issue of effectiveness in a different way which makes comparison more difficult. Methods are grouped together and the test of effectiveness is how effectively firms respond to rapid changes in exchange rates in terms of use of these groups. A seven point Likert scale, with 1 (responds very effectively) and 7 (responds poorly), is used. He finds 58% of his respondents scoring financial hedging decisions 3 or above, seeing them much more effective than other groups of methods. This is consistent with this survey's findings on the ratio of effectiveness to use of financial instruments generally.

### **Operational Techniques**

In contrast operational techniques, listed in Table 7.2, as a group were seen by the smallest percentage of users, only 42% on average, to be highly effective, This parallels the finding that usage of these techniques itself is not widespread.

**Table 7.2 - Patterns of Perceived Effectiveness of Operational Techniques in Managing Currency Exposure in British Times 1000 Corporations**

Percentage of respondents and users reporting the techniques highly effective is recorded in the first column:

<b>Operational techniques</b>	<b>Percentage Seeing Method Highly Effective</b>	<b>Effectiveness/ Usage Percentage</b>
Netting	19	61
Switching to using a different currency	13	38
Using indexation in contracts	11	52
Using reference to a stable currency	10	62
Changing the price to reflect exposure	9	39
Timing of dividend remittances	8	31
Leading and lagging payments/receipts	6	30
Using reference to a basket of currencies	5	42
Using international group transfer pricing	4	40
Delaying/speeding up sales/purchases	3	21

Jilling and Folks (1977) concentrate to such an extent on operational techniques that it is difficult to compare their respondents' usefulness rating of these techniques with that of other groups of methods. It is clear, however, that there is a broad spread of responses with some methods seen as highly useful and others of little use. Cezairli (1988) records that 27% of respondents found pricing in the parent currency, 14% netting, 3% leads and lags, and 5% intrafirm transfers very effective in managing translation and transaction exposures in developed countries, and 33% pricing in the parent currency, 11% netting, 11% leading and lagging, and 9% intrafirm transfers very effective in managing these exposures in operations in developing countries.

The respondents in the Lessard (1990) survey score pricing decisions second only to financial hedging decisions for effectiveness of response, with 48% of them giving a score of 1 to 3. This contrasts with the poorer relative showing of operational techniques in this survey. Why there is this difference in the findings is uncertain. It may be explained by differences of definition or possibly by the more effective employment of operational techniques by American corporations.

## Organisational Measures

Using a centralised treasury was considered highly effective by respondents in four in five of corporations which employed one and re-invoicing centres were considered highly effective by all but one respondent in a corporation which used them.

**Table 7.3 - Patterns of Perceived Effectiveness of Organisational Measures in Managing Currency Exposure in British Times 1000 Corporations**

Percentage of respondents and users reporting the measures highly effective is recorded in the first column:

Organisational Measures	Percentage Seeing Method Highly Effective	Effectiveness/ Usage Percentage
Using a centralised treasury	42	79
Using bank clearing intergroup flows systems	9	60
Using sensitivity analysis in planning	5	23
Using re-invoicing centres	4	80

Jilling and Folks (1977) reported that their respondents gave the usefulness of rescheduling intra-company debt a rating of 2.000 on the scale of 1 to 3. Cezairli (1988) does not report on the effectiveness of organisational measures.

The respondents of Lessard (1990) rank the effectiveness of planning for currency volatility, arguably a measure of organisation rather than strategy, behind financial hedging decisions and pricing decisions with 35% of them scoring planning 1 to 3. This is broadly in line with the way currency sensitivity analysis in planning is rated in this survey.

## Strategic Methods

Almost three quarters and two thirds of respondents reporting use of local currency denominated debt and matching respectively considered these methods highly effective and over half those using fiscal schemes considered these to be highly effective also. Overall approximately 60% of strategic methods used were considered highly effective.

**Table 7.4 - Patterns of Perceived Effectiveness of Strategic Methods in Managing Currency Exposure in British Times 1000 Corporations**

Percentage of respondents and users reporting the methods highly effective is recorded in the first column:

Strategic Methods	Percentage Seeing Method Highly Effective	Effectiveness/ Usage Percentage
Obtaining local currency denominated debt	43	72
Matching assets/income with liabilities/expense in same currencies	41	67
Use of Fiscal (tax) schemes	12	63
Selective subcontracting	7	50
In different currencies:		
matching expenses with capital liabilities	6	75
matching revenues with capital assets.	6	75
Selective overseas plant location	4	57
Use of Joint Ventures * (see below)	4	44
Acquisitions and/or disposals of businesses *	4	57
Use of royalty schemes	3	30
Seeking/obtaining government help	3	30
Asking others in supply chain to reduce exposure	3	33
Moving to weak/weakening currency input sources	3	75
Productivity improvement programmes *	3	60
Moving from strong/strengthening input sources	3	75
Changing level/emphasis of promotional activity*	3	100
Moving from weak/weakening currency markets	3	75
Matching competitor sources	2	25
Selecting assets in low correlation currencies	2	33
Matching competitor markets	2	40
Moving to strong/strengthening currency markets	2	50
Product differentiation programmes *	1	100

\* where primary policy reason was to deal with currency exposure.

Respondents reported to Jilling and Folks (1977) an average effectiveness rating for increasing and for reducing borrowing levels in currency of 2.462 and 2.286 respectively (the highest and third highest rating given). A lower effectiveness rating of 1.789 was given to financing fund requirements or investing excess cash of third country subsidiaries in currency. A very low rating of 1.395 was awarded to the usefulness of utilising government exchange risk guarantee programmes. Cezairli (1988) says that 30% and 27% of his respondents found local currency debt very effective in managing translation and transaction exposures when used in developed and developing countries respectively. In managing economic exposure, 14% of his respondents found matching the currency determination of costs and revenues, 9% flexibility in sourcing, 2% adjusting capacity utilization, 6% product

diversification, 5% geographical diversification, and 3% unhedged long-term foreign currency borrowing very effective in operations in developed countries, and 11% matching the currency determination of costs and revenues, 6% flexibility in sourcing, 5% adjusting capacity utilization, 3% product diversification, 5% geographical diversification, and 8% unhedged long-term foreign currency borrowing highly effective in operations in developing countries.

Lessard (1990) distinguishes three groups of decisions which can be classified as strategic. Respondents rated each of these for their firms' effectiveness in responding to rapid changes in exchange rates below the ratings they gave for other groups. Only 33%, 29% and 24% of respondents respectively scored 1 to 3, sourcing decisions, capacity utilisation decisions and investment decisions. The Lessard (1990) survey shows, therefore, that although greater use is made of strategic methods by American corporations than that reported by British Times 1000 corporations, British respondents rate the effectiveness of strategic methods much more highly than American corporations do. However the Cezairli (1988) survey whilst showing even greater use of strategic methods by U.S. corporations than Lessard does, finds U.S. corporations rating them infinitely less highly effective than British Times 1000 corporations do. Why there are these differences is not clear and needs further researching.

For purposes of comparison the analysis carried out in the remainder of this chapter deals with the most widely used methods only. The same analysis was, however, also carried out for all forty-five methods, and the results for both sets of methods were found to be broadly comparable.

Table 7.5 records the number of the most widely used methods of managing corporate currency exposure survey respondents considered highly effective.

**Table 7.5 - Reported Effectiveness of the Thirteen Most Widely Employed Methods of Managing Corporate Currency Exposure in British Times 1000 Corporations by Number of Respondents**

	<b>Total number of respondents</b>	<b>Number reporting highly effective any:</b>			
		<b>financial instruments</b>	<b>operating techniques</b>	<b>organisations l measures</b>	<b>strategic methods</b>
All Methods	1	1	1	1	1
12 Methods	0	-	-	-	-
11 Methods	1	1	1	1	1
10 Methods	2	2	2	2	2
9 Methods	7	7	7	7	7
8 Methods	8	8	6	7	8
7 Methods	5	5	5	0	1
6 Methods	10	10	5	6	9
5 Methods	14	14	6	9	10
4 Methods	11	11	1	8	8
3 Methods	13	10	3	3	9
2 Methods	15	14	1	3	4
1 Method	17	8	1	2	6
No Methods	15	0	0	0	0
Not Stated/ Don't Know	0	-	-	-	-
<b>Total</b>	<b>119</b>	<b>91</b>	<b>39</b>	<b>49</b>	<b>66</b>
<b>% of Total</b>	<b>100</b>	<b>76</b>	<b>33</b>	<b>41</b>	<b>55</b>

On average respondents in each corporation found 4 of the 13 most widely used methods to be highly effective. (It will be recalled from Chapter 5 that on average 6 of these methods were used per corporation.) These 13 methods account for approximately 71% of all methods considered highly effective. The other 32 methods identified account for the balance. Over 75% of respondents considered one or more of the most widely used financial instruments highly effective. Some 55% of respondents did so for the most widely used strategic methods, 40% for the most widely used organisational measures and approximately 33% for the most widely used operational techniques. Comparing these findings with those in Table 5.5 highlights differences in the extent to which methods grouped in this way are used and perceived highly effective. In particular, one or more financial instruments are seen as highly effective by a greater proportion of respondents (84% of them) than are one or more operational techniques (by 54% of them).

This concludes the analysis of individual methods considered highly effective. The next section examines associations among different methods considered highly effective. No

other surveys have examined these types of association so no corroboration of these findings is possible.

### **7.3 Interrelationships among Foreign Exchange Risk Management Methods Considered Highly Effective**

Significant associations among different currency exposure management methods considered highly effective are, as with management methods employed, always found to be positively correlated. As with associations among methods used, just over one third of these associations were found to be significant at the 5% level. As found with method usage, see Chapter 5, there is no evidence that respondents perceive the effectiveness of any one management method to affect adversely the effectiveness of any other method. If particular methods only were being used to manage specific forms of exposure, significant negative associations amongst methods considered highly effective might be predicted. This is because it is well established that in managing one form of exposure a corporation can sometimes increase its vulnerability to another form, thereby providing misleading signals of the effectiveness of the method or methods used to manage that second form.

Tables 7.6 to 7.15 document the associations found. Those among financial instruments are set out in Table 7.6, those among operational techniques in Table 7.7, those among organisational measures in Table 7.8 and among strategic methods in Table 7.9. Associations between methods in the different groups are set out in Tables 7.10 to 7.15.

Table 7.6 emphasises that without exception perceived effectiveness of each widely used financial instrument is highly significantly associated with the perceived effectiveness of all others.

**Table 7.6 - Interrelationships among Financial Instruments Considered Highly Effective by British Times 1000 Corporations**

	Forwards	Spot Contracts	Options	Prop' Hedge	Swaps
Forward market contracts	x	.0000	.0000	.0052	.0001
Spot market contracts	.0000	x	.0001	.0164	.0000
Option contracts	.0000	.0001	x	.0003	.0001
Proportional hedging	.0052	.0164	.0003	x	.0002
Swaps	.0001	.0000	.0001	.0002	x

This is not the case for operational techniques, see Table 7.7,

**Table 7.7 - Interrelationships among Operational Techniques Considered Highly Effective by British Times 1000 Corporations**

	Switching	Netting	Dividend Remittance	Changing Price
Switching currency	x	.0689	.0258	.0013
Netting	.0689	x	.1897	.0317
Timing of dividends	.0258	.1897	x	.0015
Changing price	.0013	.0317	.0015	x

and it is not found in Table 7.8 below to be so for the two organisational measures.

**Table 7.8 - Interrelationships among Organisational Measures Considered Highly Effective by British Times 1000 Corporations**

	Using a Centralised Treasury	Sensitivity Analysis
Using a Centralised Treasury	x	.4060
Sensitivity analysis	.4060	x

Not surprisingly, perceived effectiveness of local currency denominated debt which aids the process of matching is strongly associated with the perceived effectiveness of the latter.

**Table 7.9 - Interrelationships among Strategic Methods Considered Highly Effective by British Times 1000 Corporations**

	<b>Matching</b>	<b>Using Local Currency Denominated Debt</b>
Matching	x	.0000
Using Local Currency Denominated Debt	.0000	x

The relationships between the perceived effectiveness of financial instruments and that of operational techniques, organisational measures and strategic methods are set out in Tables 7.10, 7.11 and 7.12 respectively; those between operational techniques and organisational measures and strategic methods respectively in Tables 7.13 and 7.14. Finally associations between the effectiveness of organisational measures and strategic methods are recorded in Table 7.15.

Interestingly the strength of association between methods considered highly effective which are in different groups is almost as great as it is between those in the same group when the methods are likely to be employed by the same functional department. This finding is consistent with respondent perception that methods are interchangeable and, prima facie, consistent with methods being seen as having an additive effect.

The weakest of the associations is found between methods in the operational techniques group and other groups.

**Table 7.10 - Interrelationships between Financial Instruments and Operational Techniques Considered Highly Effective by British Times 1000 Corporations**

	<b>Switching</b>	<b>Netting</b>	<b>Dividend Remittance</b>	<b>Changing Price</b>
Forward market contracts	.0444	.0127	.2109	.0506
Spot market contracts	.0074	.0035	.1737	.0071
Option contracts	.4389	.0252	.1531	.1531
Proportional hedging	.0221	.0015	.0017	.3208
Swaps	.0612	.0158	.2583	.0635

In contrast, effectiveness of treasury centralisation is closely associated with perceived effectiveness of the methods traditionally employed by treasury which may imply that

particular functions are more likely to consider associations between methods normally used by that function to be highly effective.

	<b>Use Centralised Treasury</b>	<b>Sensitivity Analysis</b>
Forward market contracts	<b>.0018</b>	<b>.1906</b>
Spot market contracts	<b>.0021</b>	<b>.1234</b>
Option contracts	<b>.0045</b>	<b>.2065</b>
Proportional hedging	<b>.0001</b>	<b>.5658</b>
Swaps	<b>.0001</b>	<b>.0006</b>

For example, “highly effective” strategic methods which are employed by treasurers and by finance specialists strongly associate with “highly effective” hedging techniques largely employed by those in the same function.

	<b>Matching</b>	<b>Using Local Currency Denominated Debt</b>
Forward market contracts	<b>.0373</b>	<b>.0532</b>
Spot market contracts	<b>.0074</b>	<b>.0506</b>
Option contracts	<b>.0062</b>	<b>.0142</b>
Proportional hedging	<b>.0005</b>	<b>.0014</b>
Swaps	<b>.0025</b>	<b>.0056</b>

The strength of association between methods employed by those in different or a number of functions is often somewhat weaker as Table 7.13. shows,

**Table 7.13 - Interrelationships between Operational techniques and Organisational Measures Considered Highly Effective by British Times 1000 Corporations**

	<b>Using a Centralised Treasury</b>	<b>Sensitivity Analysis</b>
Switching currency	.0736	.3479
Netting	.0229	.0130
Timing of dividends	.1239	1.000
Changing price	.0232	.1327

Table 7.14 below also shows this,

**Table 7.14 - Interrelationships between Operational Techniques and Strategic Methods Considered Highly Effective by British Times 1000 Corporations**

	<b>Matching</b>	<b>Using Local Currency Denominated Debt</b>
Switching currency	.0521	.0036
Netting	.0001	.1822
Timing of dividends	.0196	.3848
Changing price	.0967	.3848

and this is again shown in Table 7.15.

**Table 7.15 - Interrelationships between Organisational Measures and Strategic Methods Considered Highly Effective by British Times 1000 Corporations**

	<b>Matching</b>	<b>Using Local Currency Denominated Debt</b>
Use centralised treasury	.0016	.0146
Use sensitivity analysis	.3564	.0930

If methods are used in combination it may be difficult to discern the relative effectiveness of each method. To test for complementarity of effect of methods, association between the use of and effectiveness of different methods needs to be explored. This exercise is carried out in the next section.

#### **7.4 The Relationship between Perceived Effectiveness and Use of Different Methods Used to Manage Currency Exposure**

For each of the thirteen methods identified in the survey as widely used to manage currency exposure, respondents perceived a significant positive association between use and effectiveness of that same method. (This was also found to be the case for all except five of the other 32 methods used. The five to show no significant association between use and perception of effectiveness of the same method are: selecting assets in low correlation currencies; matching competitor markets; moving to strong/strengthening currency markets; product differentiation programmes; and asking others in the supply chain to reduce their exposure.)

Respondents, as noted earlier, also rated a small number of methods highly effective which they said they did not themselves use. It was noted that it may be that respondents form a view of the effectiveness of a method from experience in a previous employment. The following widely used methods were considered highly effective by more than one respondent, who did not use them. That number is specified in brackets after the technique. They are forward market contracts (7), matching (5), options contracts (4), use of a centralised treasury (4), hedging a proportion of the risk (3), changing the price to reflect exposure (3), using local currency denominated debt (3), swaps (2), switching to use a different currency (2), and netting (2).

It may be the case that corporate policy rules out the use of some methods despite the regard individual managers have for them. There are seven instances where methods have been abandoned but are still regarded as highly effective. Among these are forward market contracts (3 times) and options (once).

The following methods widely used for managing currency exposure are found not to be significantly associated **with any other** methods considered highly effective: switching to using a different currency and changing price to reflect exposure. The number of exposure management methods whose use was found to be significantly associated with other exposure methods considered highly effective was only 8% of all such associations. With only two minor exceptions the significant associations were again all positively correlated.

This finding is prima facie evidence of a more limited amount of method interchangeability and complementarity than previous evidence would allow.

Ten of the thirteen most widely used methods were also among the thirteen rated the most highly effective. The five financial instruments and the two strategic methods are also rated the most highly effective in their group. Use of two operational techniques, indexation in contracts and use of reference to a stable currency, were rated as highly effective by 11% and 10% of respondents respectively, ahead of price changing and timing dividend remittances. The organisational measure of using bank clearing intergroup flow systems was rated as highly effective by 9% of respondents ahead of use of currency sensitivity analysis in planning, rated highly effective by 5%.

Tables 7.16 to 7.27 below set out the associations between the reported use and perceived effectiveness of the thirteen most widely used methods. Table 7.16 shows that with a few exceptions the use of each financial instrument is significantly associated with the perceived effectiveness of the other financial instruments.

<b>Methods Perceived Highly Effective</b>	<b>Forwards</b>	<b>Spot Contracts</b>	<b>Options</b>	<b>Prop' Hedge</b>	<b>Swaps</b>
<b>Methods Used:</b>					
Forward market contracts	.0107	.0000	.0008	.0378	.0165
Spot market contracts	.0000	.0000	.0434	.2456	.0047
Option contracts	.0793	.1099	.0000	.1615	.0253
Proportional hedging	.0220	.3444	.0442	.0000	.0012
Swaps	.0092	.0334	.0095	.0861	.0000

In marked contrast this is neither the case for operational techniques, see Table 7.17, nor for organisational measures, see Table 7.18, though it is for strategic methods, see Table 7.19.

**Table 7.17 - Relationship Between the Perceived Effectiveness and Use of Operational Techniques by British Times 1000 corporations to Manage Currency Exposure**

<b>Methods Perceived Highly Effective</b>	<b>Switching Currency</b>	<b>Netting</b>	<b>Dividend Remittance</b>	<b>Changing Price</b>
Methods Used:				
Switching currency	.0000	.1736	.9227	1.000
Netting	.2733	.0000	.3208	.3208
Timing of dividends	1.000	.0826	.0000	.5456
Changing price	.9492	.8760	.8553	.0008

**Table 7.18 - Relationship Between the Perceived Effectiveness and Use of Organisational Measures by British Times 1000 Corporations to Manage Currency Exposure**

<b>Methods Perceived Highly Effective</b>	<b>Using a Centralised Treasury</b>	<b>Sensitivity Analysis</b>
Methods Used:		
Using a Centralised Treasury	.0000	.8185
Sensitivity analysis	.1617	.0000

**Table 7.19 - Relationship Between the Perceived Effectiveness and Use of Strategic Methods by British Times 1000 Corporations to Manage Currency Exposure**

<b>Methods Perceived Highly Effective</b>	<b>Matching</b>	<b>Using Local Currency Denominated Debt</b>
Methods Used:		
Matching	.0000	.0008
Using Local Currency Denominated Debt	.0035	.0000

In analysing the associations between use and perceived effectiveness of methods in the different groups, set out in Tables 7.20 to 7.27, substantially fewer associations are found. The largest number of significant associations are found to relate to the use of financial instruments and effectiveness of both organisational measures and strategic methods, see Table 7.22, and with the use of the latter two groups and the effectiveness of financial instruments, see Table 7.25. Where interchangeability and/or complementarity appear to

exist, therefore, is among financial instruments and select strategic methods and among the former and organisational measures.

**Table 7.20 - Relationship Between the Perceived Effectiveness of Financial Instruments and Use by British Times 1000 Corporations of Operational Techniques to Manage Currency Exposure**

<b>Methods Used:</b>	<b>Switching</b>	<b>Netting</b>	<b>Dividend Remittance</b>	<b>Changing Price</b>
<b>Methods Perceived Effective:</b>				
Forward market contracts	.2807	.2679	.3814	.5294
Spot market contracts	.5106	.2287	.6037	.5160
Option contracts	.9085	.4653	.5211	1.000
Proportional hedging	1.000	.1999	.2546	.3702
Swaps	.4599	.0447	.0636	1.000

**Table 7.21 - Relationship Between the Perceived Effectiveness of Operational Techniques and Use by British Times 1000 Corporations of Financial Instruments to Manage Currency Exposure**

<b>Methods Used:</b>	<b>Forwards</b>	<b>Spot Contracts</b>	<b>Options</b>	<b>Prop' Hedge</b>	<b>Swaps</b>
<b>Methods Perceived Effective:</b>					
Switching currency	.6588	.4573	.5112	.1768	.4576
Netting	.1839	.0264	.7614	.2132	.0573
Timing of dividends	.6260	.4708	1.000	.0120	.3534
Changing price	1.000	.4708	.6790	.8916	.7974

**Table 7.22 - Relationship Between the Perceived Effectiveness of Organisational Measures and Strategic Methods and Use by British Times 1000 Corporations of Financial Instruments to Manage Currency Exposure**

<b>Methods Used:</b>	<b>Forwards</b>	<b>Spot Contracts</b>	<b>Options</b>	<b>Prop' Hedge</b>	<b>Swaps</b>
<b>Methods Perceived Effective:</b>					
Using a Centralised Treasury	.0679	.0427	.1505	.0008	.0257
Sensitivity analysis	.4341	.3478	.7221	.5702	.0099
Matching	.2359	.0677	.4787	.2757	.0722
Using Local Currency Denominated Debt	.1708	.1109	.4872	.0263	.0091

**Table 7.23 - Relationship Between the Perceived Effectiveness of Organisational Measures and Strategic Methods and Use by British Times 1000 Corporations of Operational Techniques to Manage Currency Exposure**

<b>Methods Used:</b>	<b>Switching</b>	<b>Netting</b>	<b>Dividend Remittance</b>	<b>Changing Price</b>
<b>Methods Perceived Effective:</b>				
Using a Centralised Treasury	.6074	.0169	.3895	.9450
Sensitivity analysis	.1884	.5658	1.000	.2547
Matching	1.000	.0244	.2746	.7858
Using Local Currency Denominated Debt	.7852	.4331	.2007	1.000

**Table 7.24 - Relationship Between the Perceived Effectiveness of Strategic Methods and Use of Operational Techniques by British Times 1000 Corporations to Manage Currency Exposure**

<b>Methods Used:</b>	<b>Using a Centralised Treasury</b>	<b>Sensitivity Analysis</b>
<b>Methods Perceived Effective:</b>		
Matching	.1673	.2444
Using Local Currency Denominated Debt	.1788	.3392

**Table 7.25 - Relationship Between the Perceived Effectiveness of Financial Instruments and Use by British Times 1000 Corporations of Organisational Measures and Strategic Methods to Manage Currency Exposure**

<b>Methods Used:</b>	<b>Using a Centralised Treasury</b>	<b>Sensitivity Analysis</b>	<b>Matching</b>	<b>Using Local Currency Denominated Debt</b>
<b>Methods Perceived Effective:</b>				
Forward market contracts	.0112	.0426	.3309	.0307
Spot market contracts	.0031	.1260	.1310	.2710
Option contracts	.0851	.0167	.0341	.0625
Proportional hedging	.0087	.1420	.0183	.0135
Swaps	.0020	.0016	.0377	.0097

**Table 7.26 - Relationship Between the Perceived Effectiveness of Operational Techniques and Use by British Times 1000 Corporations of Organisational Measures and Strategic Methods to Manage Currency Exposure**

<b>Methods Used:</b>	<b>Using a Centralised Treasury</b>	<b>Sensitivity Analysis</b>	<b>Matching</b>	<b>Using Local Currency Denominated Debt</b>
Methods Perceived Effective:				
Switching currency	.8105	.4696	.4615	.4599
Netting	.0545	.0034	.1060	.7205
Timing of dividends	.4572	.3314	.1085	.1116
Changing price	.9356	1.000	.8041	.7361

**Table 7.27 Relationship Between the Perceived Effectiveness of Organisational Measures and Use by British Times 1000 Corporations of Strategic Methods to Manage Currency Exposure**

<b>Methods Used:</b>	<b>Matching</b>	<b>Using Local Currency Denominated Debt</b>
Methods Perceived Effective:		
Using a Centralised Treasury	.0656	.0889
Sensitivity analysis	.8765	.4548

In a further analysis it is found that in only thirty-three or just over 3% of cases was the effectiveness of any two methods each significantly associated with the use of the other. Additionally, there is only one three way association of this nature among widely used methods which involves spot market contracts, forward market contracts and swaps. Otherwise there is little evidence that the perceived effectiveness of one method is frequently associated with the use of another.

One explanation for the high proportion of significant associations among different methods considered to be highly effective may therefore lie in there fortuitously being favourable circumstances which make currency exposure management, however addressed, appear successful. This reasoning questions the discernment of respondents, many of whom are specialists, and although this explanation is an unlikely one, because respondents are not asked about the effectiveness of methods in specific circumstances, it is examined further in the following section.

To conclude this section, the associations between perceived effectiveness of foreign exchange risk management methods and their usage are set out in one figure, which compares percentage perceived effectiveness with relative usage of methods. Methods are categorised according to whether they are perceived highly effective by more than 75% of respondents using them, by less than 75% but by 60% or more, by less than 60% but by 40% or more or by less than 40% of respondents using them. Methods are also categorised according to their relative use by respondents: whether their usage rate is more than twice the average, between the average and twice the average, between half the average and the average or under half the average for all methods. The results presented in Figure 7.1 below show that overall usage is in the main positively associated with the degree of perceived effectiveness of methods. All widely used methods are among those perceived highly effective by the majority of respondents, but this is also the case for many methods not widely used. Others not widely used are perceived highly effective by only a minority of respondents.



## **7.5 The Relationship between the Perceived Effectiveness of Method Used to Manage Currency Exposure and the External Corporate Environment**

The relationship between usage of methods to manage currency exposure and the external corporate environment was examined in Chapter 5 and the hypothesis that the external environment determined the methods used to manage currency exposure, the second hypothesis, could not be confirmed. This section looks at the perceived effectiveness of methods as an additional measure of the relationship between methods and the external environment. The arguments employed earlier in this chapter (see section 7.2) suggest that perception of effectiveness is not contingent on the external environment and rejection of this hypothesis is expected.

### **7.5.1 Regulatory Environment**

As Table 7.28 shows, not a single significant association was found between the perceived effectiveness of methods and the regulatory environment. This suggests that the limited extent of regulation in the environment is neither seen as a help nor a hindrance in managing currency exposure and there is no reason to believe that respondents are unable to discern the impact of regulation such as it is.

**Table 7.28 - Relationship between Foreign Exchange Risk Management Methods Perceived Highly Effective by British Times 1000 Corporations and the Regulatory Environment**

	Regulatory Variables			
	Regulated Markets	Restrictive Currency Regulations	Regulations Hinder Management	Tariffs High
Forward market contracts	.6669	.7512	.9234	.5701
Spot market contracts	.5125	.6886	.8848	.2238
Option contracts	.7606	.4881	.3799	.2096
Proportional hedging	.4843	.9611	.7541	.1563
Swaps	.8096	.4198	.4188	.1329
Switching currency	.3926	.7384	.4192	.9458
Netting	.6376	.6091	.8555	.0604
Timing of dividends	.9957	.8183	.8256	.9057
Changing price	.3247	.2717	.3516	.2784
Use centralised treasury	.1487	.1635	.1373	.6155
Use sensitivity analysis	.6447	.5627	.3642	.3424
Matching	.6187	.2468	.7324	.8825
Using Local Currency Denominated Debt	.7660	.9472	.5864	.5993

## 7.5.2 Market Environment

In contrast, a modest number of significant associations are found between methods perceived highly effective and the market environment. If corporations which influence or take into account their market environment in managing their exposure are more likely to consider their exposure management methods highly effective, perceived success in exposure management may owe less to the effects of individual management methods and more to a corporation's overall approach to its market structure. Employment of “strategic” exposure management methods, by their nature, should be most productive in influencing this structure.

However only in three of the fourteen associations significant at the 5% level does the association between methods used and methods considered highly effective relate to the same market variable. The effectiveness and the use of netting are significantly associated with the degree of competition in markets and those of matching and use of local currency denominated debt are with the percentage of assets represented by foreign assets. Further, some of these associations are neither clearly positive or negative associations, such that it is

not possible to conclude that there is other than a weak association between methods perceived as highly effective and the market environment.

<b>Table 7.29 - Relationship between Foreign Exchange Risk Management Methods Perceived Highly Effective by British Times 1000 Corporations and the Market Environment</b>				
	<b>Direct Input %</b>	<b>Indirect Input %</b>	<b>Input Prices</b>	<b>Foreign Competition</b>
Forward market contracts	.0153	.4182	.0072	.2149
Spot market contracts	.1832	.3297	.0591	.0379
Option contracts	.5910	.0444	.0203	.2273
Proportional hedging	.4872	.6547	.7787	.0887
Swaps	.1900	.0774	.1582	.8035
Switching currency	.7189	.3191	.2429	.5144
Netting	.6084	.4459	.2954	.0148
Timing of dividends	.9350	.8661	.2788	.5791
Changing price	.6999	.0768	.3061	.4263
Use a centralised treasury	.6632	.8060	.0530	.1336
Use sensitivity analysis	.9121	.0265	.1137	.0338
Matching	.1948	.8224	.9945	.9915
Using Local Currency Denominated Debt	.2033	.3949	.4261	.8322
(table continued)	<b>Direct Output %</b>	<b>Indirect Output %</b>	<b>Output Prices</b>	<b>Foreign Asset %</b>
Forward market contracts	.6528	.1217	.0020	.9924
Spot market contracts	.6008	.1185	.1161	.0923
Option contracts	.0021	.1588	.2859	.1415
Proportional hedging	.0753	.9393	.1153	.7159
Swaps	.7084	.6499	.0945	.2523
Switching currency	.5199	.4291	.3948	.1568
Netting	.0625	.8069	.4558	.1527
Timing of dividends	.6965	.1953	.3399	.2265
Changing price	.7875	.4457	.3963	.0211
Use a centralised treasury	.5052	.7364	.1449	.0807
Using sensitivity analysis	.4483	.0073	.4528	.7263
Matching	.1001	.9160	.4136	.0066
Using Local Currency Denominated Debt	.2453	.0856	.1553	.0036

As expected, therefore, it is not possible to conclude that the external environment determines the perception of the effectiveness of methods used to manage currency exposure any more than it does their usage.

## **7.6 Relationships between Foreign Exchange Risk Management Methods Perceived Highly Effective and Forms of Currency Exposure**

Another way of gaining a perspective on the extent to which different methods are perceived as responses to specific exposures, or to a number of forms of exposure, is to examine whether the ways in which corporations are vulnerable to or advantaged by different forms of exposure determine the perceived effectiveness of methods employed to manage that exposure. It will be recalled from Chapter 5 that the third hypothesis, that usage of methods is determined by forms of exposure, could not be substantiated. If there is substitutability and/or complementarity in the effectiveness of methods no contingent relationship is likely to be found. The expectation is therefore that no significant relationship will be observed.

The relationship between methods perceived effective and forms of exposure is analyzed below and the findings set out in Tables 7.30 to 7.37.

### **Vulnerability**

Of the 156 possible associations between vulnerability to the twelve different forms of currency exposure and instances where the thirteen widely used methods of managing currency exposure are considered highly effective, see Tables 7.30 to 7.33 inclusive below, only eleven of these or approximately 7% are significant at the 5% level. There appears to be no overall pattern in the significant associations found.

Table 7.30 shows that vulnerability to Supply Margin exposure is significantly associated with usage of options contracts. The substantially vulnerable have a greater than expected propensity to see options contracts as highly effective, and both those not or moderately vulnerable a less than expected propensity to do so. Vulnerability to Elasticity of Demand exposure is significantly associated with use of forward market contracts. The moderately vulnerable are more likely to consider these methods highly effective and those not vulnerable are less than likely to do so. The substantially vulnerable only have the propensity to consider forward market contracts as highly effective and are less likely than expected to consider all the other methods so.

There are significant associations between vulnerability to Translation exposure and spot market contracts and swaps. Both the moderately vulnerable and the substantially vulnerable consider spot market contracts highly effective. The moderately vulnerable consider swaps highly effective more than expected, those not vulnerable less so and those substantially vulnerable no more than chance would dictate. There is a significant association between vulnerability to Quasi-Contractual exposure and perceived effectiveness of forward market contracts, with both the moderately and the substantially vulnerable more likely to regard this method as highly effective.

**Table 7.30 - Relationship between Financial Instruments Perceived Highly Effective by British Times 1000 Corporations and Forms of Vulnerability to Currency Exposure**

Financial Instruments	Forwards	Spot Contracts	Options	Prop' Hedge	Swaps
Forms of Exposure					
Supply Chain	.3187	.2906	.3129	.4891	.7412
Local Currency Supply	.1619	.3525	.1849	.1883	.9538
Supply Margin	.0669	.6919	.0154	.3939	.7934
Elasticity of Demand	.0500	.3463	.1026	.3574	.2775
Competitive Supply	.2146	.5219	.1665	.4735	.4735
Competitive Demand	.1378	.3414	.8525	.6678	.3077
Demand Side Margin	.1044	.3147	.9589	.5834	.3779
Demand Chain	.0586	.5877	.2801	.8909	.6861
Translation	.1129	.0262	.0824	.2057	.0409
Transaction	.5456	.1388	.6749	.1805	.6051
Quasi-Contractual	.0265	.7473	.3300	.8063	.5584
Long-term Contract	.4093	.9323	.8115	.1424	.9467

From Table 7.31 vulnerability to Elasticity of Demand exposure can be seen to associate significantly with the perception of effectiveness of changing the price to reflect exposure. Here the moderately vulnerable are more likely to consider this method highly effective, and those not vulnerable and those highly vulnerable are less likely to do so. There is only a significant association between vulnerability to Competitive Supply exposure and one method perceived highly effective. Those highly vulnerable have greater propensity to consider netting highly effective and those not vulnerable less so. There is a significant association between vulnerability to Long-term Contract exposure and switching to use of a different currency with the substantially vulnerable having a greater propensity to consider

the method highly effective, and the moderately vulnerable and those not vulnerable to consider it less so than chance would predict.

**Table 7.31 - Relationship between Operational Techniques Perceived Highly Effective by British Times 1000 Corporations and Forms of Vulnerability to Currency Exposure**

<b>Operational Techniques</b>	<b>Switching</b>	<b>Netting</b>	<b>Dividend Remittance</b>	<b>Changing Price</b>
<b>Forms of Exposure</b>				
Supply Chain	.7380	.6006	.5014	.3862
Local Currency Supply	.6892	.3784	.2220	.0949
Supply Margin	.9960	.3812	.7853	.6674
Elasticity of Demand	.1027	.1573	.2798	<b>.0243</b>
Competitive Supply	.2301	<b>.0162</b>	.2746	.3738
Competitive Demand	.2227	.0701	.2145	.5407
Demand Side Margin	.4676	.0634	.6952	.3710
Demand Chain	.8355	.3833	.4488	.5073
Translation	.0787	.7182	.9928	.4661
Transaction	.1285	.0701	.7186	.8606
Quasi-Contractual	.7024	.1032	.3763	.8281
Long-term Contract	<b>.0146</b>	.1139	.6711	.8091

There is a significant association between vulnerability to Elasticity of Demand exposure and using a centralised treasury, see Table 7.32. The moderately vulnerable are more likely to consider this method highly effective and those substantially vulnerable or not vulnerable are less likely to do so. There is one significant positive association between vulnerability to Competitive Demand exposure and the use of currency sensitivity analysis in planning.

**Table 7.32 - Relationship between Organisational Measures Perceived Highly Effective by British Times 1000 Corporations and Forms of Vulnerability to Currency Exposure**

<b>Organisational Measures</b>	<b>Use a Centralised Treasury</b>	<b>Sensitivity Analysis</b>
<b>Forms of Exposure</b>		
Supply Chain	.9095	.1330
Local Currency Supply	.4124	.2024
Supply Margin	.6916	.2659
Elasticity of Demand	<b>.0044</b>	.0598
Competitive Supply	.8134	.1574
Competitive Demand	.6129	<b>.0428</b>
Demand Side Margin	.8252	.1416
Demand Chain	.7003	.0887
Translation	.1842	.1937
Transaction	.5753	.3313
Quasi-Contractual	.9656	.1092
Long-term Contract	.2420	.4371

In Table 7.33 there is only one significant association between widely used strategic methods and methods to manage this exposure considered highly effective. Vulnerability to Elasticity of Demand Exposure is associated with matching. The moderately vulnerable are more likely to consider these methods highly effective and those not vulnerable and those substantially vulnerable are found less likely to do so.

**Table 7.33 - Relationship between Strategic Methods Perceived Highly Effective by British Times 1000 Corporations and Forms of Vulnerability to Currency Exposure**

Strategic Methods	Matching	Using Local Currency Denominated Debt
Forms of Exposure		
Supply Chain	.5010	.5094
Local Currency Supply	.0939	.3445
Supply Margin	.1940	.3081
Elasticity of Demand	<b>.0426</b>	.1713
Competitive Supply	.5461	.6819
Competitive Demand	.5369	.5398
Demand Side Margin	.2746	.7794
Demand Chain	.4542	.3080
Translation	.3682	.1210
Transaction	.5189	.4983
Quasi-Contractual	.8201	.6963
Long-term Contract	.3040	.5518

### **Advantage**

Of the 143 possible associations between advantage from eleven different forms of currency exposure, see Tables 7.34 to 7.37 inclusive below, and instances where the thirteen widely used methods of managing currency exposure are considered highly effective, only ten or approximately 7% are significant at the 5% level. Four of these involve Transaction exposure and two Translation exposure, and all but one of the six concern financial instruments, affording limited support to Cezairli (1988) in distinguishing financial instruments in particular as being relevant to these two forms of exposure.

The significant associations between advantage from Translation exposure and perception of effectiveness of spot and forward market contracts are both positive. Of the three significant associations between advantage from Transaction exposure, those with spot market contracts and forward market contracts are positive relationships. The relationship with proportional hedging of risks is also a positive association, but here only the substantially advantaged are more likely to consider the method highly effective.

**Table 7.34 - Relationship between Financial Instruments Considered Highly Effective by British Times 1000 Corporations and Forms of Advantage from Currency Exposure**

Financial Instruments	Forwards	Spot Contracts	Options	Prop' Hedge	Swaps
Forms of exposure					
Supply Chain	.8791	.4374	.8779	.7688	.7558
Local Currency Supply	.5084	.2457	.5477	.9730	.9601
Supply Margin	.6030	.3717	.2887	.9535	.8093
Elasticity of Demand	.3256	.1737	.6639	.8854	.3934
Competitive Supply	.1720	.0737	.5762	.4288	.7054
Competitive Demand	.4362	.4465	.6992	.4742	.9301
Demand Side Margin	.2026	.2593	.7557	.7757	.2248
Demand Chain	.4585	.9652	.9137	.4405	.8836
Translation	<b>.0342</b>	<b>.0245</b>	.5467	.2372	.0973
Transaction	<b>.0205</b>	<b>.0379</b>	.5041	<b>.0387</b>	.9066
Long-term Contract	.0891	.3312	.5228	.1420	.9108

Table 7.35 shows that there is a significant association between advantage from Long-term Contract exposure and use of a centralised treasury. Here it is the substantially advantaged who find the method highly effective and the moderately advantaged and those not advantaged who are less likely to do so than chance would predict. No other associations with operational techniques were found significant at the 5% level.

**Table 7.35 - Relationship between Operational Techniques Considered Highly Effective by British Times 1000 Corporations and Forms of Advantage from Currency Exposure**

Operational Techniques	Switching	Netting	Dividend Remittance	Changing Price
Forms of exposure				
Supply Chain	.6083	.5110	.3630	.7931
Local Currency Supply	.7244	.1131	.1009	.2657
Supply Margin	.5446	.6731	.6563	.4490
Elasticity of Demand	.8833	.5049	.9076	.7574
Competitive Supply	.8417	.2898	.1441	.4708
Competitive Demand	.8587	.4009	.1785	.5195
Demand Side Margin	.8684	.1918	.6621	.4106
Demand Chain	.5805	.7367	.8006	.6292
Translation	.3908	.2301	.7012	.8716
Transaction	.7778	.0964	.5965	.4082
Long-term Contract	<b>.0482</b>	.3578	.1365	.7385

Table 7.36 records that advantage from Supply and Demand Chain exposure is significantly associated with the use of currency sensitivity analysis in planning, and the moderately advantaged make greater use of sensitivity analysis and the substantially advantaged and those not advantaged less use. There is a significant association between advantage from

Transaction exposure and finding a centralised treasury highly effective. The substantially advantaged are more likely to regard a centralised treasury as highly effective and the moderately advantaged and those not advantaged less so. There is an association between advantage from Demand Chain exposure and use of currency sensitivity analysis in planning. Here the moderately advantaged find these methods more effective and those not advantaged and the substantially advantaged less so.

**Table 7.36 - Relationship between Organisational Measures Considered Highly Effective by British Times 1000 Corporations and Forms of Advantage from Currency Exposure**

<b>Organisational Measures</b>	<b>Use a Centralised Treasury</b>	<b>Sensitivity Analysis</b>
Forms of Exposure		
Supply Chain	.3812	.0170
Local Currency Supply	.9522	.1387
Supply Margin	.6712	.1290
Elasticity of Demand	.8279	.1050
Competitive Supply	.9183	.0655
Competitive Demand	.4025	.0756
Demand Side Margin	.9750	.1240
Demand Chain	.4565	.0195
Translation	.0738	.5789
Transaction	.0033	.2085
Long-term Contract	.0466	.2503

No associations whatsoever are found between forms of advantage from currency exposure and widely used strategic methods considered highly effective.

**Table 7.37 - Relationship between Strategic Methods Considered Highly Effective by British Times 1000 Corporations and Forms of Advantage from Currency Exposure**

<b>Strategic Methods</b>	<b>Matching</b>	<b>Use Local Currency Denominated Debt</b>
<b>Forms of Exposure</b>		
Supply Chain	.7341	.7619
Local Currency Supply	.1289	.6524
Supply Margin	.3141	.9606
Elasticity of Demand	.4077	.4385
Competitive Supply	.2370	.2125
Competitive Demand	.2257	.2502
Demand Side Margin	.4223	.9823
Demand Chain	.7933	.8326
Translation	.8407	.6283
Transaction	.8810	.8972
Long-term Contract	.7255	.9037

Overall the number of associations between vulnerability to and advantage from forms of currency exposure and methods used to manage it considered highly effective is small, too small to conclude other than that there is no evidence to link the two or to suggest that forms of exposure determine the pattern of perceived effectiveness of methods used to manage currency exposure generally. Moreover, where such direct associations are significant they are often not progressively positively correlated. In a majority of cases it was found that if moderate advantage or vulnerability was associated with greater than expected use or perceived effectiveness of a method, then substantial advantage or vulnerability would be associated with a greater than expected non-use or a lack of perceived effectiveness of that same method.

The overall finding of a lack of association between forms of exposure and effectiveness of methods confirms expectations. It is consistent with the explanation that methods used to manage exposure are sufficiently interchangeable that a firm with specific forms of exposure will find effective a number of methods. Although most corporations face a unique combination of exposures, only in a few instances are they affected by only one form. Some are affected by them all. At least 54% of corporations responding to the survey report being vulnerable to each individual form of exposure and at least 51% advantaged from each form of exposure. A majority of corporations are affected by a majority of forms. If methods of

managing exposure can be used to deal with more than one form of it, what corporations may be saying, when they consider a method of managing currency exposure highly effective, is that they believe the method operates effectively in dealing with the **combination** of exposures that they face. An analysis of associations between individual forms of exposure and individual methods of managing it might not necessarily reveal these associations. Only by analysing different degrees of exposure to different combinations of forms of exposure would such associations be revealed. This might explain why the effectiveness to usage ratios of methods of managing currency exposure obtained from the survey are quite high and cannot be reconciled with the small number of significant associations found for particular methods here, assuming perception of effectiveness of methods is sound.

The point is therefore forcefully made that the interrelationship between forms of exposure and methods used to deal with them is a highly complex one. The associations that can be seen to be significant may only be those which highlight the particular relevance or lack of relevance of one method used to manage exposure and one particular form of exposure. To unravel the relevance of each method of managing exposure requires an analysis of the interaction between the combination of methods used and the combination of exposures faced. A survey of use of methods designed to manage particular forms of exposure and a survey of the perceived effectiveness of using particular methods in managing particular exposures needs to be carried out and a large response obtained.

If the perceived effectiveness of methods used to manage currency exposure is not related to the nature of the corporation's external environment, or to the nature of the exposures which it faces, the key question of what influences or determines the perceived effectiveness of particular methods remains to be answered. Given the finding in the previous chapter that use of methods is associated if not determined by the corporation's internal environment, the next section must examine whether the perception of the effectiveness of methods is also influenced or determined by this internal environment.

## **7.7 The Relationship between the Perceived Effectiveness of Methods Used to Manage Currency Exposure and the Internal Corporate Environment**

One hypothesis which could not be rejected was the sixth hypothesis that the internal corporate environment determines the methods used to manage currency exposure. Perception of the effectiveness of methods used to manage currency exposure might be determined by a corporation's structure, given a respondent's view is dependent on his or her functional orientation, departmental responsibilities and activities and motivations. Perception of effectiveness may also be dependent upon the extent to which a method is seen to facilitate the achievement of corporate or individually endorsed strategies. Just as likely perceptions of effectiveness will be dependent to some degree on the background and experience the perceiver has had of the phenomenon. There is an expectation therefore that perceptions of the effectiveness of methods used to manage currency exposure are significantly associated with selected variables measuring the internal corporate environment.

It is also possible that the way a corporation configures its internal environment to manage currency exposure is partly dependent on perceptions of the effectiveness of management methods used. It may be difficult to determine the direction of dependence. Dependence may indeed be bi-directional. It may not consequently be possible other than to reject the null hypothesis.

Associations between methods considered by respondents to be highly effective and variables measuring the internal corporate environment are set out in Tables 7.38 to 7.40; those with corporate structure variables in Table 7.38, those with attitudinal and strategic variables in Table 7.39, and those with variables measuring management and expertise in Table 7.40. The percentage of all associations between the perception of effectiveness of methods and attitudinal and strategic variables significant at the 5% level is, at almost 34%, found to be very high, those with variables measuring management and experts is high at 18%, and those with structural variables a more modest 12%.

## **Corporate Structure**

There are significant positive associations between the propensity to set the performance targets of foreign subsidiaries and the propensity to consider the use of swaps, matching and local currency denominated debt highly effective. The same is the case with the propensity to set performance related pay of management by reference to the local currency rather than the parent currency (see Table 7.38 below). A significant association is also found with option contracts in the former case and forward market contracts in the latter. In contrast there is a marked negative association between the propensity for subsidiaries to have sole control for managing their currency exposure and a propensity for them to perceive the use of swaps and, not surprisingly, the use of a centralised treasury as highly effective. Nevertheless no significant associations were found where the parent acts on its own discretion in deciding whether or not to hedge in the market. A strong positive association is also found between considering use of spot market contracts, proportional hedging and matching highly effective and the propensity for respondents to be giving more attention to currency related matters in their procedures. This provides an indication of the perceived returns available to corporations paying more attention to the subject, and/or of the ability of corporations who invest in this effort to believe they can distinguish between methods which are highly effective and those which are not.

Turning to departmental involvement, there are markedly fewer significant associations in the case of both group and subsidiary departments. Where the group treasury department is responsible or involved in managing currency exposure, use of that department is seen as highly effective, as is also the use of swaps. But there is at best only one association between the perceived effectiveness of the most widely used methods and other group departments. There are positive associations between effectiveness of using option contracts and involvement of the chief executive; switching currencies and group finance department responsibility; and between netting and both consultation with group marketing departments and involvement of group planning departments.

There are significant positive associations between considering use of sensitivity analysis and the timing of dividend payments to be highly effective and the propensity of subsidiary

treasury departments to take part in managing currency issues. There is a similar one in the case of matching and subsidiary costing departments, but when the latter are only consulted as necessary there is a negative association with the propensity to consider spot market contracts highly effective. A further negative association exists between involvement of subsidiary purchasing departments and the propensity to consider highly effective the use of local currency denominated debt.

**Table 7.38 - The Relationship between the Perceived Effectiveness of Method Used by British Times 1000 Corporations to Manage Currency Exposure and Structural Variables**

	Subsidiary Control of FX	HQ Control of FX	Local Currency Targets	Local Currency Bonuses	More Attention to Procedure
Forward market contracts	.8813	.5310	.1352	<b>.0438</b>	.3285
Spot market contracts	.9530	.2329	.4092	.2492	<b>.0094</b>
Option contracts	.9420	.3169	<b>.0481</b>	.1444	.1935
Proportional Hedging	.4045	1.000	.3455	.6965	<b>.0221</b>
Swaps	<b>.0452</b>	.3601	<b>.0254</b>	<b>.0137</b>	.4024
Switching currency	.8579	.2629	1.000	.9200	.0749
Netting	.8733	.3418	.5243	.9047	.4358
Timing of dividends	1.000	.7461	.5999	1.000	.7327
Changing price	.9872	.7461	.5999	.1940	1.000
Use a centralised treasury	<b>.0001</b>	.3629	.2717	.1590	.0770
Use sensitivity analysis	1.000	1.000	.3644	.3231	.7738
Matching	.1212	1.000	<b>.0076</b>	<b>.0097</b>	<b>.0045</b>
Using Local Currency Denominated Debt	.9642	.1708	<b>.0000</b>	<b>.0001</b>	.0770

(table continued)

**Involvement in FX Management of Group:**

	CEO	Treasury	Finance	Buying	Marketing	Planning
Forward market contracts	.9087	.4484	.4575	.1338	.4911	.5384
Spot market contracts	.7496	.2673	.3272	.4138	.4086	.1672
Option contracts	<b>.0167</b>	.2350	.9597	.2254	.2825	.2714
Proportional hedging	.3843	.3332	.3163	.7258	.4110	.3937
Swaps	.6380	<b>.0041</b>	.3583	.6600	.6871	.3398
Switching currency	.2095	.6608	<b>.0071</b>	.6272	.5151	.7441
Netting	.8298	.0696	.2155	.4226	<b>.0054</b>	<b>.0042</b>
Timing of dividends	.8300	.3591	.7137	.5571	.3780	.6126
Changing price	.9493	.1981	.7643	.6655	.8386	.2455
Use centralised treasury	.4464	<b>.0001</b>	.2601	.0724	.6721	.0504
Use sensitivity analysis	.8628	.1226	.5039	.2483	.3995	.1480
Matching	.1366	.8749	.5856	.0601	.9544	.8268
Using Local Currency Denominated Debt	.4975	.4359	.7196	.4650	.1653	.4542

(table continued)

**Involvement in FX Management of Subsidiary:**

	Treasury Dept	Finance Dept	Buying Dept	Marketing Dept	Costing Dept
Forward market contracts	.0715	.8219	.1484	.2831	.1841
Spot market contracts	.4916	.6199	.7585	.3974	<b>.0457</b>
Option contracts	.2904	.6200	.6572	.2262	.5598
Proportional hedging	.6278	.4586	.9262	.3494	.2382
Swaps	.5366	.6971	.2837	.2088	.2873
Switching currency	.3332	.3181	.7804	.8384	.6806
Netting	.1822	.2367	.7868	.8499	.9548
Timing of dividends	<b>.0001</b>	.6912	.4548	.9104	.4062
Changing price	.1671	.6786	.8683	.9240	.4708
Use centralised treasury	.6335	.0655	.5011	.5468	.1098
Use sensitivity analysis	<b>.0121</b>	.1124	.4572	.7347	.6340
Matching	.8058	.3480	.6757	.5656	<b>.0411</b>
Using Local Currency Denominated Debt	.3028	.3965	<b>.0137</b>	.8522	.8814

## **Attitudes and Strategies**

A considerable number of significant associations are to be found between methods of managing currency exposure considered highly effective and corporate strategic and attitudinal variables. Without exception these significant associations are positive ones. The majority of these concern financial instruments and strategic methods and relatively few concern operational techniques.

Both associations between methods used and the propensity to hedge all quantifiable exposures as a matter of corporate policy and to hedge long-term asset exposures where possible, the “locker” mentality, are maintained in the case of methods considered highly effective and, unlike with usage, there is now a moderate association also between methods considered highly effective and the policy to try to balance assets and liabilities in each currency to minimize net exposures. It seems therefore that respondents are happier with those methods that help with currency exposure risk reduction and that, as already noted, there is a residual difficulty in assessing the relative merits of employing financial instruments which play a disproportionate part in hedging to reduce risk. Even the lack of an association between methods used and the strategy to try to smooth out the impact on the business of currency related influences gives way to a moderately strong association with methods considered highly effective. The association between the propensity for corporations to be in the process of giving more attention to currency matters in their policies and methods considered highly effective is also a moderately strong one.

**Table 7.39 - The Relationship between the Perceived Effectiveness of Method Used by British Times 1000 Corporations to Manage Currency Exposure and Attitudinal and Strategic Variables**

<b>Propensity to:</b>	<b>Give Attention to Policy</b>	<b>Hedge Quantifiable Exposure</b>	<b>Hedge Fixed Asset Exposure</b>	<b>Balance Asset and Liability</b>	<b>Smooth Currency Influences</b>
Forward market contracts	.0598	.0000	.8174	.5635	.4470
Spot market contracts	.0168	.1099	1.000	.0646	.3327
Option contracts	.0751	.0039	.1481	.0851	.1919
Proportional hedging	.0607	.1615	.0117	.0025	.0477
Swaps	.4201	.0083	.0040	.1379	.0195
Switching currency	.4083	1.000	.3345	.4274	.7450
Netting	.1055	.0080	.0075	.0169	.2512
Timing of dividends	1.000	.6790	.2674	.9356	.7612
Changing price	.5916	.3638	1.000	.1597	1.000
Use centralised treasury	.1316	.0704	.0485	.0367	.0103
Use sensitivity analysis	1.000	.0422	.0606	.2847	.3327
Matching	.0098	.0673	.0077	.0000	.1757
Using Local Currency Denominated Debt	.0194	.1505	.0485	.0000	.9250

### **Management and Experts**

Table 7.40 sets out the associations between variables relating to management and experts and methods used to manage currency exposure considered highly effective. All associations significant at the 5% level are positive associations.

Comparing use and effectiveness, there is a shift in emphasis to one where methods considered highly effective are as much associated with accumulated management experience gained over time and experience of volatility as they are specifically with currency related training. This was not the case with associations with methods used. One inference from this is that experience is needed to discern effectiveness. However there is still no association with lessons learnt from past losses or from windfalls.

The very strong association between methods used to manage exposure and the propensity for recourse to formal courses and the literature in dealing with currency matters gives way to a more modest one with methods considered highly effective, suggesting that the impact of such learning aids may be regarded as far from beneficial in bringing practical help whether or not they are influential in stimulating action. Also, there is no association

whatsoever between perceived effectiveness of methods and the propensity to use forecasting services, and for only one method with use of formal management committees to manage exposure.

The association between the propensity for respondents to regard the employment of outside experts to be a significant influence on the way currency related issues are dealt with and currency exposure management methods considered highly effective is no stronger than the association with methods used, though here the significant associations are both with operational measures.

Associations between the propensity to consider guidance from the treasury department a significant influence and the use of their own formally qualified treasury staff to provide expertise are both less strongly related to methods considered highly effective than with method usage, and there is only one significant association with the use of other accounting or finance and business trained staff to manage currency exposure.

**Table 7.40 - The Relationship between the Perceived Effectiveness of Method Used by British Times 1000 Corporations to Manage Currency Exposure and Variables Relating to Management and Experts**

	Corporation to manage its FX uses:					A M'gmt Comm'tee
	Forecast Services	Literature	Courses	Treasury Staff	Non Treasury Staff	
Forwards contracts	.4260	.0003	.0166	.2679	.0191	.1558
Spot market contracts	.6305	.3630	.0610	.6520	.3946	.3080
Option contracts	.5570	.7589	.8918	.1075	1.000	.6363
Proportional hedging	.2514	.0513	.1171	.2113	.4353	.9565
Swaps	.3014	.0451	.1380	.0010	.5183	.0031
Switching currency	.0528	1.000	1.000	.2846	.2998	.3979
Netting	.2083	.1222	.0547	.6106	.7641	.7644
Timing of dividends	.9697	1.000	1.000	.7621	.9838	.6283
Changing price	.1531	1.000	.8925	.7621	.5022	1.000
Use centralised treasury	.9150	.1338	.4388	.0339	.6558	.2285
” sensitivity analysis	.2065	1.000	.8070	.2012	.5882	.1715
Matching	.6832	.2476	.7710	1.000	.3398	.5455
Using Local Currency Denominated Debt	.9150	.2597	.6968	.7920	.6558	.5734

(table continued)	Corporation sees as influential in Managing FX:				FX Volatility
	Experience of FX	FX Training	Treasury	Outside Experts	
Forwards contracts	.0031	.0274	.1704	.4169	.0437
Spot market contracts	.0185	.7999	.0365	.5364	.3056
Option contracts	.0199	.3049	.1747	.6746	.0084
Proportional hedging	.1423	.0861	.0303	.0700	.1278
Swaps	.1751	.0038	.0095	.1201	.1211
Switching currency	.3530	1.000	.9168	.0032	.2846
Netting	.1607	.0533	.0140	.0366	.3768
Timing of dividends	.5769	1.000	.8048	1.000	1.000
Changing price	.5769	1.000	.6790	.0517	1.000
Use central treasury	.1169	.0257	.0002	.1720	.0494
” sensitivity analysis	.8838	.0099	.6295	.8054	1.000
Matching	.0382	.2990	.1249	.8487	.9112
Using Local Currency Denominated Debt	.0289	.2719	.4286	.0685	.7920

This section underlines that the strong link between methods used to manage currency exposure and the internal corporate organisation of its management is accompanied by a similarly strong one between internal corporate organisation and methods considered highly effective. In so far as both groups of dependent variables in the model are measures of the extent of particular method usage, there is additional evidence which favours acceptance of the sixth hypothesis. It also underlines that the subjective perceptions of respondents appear

to be highly influenced by the nature of the immediate corporate environment and its propensity to influence what is found to be highly effective.

#### **7.8 A Summary of Explanations of the Perceived Effectiveness of Methods Used to Manage Currency Exposure and Matters Remaining Unexplained**

The remarkable similarity of the overall findings for methods used to manage currency exposure in Chapters 5 and 6 and for methods considered highly effective in this chapter can be explained in several ways. One possibility is that there is no link between usage of methods and their perceived effectiveness and the similarities are entirely fortuitous. Alternatively the similarity may be the result of the operation of a powerful underlying variable which affects both sets of variables.

One finding is that respondents report that their corporations do not employ a small proportion of the methods which respondents consider highly effective. High regard for these methods may have been formed in a previous employment. The reason why these methods are not being used in the present one may be because they are regarded as situation specific or that there has been insufficient time or opportunity for their introduction.

To the extent that respondents label as highly effective those methods that they do use and use frequently, or which by their nature, involve radical changes to be made to the organisation, they provide corroborative evidence that they are reporting consistently, even if not accurately, the way they are managing their foreign exchange risk. The possibility that, to some extent, the internal corporate environment in which currency exposure is managed may itself be dependent on the methods used and considered highly effective in managing currency exposure has been raised. Any bi-directionality of dependency may also be mutually reinforcing.

Managers may be more likely to believe that anything they do regularly, such as employing particular methods, is effective behaviour. To do otherwise would imply perversity or unthinking behaviour. A parallel exists here in Staw (1976), finding self-justification to explain the incorrect perception that sunk costs are relevant in decision making where an individual seeks to demonstrate, in retrospect, the rationality of an initial investment

decision. Also Whyte (1986), using prospect theory, has explained that individuals have a strong need to be correct and accurate. This may compel them to justify their actions retrospectively, seeking by that to prove to themselves and others that they are rational.

Failure to find links between methods used to manage currency exposure considered highly effective and both the external corporate environment and the forms which exposure takes was expected and rationalised. Additionally if the view is taken that links do exist but respondents' perceptions are such that they do not detect them, the same explanations supplied in Chapter 6 with respect to methods used can also be employed here. Bounded rationality was shown to operate and influence managers' perceptions of the external corporate environment. The result is to prevent accurate perception of the impact of methods used and hence their actual and perceived effectiveness. It may be that managers do not concentrate, or concentrate sufficiently on what is taking place outside the corporation and, if they do, the difficulties in distinguishing complex signals and phenomena may obscure them from clear view.

Managers will consequently have to or seek to depend for their perceptual clues on internal organisational factors. They will place emphasis on their perceptions of what their experience tells them. If it worked well in the past it works well now and will continue to do so until it is clearly shown not to do so. They will be conditioned by their professional training, guidance from others, what they perceive to be the approach favoured within the organisation, attitudes of management, corporate policies and strategies, departmental remits within the organisation, and how their own personal interests are affected. These are the very variables which measure the internal corporate environment. Other factors may be at work too, which the model presented in this thesis does not measure. For example, personality traits of the managers, organisational operating instructions and power politics may all influence perceptions, decisions and actions.

March and Simon (1958) suggest that decision makers will forego the best solutions in favour of one that is acceptable or reasonable. They “satisfice”, or search until they find a solution that meets a certain acceptable level of performance. Moreover, as the systematic and time-consuming demands of rational decision making are simply not viable, particularly

with complex phenomena difficult to define and measure, most significant decisions are made by judgment rather than by reference to any model. Bazerman (1994) says this is evident from Mintzberg's (1975) study of managerial behaviour, which found that the average manager engages in a different activity every nine minutes. That manager also tends to avoid hard data and rely more on intuitive judgment. Tversky and Kahneman (1971) began to take this process further to suggest how this judgment may be biased. They suggest that people rely on a number of simplifying strategies, rules of thumb or heuristics, in making decisions. These standard rules serve as mechanisms for coping with the complex environment which surround our decisions. They believe that heuristics are in general helpful, but that their use can sometimes lead to severe errors. One such might be the oversimplification of the nature of currency exposure as conventionally occurs by fitting it into a broad threefold classification.

Nevertheless it should be remembered that human inability to achieve objectivity prevents any of these explanations from being accepted conclusively and the impact of subjectivity in the perception of effectiveness must qualify any findings accordingly. Kanaan (1993) has pointed out that limitations of human information processing inter alia have led to the development of a plethora of decision aids intended to help decision makers reach higher levels of accuracy, reduce inconsistencies in judgement, and make efficient use of time. He has seen the most notable achievements in this endeavour as consisting of expert systems and artificial neural systems. Describing the latter, Hawley et al (1990) said that they are best applied to decision situations that are highly unstructured, require some form of pattern recognition and may involve irrelevant and fuzzy data. They noted:

“in the area of finance, there is no shortage of decision tasks that can benefit from the implementation of such systems. Possible applications include, but are not limited to areas such as cash management, evaluation of capital investments, exchange rate risk management and loan evaluation.” p 63.

They have also argued that by overcoming some of the deficiencies of expert systems and the limitations of human information processing, artificial neural systems can act as a major catalyst in efforts to increase the adoption of normative financial decision models in real

world decision situations. However, claiming that decisions reached by these systems are based on factual data not subject to the personal characteristics of human decision makers, they do not make clear how the “factual” data is selected and encoded. Artificial neural systems and other processing aids doubtless have their place but, to re-emphasise, there is no escaping subjectivity, even when this is often forgotten.

## **7.9 Conclusion**

This chapter has set out the findings of the survey conducted during the course of this research on the methods respondents perceive to be highly effective in managing currency exposure. The relationship between the usage of and perceived effectiveness of these methods and the relationship between the perceived effectiveness of each method and that of other methods was described. Reasons were put forward why perceptions of effectiveness of methods would not be dependent on variations in the external corporate environment and the forms of currency exposure experienced by corporations, but might be found to be dependent on the internal corporate environment. The survey findings confirmed these expectations. Possible alternative explanations were then reviewed. None of these could be conclusively rejected. The following chapter will now summarise the findings of the research which has been carried out, highlight its contribution, suggest possible improvements in practice and suggest future research priorities in the field of managing currency exposure.

## **CHAPTER 8 - SUMMARY AND CONCLUSIONS**

### **8.1 Introduction**

This chapter summarises the findings of the research into the incidence of currency exposure and its management in the sample companies, bringing together the findings reported in the previous four chapters. The contribution of this research to the theory of currency exposure management is highlighted, and improvements in management practice related to currency exposure implied by the research are recommended. Finally, future research priorities in this field are suggested.

### **8.2 A Summary of the Research Findings**

The thesis set out to examine the determinants of the management of corporate currency exposure. It was hypothesised, using a contingency model, that methods used to manage currency exposure would be directly determined by three groups of variables. These three are: aspects of the external corporate environment; the way the corporation is affected by exchange rate changes manifest as forms of exposure; and the way aspects of the internal corporate environment are configured to manage currency exposure. It was also hypothesised that the way a corporation manages its currency exposure would be determined indirectly by the influence the external environment exerts both on forms of exposure and on the internal corporate environment, and by the influence which forms of exposure bring to bear on the internal corporate environment.

In the event a link was found between aspects of the external corporate environment and forms of exposure, and a stronger one was established between aspects of the internal corporate environment and methods used and considered effective in managing currency exposure. None of the other links hypothesised by the model could be confirmed and, significantly, no link could be confidently made between forms of currency exposure and methods used to manage the phenomenon. This is *prima facie* cause for concern to practitioners.

However, this result may be unsurprising in the context of the modest reported success in previous attempts at employing contingency models. Several explanations can be given for why all the predictions of the contingency model have not been confirmed.

First, a contingent relationship may be too complex for managers, let alone researchers attempting specifically to associate hedges with offsetting business impacts, to detect. The paradox that managers are reported to devote more attention to the exposures which they perceive as having modest profit impact and less attention to those exposures they consider to have the greater profit impact is consistent with the failure to perceive external signals to guide practice.

Second, there may be a delay between the recognition of the nature of a corporation's exposure and action taken to deal with it. In terms of a strategic response the delay could amount to one of several years. It may therefore be necessary to construct a more dynamic model by revisiting corporations to chart how use of management methods is changing over time and to research corporations' past exposure.

Third, the research carried out may have correctly highlighted a number of situations where contingency does not exist. If this is the case the search will continue to find ways to understand the nature of corporate currency exposure and the determinants of the way it is managed.

Finally, there may indeed be contingent relationships, but the difficulty of measuring more important exposures and/or misspecification of the model, in particular of the variables measured, may have obscured them. The variables employed may have been too coarse grained or even too fine grained. It is therefore necessary for further testing of the model to be undertaken, before confirming this to be the case.

### **Results of a Factor and Regression Analysis**

Consequently, a factor analysis of the variables in the model was carried out. The factors generated were then employed to retest the contingency model using the technique of regression analysis. The results of the factor analysis and the retesting of the hypotheses in

the model and testing of the contingency model as a whole are reported below. Details of the procedures involved are contained in the methodology section of Chapter 3.

A factor analysis of the four variables which measure aspects of the corporate regulatory environment identified one factor only. As a result there was no factor rotation and no structure matrix. Where, as here, only one factor is identified and no structure matrix is generated, only a final communality table will be displayed, see Table 8.1 below.

**Table 8.1- Final Communality Table for Regulatory Variables**

	<b>International Market Regulation Factor</b>
Regulated Markets	.54724
Restrictive Currency Regulations	.79852
Regulation Hinders Management	.79903
Tariffs are High	.58704

The factor generated for regulatory variables explains approximately 68% of the variance of these four variables. This factor broadly reflects the degree of regulation and legislation which complicates currency exposure management and will be referred to as the international market regulation factor.

A factor analysis of the eight variables which measure aspects of the markets in which British Times 1000 corporations operate identified three factors, see Table 8.2 below. These together explain approximately 54% of the variance of these variables.

**Table 8.2 - Structure Matrix of Market Variables**

	<b>International Market Inputs Factor</b>	<b>International Market Outputs Factor</b>	<b>International Assets Factor</b>
Direct Input %	<b>.62302</b>	-.12386	-.02466
Indirect Input %	<b>.68337</b>	-.06510	.22183
Input Prices	<b>.53949</b>	.18957	-.04956
Direct Output %	.37554	<b>.59540</b>	.15162
Indirect Output %	<b>.60954</b>	-.42657	.13162
Foreign Asset %	.12524	-.06767	<b>.91333</b>
Output Prices	-.05988	<b>.69405</b>	.32132
Foreign Competition	.19309	<b>.66120</b>	-.31241

The first factor underlies the proportion of the firm's inputs which are imported directly, the proportion imported indirectly, the discretion to determine the currency in which the firm's purchases are priced and also, the proportion of the firm's exports which are indirectly exported. It is largely a factor which reflects international market inputs and will be referred to as such. The second factor underlies the proportion of a firm's sales which are directly exported, the discretion the firm has to determine the currency in which sales are priced, and the proportion of its markets in which there is foreign competition. This will be referred to as the international market outputs factor. The third factor underlies only the proportion of corporate assets located outside Britain and will be referred to as the international assets factor. The inter-correlation of these three factors was low and in no case in excess of 10%.

### **Retesting Hypothesis 1**

A factor analysis of the variables measuring the forms of currency exposure which generate vulnerability and which produce advantage, provided factors for the dependent variables to retest the first hypothesis. Only one factor is identified for the variables generating vulnerability and only one for the variables producing advantage, a finding which once more underlines the relatedness of each of the forms of exposure in the model.

**Table 8.3 - Final Community Table for Variables Denoting Forms of Currency Exposure**

	<b>Forms of Currency Exposure Generating Vulnerability Factor</b>	<b>Forms of Currency Exposure Producing Advantage Factor</b>
Supply Chain	.81417	.78095
Local Currency Supply	.74609	.78157
Supply Margin	.74111	.75755
Elasticity of Demand	.67790	.77330
Competitive Supply	.79512	.85790
Competitive Demand	.82996	.81222
Demand Side Margin	.57717	.68348
Demand Chain	.81954	.80696
Translation	.61398	.71566
Transaction	.57292	.72829
Quasi-Contractual	.63309	N/A
Long-term Contract	.63309	.71394

These two forms of currency exposure factors explain approximately 70% and 77% of the variance of these variables respectively.

The regulatory and market factors explained 6% of the variance of forms of exposure generating vulnerability with only the international market input factor having a significant T score. These external environmental factors also explained 6% of the variance of forms of exposure producing advantage with the same market factor again having the only significant T score. The multiple regression retesting the first hypothesis thus confirms the conclusion, reported in Chapter 4, that this hypothesis could not be rejected.

The factors which represent forms of exposure were then used to retest whether forms of exposure were significantly associated either with factors underlying aspects of the internal corporate environment or with factors representing methods used and methods considered effective in managing currency exposure (Hypotheses 3 and 5 respectively).

The factor analysis of variables measuring the structure of the internal corporate environment following an oblique rotation, failed to produce convergence after twenty-five iterations and the variables which analyzed departmental involvement in foreign exchange risk management were consequently distinguished out from the rest. From these eleven

variables, four factors were identified, see Table 8.4 below. These factors together accounted for approximately 59% of the variance among the variables.

	<b>Subsidiary Non-finance Department Involvement Factor</b>	<b>Planning &amp; Treasury Department Involvement Factor</b>	<b>CEO versus Finance Management Involvement Factor</b>	<b>Group Non-finance Department Involvement Factor</b>
Involvement in FX management of:				
Group CEO	.03265	.21755	<b>.60772</b>	-.12581
Group Treasury	.15839	<b>.67669</b>	-.01810	.12089
Sub Treasury	-.02717	<b>.74079</b>	.14966	-.22788
Group Finance	.01736	.05314	<b>-.70861</b>	-.08870
Sub Finance	.39130	.23456	<b>-.71604</b>	-.22139
Group Purchasing	.01205	.00429	.01791	<b>-.79514</b>
Group Planning	-.11809	<b>.58389</b>	-.10190	-.26224
Sub Purchasing	<b>.48515</b>	.25631	-.24333	<b>-.62900</b>
Group Marketing	.16646	.25003	-.06563	<b>-.75722</b>
Sub Marketing	<b>.87883</b>	.02133	-.15432	-.10911
Sub Costing	<b>.81570</b>	.00167	-.01101	-.11488

The first of these factors underlies the involvement of subsidiary purchasing, costing and marketing departments, and will be referred to as the subsidiary non-finance department involvement factor. The second underlies the involvement of group planning and group and subsidiary treasury departments, and will be referred to as the planning and treasury department involvement factor. The third underlies the propensity for involvement of the group chief executive and not of group or subsidiary finance departments or involvement of the latter and not of the group chief executive, and will be referred to as the general versus financial management involvement factor. The fourth factor underlies the involvement of group purchasing and marketing departments and to a lesser extent the subsidiary purchasing department. It will be referred to as the group non-finance department involvement factor. The inter-correlation among these factors was found to be low and under 10% in all cases except for that between the first and third factor where it was 12%, that between the first and fourth factor, also 12%, and, that between the third and fourth factors, one of 18%.

The factor analysis of other variables measuring the structure of the internal corporate environment identified a further two factors, see Table 8.5 below. These explained just over 60% of the variance of those variables.

**Table 8.5 - Structure Matrix of Residual Structural Variables**

	<b>Performance Measurement Factor</b>	<b>Responsibility Location Factor</b>
Subsidiary Controls FX	-.23475	-.78159
HQ controls FX	-.14688	.79878
Local Currency Performance	.89402	.00808
Local Currency Incentives	.88080	-.03299
More attention to Procedure	.32200	.05510

The first of these factors relates to the propensity for the performance of the firm or subsidiary to have its results measured in the local currency and for individual remuneration to be dependent on results measured in the same currency. It will be referred to as the performance measurement factor. The second factor relates to the locus of responsibility for managing currency exposure, be it either with the parent company or with the subsidiary, and will consequently be referred to as the responsibility location factor. The propensity for firms to be paying more attention to currency exposure in procedures was not a variable found to be a major element of either factor. The correlation between the two factors was found to be under 5%.

The factor analysis of the variables measuring the strategies of British Times 1000 corporations produced only one factor, which explained just over 33% of the variance in these variables, see Table 8.6 below. It will be referred to as the strategic factor.

**Table 8.6 - Final Community Table for Strategic Variables**

	<b>Strategic Factor</b>
Attends more to policies	.47011
Hedge quantifiable exposures	.07360
Hedge fixed asset exposures	.36935
Balance Assets & Liabilities	.40487
Smooth Currency Influences	.34683

In particular, little of the variance of the variable measuring the propensity to hedge all quantifiable exposures was explained. The factor appeared to be underlying the propensity to deal with fixed asset exposures, to smooth the impact of currency exposure and to pay more attention to it in policies.

The factor analysis of eleven variables measuring managers and outside experts involved in currency exposure management produced four factors, see Table 8.7 below. These factors together explained 60% of their variance.

**Table 8.7 - Structure Matrix of Management and Expertise Variables**

	<b>Training and Conferring Factor</b>	<b>Treasury versus Non- treasury Management Factor</b>	<b>Experience Factor</b>	<b>Experts Factor</b>
Uses Forecasting Service	.16834	.00810	.14149	-.80804
Uses the Literature	<b>.55615</b>	-.11578	.39468	-.42708
Uses Courses	<b>.73513</b>	-.22123	.30538	-.29323
Uses Treasury Staff	.23023	<b>-.83097</b>	.02773	-.04557
Uses Non-Treasury Staff	.38663	<b>.51413</b>	.22375	-.27775
Uses Management Committee	<b>.59879</b>	-.02189	-.01987	.03656
Experience influential	.28118	.07971	<b>.77478</b>	.00708
FX Training influential	<b>.64053</b>	-.48737	.13418	-.32221
Treasury is influential	.21675	<b>-.72637</b>	.21932	-.18403
Outside experts influential	.08480	-.05851	.15363	<b>-.75282</b>
FX Volatility influential	-.17025	-.21155	<b>.74312</b>	-.33947

The first of the factors underlies the propensity for respondents: to employ the literature and courses in managing currency exposure, to consider currency training an important influence in doing so and to manage their exposure using a committee of managers. This

will be referred to as the training and conferring factor. The second factor underlies the use of treasury staff and the propensity to see their use as highly influential in managing currency exposure as distinct from the employment of non-treasury but professionally qualified staff for the same purpose. This is referred to as the treasury versus non-treasury management factor. The third factor underlies the perceived influence of previous experience of the subject and the propensity for experience of currency volatility to be educative in the way the issue is managed and will be referred to as the experience factor. The fourth factor relates to the propensity to use forecasting services and to regard outside experts as a significant influence on the way currency exposure is managed. It will be referred to as the experts factor. The inter-correlation among these factors was found to be somewhat higher than experienced elsewhere. It was almost 25% between the third and fourth factor, 18% between factors one and four, 16% between factors one and three. The inter-correlation was 8% between factors one and two and between factors two and four and 5% between factors two and three.

### **Retesting Hypothesis 5**

The multiple regression testing the associations between factors underlying forms of exposure and those underlying aspects of the internal corporate environment again established not a single significant association, confirming rejection of Hypothesis 5, the results of whose earlier testing is reported in Chapter 6.

To retest the associations between factors underlying forms of currency exposure and both methods used to manage it and measures considered highly effective, a factor analysis of the dependent variables was then undertaken. The factor analysis of the thirteen most broadly used methods for managing currency exposure refused to converge after twenty-five iterations of an oblique rotation. The result following a similar exercise with the same methods considered highly effective was identical. A factor analysis of each of the four groups of methods distinguished in Chapter 5 proved more successful, see Tables 8.8 and 8.9 below. Moreover, as only one factor is identified for each group of methods used and considered highly effective, the method classification system used in the model is given further force.

**Table 8.8 - Final Community Table for Methods Used to Manage Currency Exposure**

	<b>Use of Financial Instruments Factor</b>	<b>Use of Operational Techniques Factor</b>	<b>Use of Organisational Measures Factor</b>	<b>Use of Strategic Methods Factor</b>
Forward Contracts	.44774			
Spot Contracts	.61940			
Option Contracts	.55234			
Proportional Hedge	.37998			
Swaps	.23219			
Switching Currency		.43294		
Netting		.38676		
Timing of Dividends		.49126		
Changing price		.15379		
Use Central Treasury			.59013	
Sensitivity analysis			.59013	
Matching				.78717
Using Local Currency Denominated Debt				.78717

The factor for use of financial instruments explained approximately 45% of the variance in use of these instruments and those for use of operational techniques, organisational measures and strategic methods, approximately 37%, 59% and 79% of the variance in the use of the individual methods in each of these categories respectively.

**Table 8.9 - Final Commuality Table for Methods Considered Highly Effective in Managing Currency Exposure**

	<b>Effectiveness of Financial Instruments Factor</b>	<b>Effectiveness of Operational Techniques Factor</b>	<b>Effectiveness of Organisational Measures Factor</b>	<b>Effectiveness of Strategic Methods Factor</b>
Forward Contracts	.58235			
Spot Contracts	.57739			
Option Contracts	.49899			
Proportional Hedge	.35010			
Swaps	.41491			
Switching Currency		.46832		
Netting		.53976		
Timing of Dividends		.66593		
Changing price		.57516		
Use of a Central Treasury			.57448	
” sensitivity analysis			.57448	
Matching				.74002
Using Local Currency				.74002
Denominated Debt				

The factor for effectiveness of financial instruments explained approximately 50% of the variance in effectiveness of these instruments and those for operational techniques, organisational measures and strategic methods, approximately 55%, 57% and 74% of the variance in effectiveness of the individual methods in each of these categories respectively.

### **Retesting Hypothesis 3**

The multiple regression testing the association between the factors underlying forms of exposure and both methods used and considered highly effective in managing currency exposure were in no cases found to be significant. Hypothesis 3 tested in Chapter 5 is thus once more emphatically rejected. It appears that there is no case for the inclusion of forms of currency exposure in a revised contingency model.

### **Retesting Hypothesis 2**

A multiple regression analysis was next carried out between the factors for regulatory and market variables and factors for the dependent variables, the four groups of methods used to manage currency exposure and the perceived effectiveness of these same four groups of

methods in doing so. This retests Hypothesis 2 first examined in Chapter 5 and there rejected.

The first multiple regression between regulatory and market factors and the factor for use of financial instruments was not found to be a significant one. However the multiple regressions between regulatory and market factors and use of operational techniques, organisational measures and strategic methods were all significant. What marks out this distinction is unclear and needs further investigation. Nevertheless the regressions only explained approximately 20%, 10% and 12% of the variance in the dependent factors respectively and any influence is not strong.

Specifically, all three market factors were found to have significant T scores in the association with the factor for use of operational techniques. The international market outputs factor counterintuitively had a negative T score in contrast to the positive scores from the international market inputs and assets factors.

All three market factors had significant T scores in the association with the factor underlying use of organisational measures and again the international market outputs factor had a negative T score albeit a less pronounced one. Both negative associations suggest respondents may be switching to use of other methods when international market output exposure is greater.

The pattern of association with the factor for use of strategic methods is different. Here only the international market assets factor has a positive significant association (T score). There is also a significant association, here a negative one, with the international market regulation factor. This is understandable as the greater the proportion of foreign assets the greater may be the need for a strategic response. This response is one which could subsequently be deterred by regulatory obstacles.

These findings encourage further research into the relationship between aspects of the external corporate environment and use of particular methods in managing currency exposure. However, no significant associations whatsoever were found to exist between regulatory and market factors and factors underlying the perceived effectiveness of the four

groups of methods used to manage currency exposure. This is a result which corroborates the findings in Chapter 7.

#### **Retesting Hypothesis 4**

The associations between regulatory and market aspects of the external corporate environment and aspects of the internal corporate environment were examined in Chapter 6. Too few of these associations were found to be significant to permit other than rejection of Hypothesis 4, which mooted an association between them. Interestingly, the multiple regression analysis of the factors identified from both these groups of variables did nevertheless uncover some significant associations although the amount of the variance explained was small. In the case of both the second and fourth factor underlying departmental involvement in currency exposure management, the adjusted R square was between 5% and 6%, and in the case of the second and third factor measuring management and expertise, the adjusted R square was between 9% and 10%.

Specifically, the planning and treasury department involvement factor was found to be positively significantly associated with the international assets factor. The group non-financial department involvement factor was also found to be positively significantly associated with the same market factor, suggesting that the degree to which a firm is involved in foreign direct investment may be related to the breadth of involvement of different functions in managing currency exposure. The treasury department involvement factor was found to be significantly negatively associated with the international market regulation factor, suggesting that lack of corporate manoeuvrability is matched with lack of treasury involvement. This factor was also associated positively with the international assets factor. Finally, not unexpectedly, the experts factor was positively significantly associated with the international market outputs factor.

If external environmental factors cannot entirely be disassociated from internal corporate factors, the associations which do exist are nevertheless weak ones. One further insight can be obtained from analysing the joint impact of external environmental factors and forms of exposure together on internal corporate factors. Overwhelmingly, the multiple regressions

do not uncover significant associations but there are two exceptions where the second and third factors relating to management and experts are concerned. The planning and treasury department involvement and general versus financial management involvement factors, significantly associate negatively with the international market regulation factor and do so positively with the international assets factor when forms of exposure factors are included in the regression. In the same circumstances the experience factor was also found to be negatively associated with the international market outputs factor. The latter finding seems to imply that if a company is highly exposed internationally, managers are less likely to need exchange rates to be volatile or have to consciously learn about the subject in order to be aware of their exposure.

### **Retesting Hypothesis 6**

The last multiple regression analysis carried out was that between the factors underlying the internal corporate environment and the factors for both methods used and those considered highly effective in managing currency exposure respectively (Hypothesis 6). This hypothesis was earlier tested in Chapters 6 and 7 and could not be rejected. The results obtained in Chapters 6 and 7 are once more confirmed here.

This analysis first dealt with the four factors which underlie use of currency risk management methods and subsequently with those methods considered highly effective. In the case of use of financial instruments, operational techniques, organisational measures and strategic methods, all of these dependent factors, with the exception of the factor for operational techniques, were found to be significantly associated with factors underlying the internal corporate environment. Internal corporate factors were found to explain over 28%, 20%, and over 32% of the variance in the factors relating to use of financial instruments, organisational measures and strategic methods respectively.

The factor representing use of financial instruments was found to be significantly associated with all four factors underlying elements of management and expertise; the association with the experience factor was negative. An issue raised by this finding is whether experience and learning reduces managements' desire to employ financial instruments. The training and

conferring factor is positively associated with financial instrument use, as expectedly are the planning and treasury department involvement and treasury influence and experts factors.

The factor underlying use of organisational measures was found to be significantly associated with all of the management factors but not the experts factor. The associations with the training and conferring and planning and treasury department involvement factors were found to be positive and significant. There is also a negative significant association with the experience factor. The first two associations are unsurprising. The last mentioned needs further investigation. Perhaps those in a central treasury and planning role do not need to depend on experience as distinct from expertise.

The factor underlying use of strategic methods was found to be significantly associated with two factors underlying aspects of the internal corporate environment. A positive significant association was found with the performance measurement factor. This might be because the decision to use strategic methods is more likely to be taken centrally and to imply central control of and responsibility for the subject, making it irrelevant for local management to be aware of the parent's perspective. There is also a negative association with the experts factor, perhaps, in part, because outside experts have a greater propensity to give other than strategic advice. It is clear, however, that the reasons for both findings need further investigation.

The analysis now turns to deal with the four factors underlying the perceived effectiveness of methods, the second group of dependent variables. The factors underlying effectiveness of financial instruments, operational techniques, organisational measures and strategic methods, with the sole exception of the factor underlying perceived effectiveness of operational techniques, were all found to be significantly associated with the factors underlying elements of the internal corporate environment. Internal corporate factors were found to explain almost 24%, 16% and 24% of the variance in the variables measuring the perceived effectiveness of financial instruments, organisational measures and strategic methods respectively.

The factor underlying the perceived effectiveness of financial instruments was found to be significantly positively associated with three internal corporate factors. The first of these is the strategic factor and the other two the training and conferring and experience factors. Training, learning, experience, co-ordination and clarity of purpose are clearly perceived as key elements in achieving effectiveness here.

The factor underlying the perceived effectiveness of organisational measures was not found to be significantly positively associated with any factor within the 5% confidence limit but it was associated positively with the strategic factor and negatively with the subsidiary non-financial department involvement factor. The latter association does seem surprising in suggesting that breadth of departmental involvement in currency exposure management is negatively associated with organisational effectiveness in dealing with the issue. It should be recalled that one of the two broadly used organisational measures concerned is that involving the centralisation of the treasury function. This finding requires further investigation.

The factor underlying the perceived effectiveness of strategic methods was found to be significantly positively associated with both the strategic and the performance measurement factor. The latter association underlines that effectiveness is perceived to be negatively related to breadth of involvement. The majority of survey respondents hold group appointments and are likely to see the centralisation of management of foreign exchange risk as essential for efficient strategic management of their exposure.

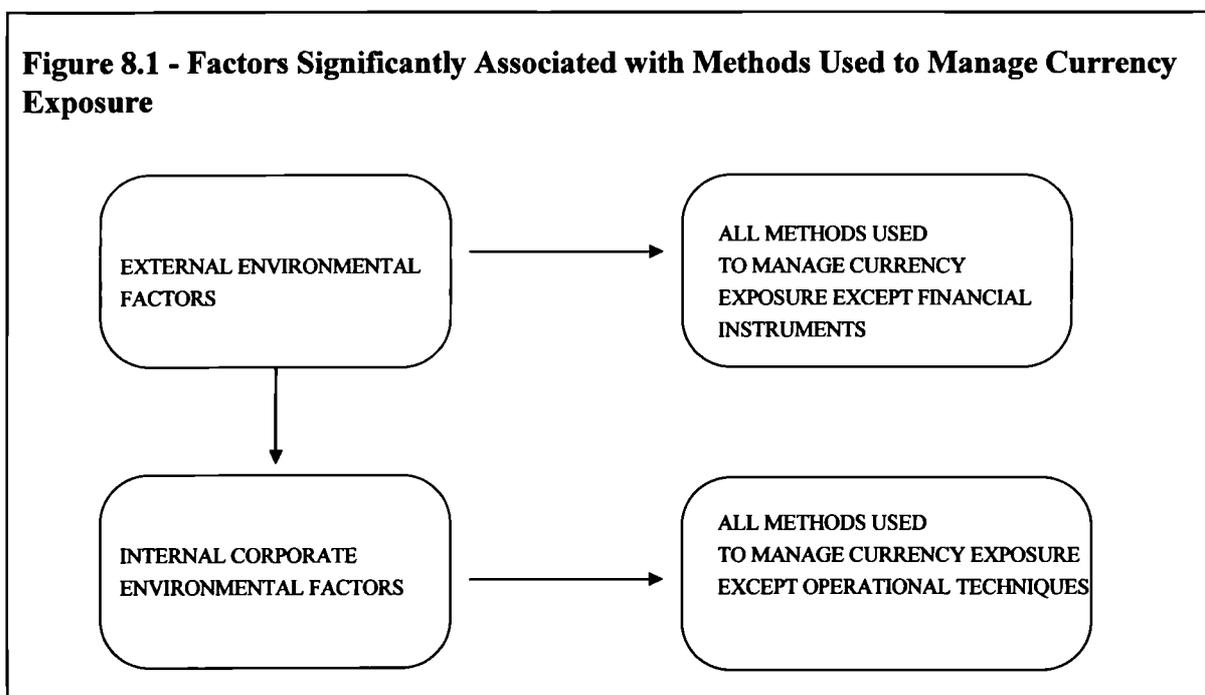
To summarise the results of the factor and regression analysis, seventeen independent and intermediate factors have been identified in the groups of variables making up the contingency model. Use of the technique of multiple regression has confirmed that the first and sixth hypotheses cannot be rejected and has highlighted that there is also a strong case for not rejecting elements of the second and fourth hypotheses.

### **Testing the Overall Model**

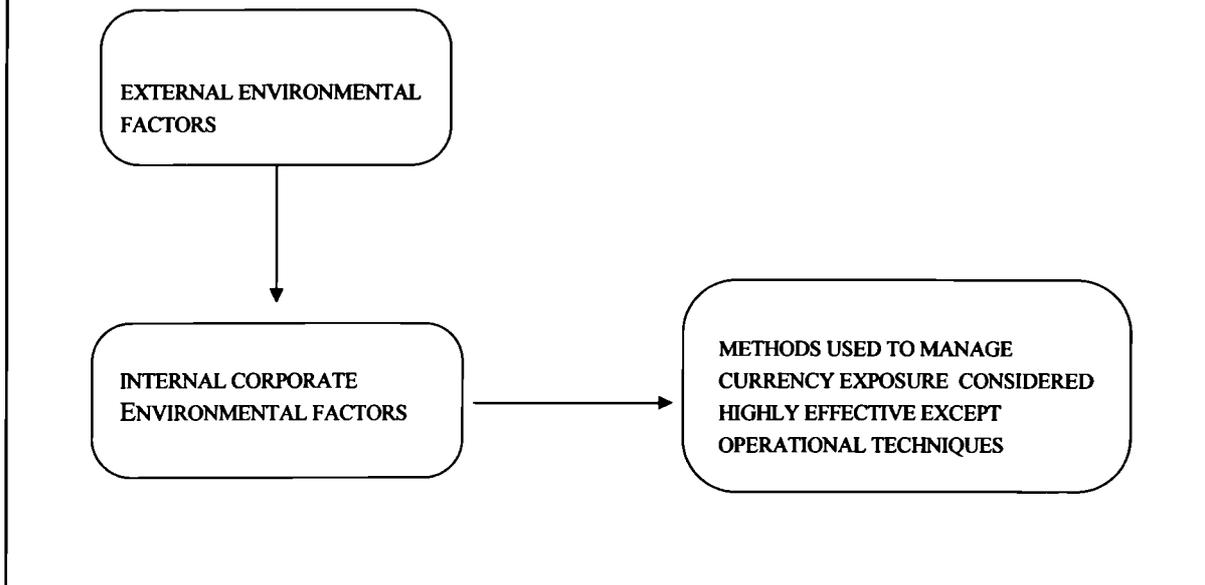
Finally a multiple regression of the seventeen factors derived from all the independent and intermediate variables in the model was carried out with each of the dependent factors

underlying the group of methods used and methods considered highly effective in managing currency exposure. A statistically significant result was obtained in each case with only one exception, namely the effectiveness of operational techniques. Even the factor underlying the use of such techniques was found to be significant when a multiple regression contained all factors in the model. The adjusted R Square for the factors underlying use of financial instruments, operational techniques, organisational measures and strategic methods are approximately .28, .20, .26 and .39 respectively and for the factors underlying the effectiveness of the methods, for financial instruments, for organisational measures and strategic methods approximately .24, .16 and .24 respectively. Although not a spectacular result, the value of developing a contingency model is thus confirmed. A revised model which incorporates the findings of the factor and multiple regression analysis is set out below.

**Figure 8.1 - Factors Significantly Associated with Methods Used to Manage Currency Exposure**



**Figure 8.2 - Factors Significantly Associated with Methods Used to Manage Currency Exposure Considered Highly Effective**



The amended contingency model is now a somewhat more focused one, pinpointing significant associations between the independent, intermediate and dependent factors. Certain issues have been highlighted by factoring the variables and these warrant further investigation.

In future research it may also be instructive to try to link methods used to manage currency exposure more closely with a particular form or groups of forms of exposure and to chart perceptions of the success of these methods either singly or in combination in relation to those particular forms or groups of forms. At the same time further work needs to be done to see how foreign exchange risk management is reconciled with management of different corporate risks and other issues.

In conclusion, efforts to refine and confirm a contingency model could provide a key to the variables which should concern managers. At the same time recognition that further contingent relationships may not be uncovered can alert managers to the need to recognise clearly their exposures and review systematically the means of managing them by absorbing available normative lessons.

### **8.3 The Contribution of this Research to the Theory of Currency Exposure and its Management**

The contribution of this research to the theory of currency exposure and its management has occurred in the following areas:

- **a taxonomy of forms of currency exposure facilitating measurability and mapping interrelatedness of exposures**
- **a demonstration of a perceived link between the external environment and a corporation's currency exposure**
- **a demonstration of the pervasiveness of economic exposure and a rationale for its perceived relative importance**
- **a demonstration of the importance of distinguishing the positive and negative effects of currency exposure and the unjustified preoccupation with the latter of these effects**
- **a taxonomy of methods of managing currency exposure which highlights relative use and perceived effectiveness of methods**
- **a classification of methods used to manage currency exposure in terms of the particular forms of exposure they can logically be employed to manage and a demonstration of the absence of a link between forms of exposure and either methods used or methods considered highly effective in managing currency exposure**
- **a demonstration of a link between the methods used to manage currency exposure and aspects of the external environment**
- **a demonstration of the absence of a link between methods considered highly effective in managing currency exposure and aspects of the external environment**

- **a demonstration of a link between the methods used and considered highly effective in managing currency exposure and the internal corporate environment**
- **an explanation, using organisational, behavioural and psychological theories, of managers' apparent actions in managing currency exposure**

Each of these areas is elaborated upon below.

- **a taxonomy of forms of currency exposure facilitating measurability and mapping interrelatedness of exposures**

A taxonomy of currency exposures has been developed which examines the different ways the profits of a corporation can be positively or adversely affected by exchange rate changes. The taxonomy builds on the conventional threefold economic, transaction and translation classification of currency exposure, principally by expanding on the different forms of economic exposure. In recognition of the complexity involved in quantifying ex-ante economic exposure as distinct from transaction and translation exposure, currency exposure is measured ex-post. Accounting variances define deviations from budgeted or expected exchange rates which result from actual exchange rate changes. To the extent that volatility of exchange rates does not increase or decline, past exposure can be used as a guide to likely future exposure. The taxonomy recognises that economic exposure contains value chain, input, output, competitive and quasi-contractual elements. The taxonomy when operationalised also showed the interrelatedness of all the different forms of exposure predicted in the theoretical literature. It was sensitive enough however to highlight different associations between different forms of exposure and other variables employed in the contingency model.

- **a demonstration of a perceived link between the external environment and a corporation's currency exposure**

Using contingency theory it was hypothesised that the environment external to the corporation would determine the forms of exposure to which corporations would be subject. It was not possible to reject the null hypothesis despite the finding that little external

regulation was found and that many of the corporations sampled did not have a significant international involvement. The factor analysis confirmed the links with external market variables, the international market input factor associating significantly with forms of exposure generating vulnerability and producing advantage. In contrast, no evidence of any link between the nature of a corporation's product markets and the forms of exposure it experienced was found.

- **a demonstration of the pervasiveness of economic exposure and a rationale for its perceived relative importance**

This thesis has examined broadly how currency exposure affects the corporation. Other surveys have concentrated in the main on which exposures are managed by firms and have found that managers concentrate on managing transaction and translation exposure. However the literature asserts that economic exposure has the greatest impact on profits. The thesis examines this contention and notes that under a range of assumptions regarding trading conditions, the discounted value of the non-contractual element of the future cash flow of a corporation will normally be between 85% and 95% of the total cash flow. The survey of British Times 1000 corporations demonstrated the perceived pervasiveness of economic exposure. Five times as many survey respondents considered vulnerability to one or more economic exposures to have greater profit impact than vulnerability to transaction exposure than vice versa. Fifteen times as many respondents considered the advantage gained from one or more economic exposures to have more profit impact than advantage gained from transaction exposure than the converse.

- **a demonstration of the importance of distinguishing the positive and negative effects of currency exposure and the unjustified preoccupation with the latter of these effects**

The literature concentrates almost exclusively on the negative effects of currency exposure. This thesis could identify no argument in the literature which indicates that these negative effects outweigh positive ones and the taxonomy of exposures developed distinguished positive and negative effects. When the taxonomy was operationalised it was found that the

positive effects of currency exposure were seen to have four fifths the impact on profits that the negative effects had. The positive and negative effects of particular exposures were not found to be symmetrical. A taxonomy which identifies exposures on a single positive to negative effect syndrome could not be justified and the value of the decision to use two sets of exposures was demonstrated.

- **a taxonomy of methods of managing currency exposure which highlights relative use and perceived effectiveness of methods**

The literature revealed no attempts at the provision of a comprehensive taxonomy of methods available to manage currency exposure and few attempts at comparisons of different methods. Methods were sometimes classified according to the forms of exposure these same methods were seen appropriate to manage. Other taxonomies identify methods which depend on access to markets and mechanisms outside the corporation and those which depend on the action of the corporation alone. Although this thesis recognises that no taxonomy is likely to achieve comprehensiveness and that the definition of methods is also arbitrary, a list of all methods identified in the literature was compiled.

The taxonomy put forward here recognises a distinction between financial instruments which produce a financial hedge, operational techniques which directly impact the operating cash flow of the business, and organisational measures which facilitate foreign exchange risk management. The taxonomy also recognises a fourth category of strategic methods, which achieve a natural hedge or which seek to increase the parent currency value of cash inflows and/or reduce the parent currency value of cash outflows. Although it was not possible to validate the taxonomy, the factor analysis produced only one factor underlying the variables measuring each of the four groups of methods used and those measuring each group of methods considered highly effective. The taxonomy of methods used clearly identifies relative differences and trends in use and effectiveness of different methods. For example, it illustrates the high regard for and growth in use of financial instruments in contrast to a decline in perceived effectiveness of and employment of operational measures. The markedly different levels of usage and perceived effectiveness of these different groups

of methods argues for the functional utility of the taxonomy. The taxonomy also highlights the declining use of methods which are perceived as less effective.

- **a classification of methods used to manage currency exposure in terms of the particular forms of exposure they can logically be employed to manage and a demonstration of the absence of a link between forms of exposure and either methods used or methods considered highly effective in managing currency exposure**

Individual methods used to manage currency exposure are examined in the literature in detail, but only Srinivasulu (1981) and Buckley (1992) have set out a systematic classification of methods against the forms of exposure they can be employed to manage. Logical analysis can be used to determine which methods can influence or address particular exposures and which cannot. This thesis provides a first attempt at setting out a system of classification that identifies which exposures can logically be addressed by the management methods most widely used by British Times 1000 corporations. No overall link, direct or indirect, has been found between the forms of currency exposure respondents see themselves subject to and the methods they use to manage their exposure or their regard for them. Only just over a quarter of predicted positive significant associations between forms of exposure and methods used to manage them have been identified. Nevertheless further more focused work may yet uncover further associations and only by the development of classification systems of the type described in Chapter 5 can a logically predicted pattern of management be compared with reported patterns of management to test theoretical predictions.

- **a demonstration of a link between the methods used to manage currency exposure and aspects of the external environment**

Although this link was not clear from the detailed analysis reported in Chapter 5, the factor analysis revealed that the factor underlying the use of operational techniques is significantly positively associated with the international market input factor and significantly negatively associated with the international market output factor; the factor underlying the use of

organisational methods is significantly positively associated with both the international asset and market input factors and negatively with the international market output factor; and the factor underlying use of strategic methods is significantly positively associated with the international asset factor and negatively associated with the international market regulation factor.

- **a demonstration of the absence of a link between methods considered highly effective in managing currency exposure and aspects of the external environment**

The predictions of contingency theory were used to hypothesise the relationship between facets of the corporation's external environment, its internal environment, the forms of exposure experienced and managers' evaluations of the methods to manage that exposure. The rejection of a number of the hypotheses, the one seeking to link methods considered highly effective and aspects of the external environment is again rejected by the analysis in Section 8.2 above, questions the explanatory power of the original contingency model proposed and draws attention to the need to provide alternative or supplementary explanations for the observed significant associations.

- **a demonstration of a link between the methods used and considered highly effective in managing currency exposure and the internal corporate environment**

A clear link was found, however, between the internal corporate environment and the choice of methods used to manage currency exposure. The detailed links reported in Chapter 6 were confirmed by the results of the factor analysis. Only the factor underlying use and effectiveness of operational techniques failed to associate significantly with factors underlying the internal corporate environment. The factors underlying use of financial instruments, organisational measures, and strategic methods largely associated significantly with management and expert factors and the factor underlying effectiveness of financial instruments, organisational measures and strategic methods largely associated significantly with the strategic factor. This outcome parallels the findings in wider research on

organisations which has demonstrated that the strategy, structure, culture, internal relationships and characteristics of individual managers influence perception and action.

- **an explanation, using organisational, behavioural and psychological theories, of managers' actions in managing currency exposure**

Theoretical work on currency exposure and its management is overwhelmingly located in the finance, financial accounting, macroeconomic and international business literature. There is little examination of currency exposure in the management, management accounting, managerial economics and organisational behaviour literature. In consequence the explanatory power of theories developed in the latter literatures have until recently not been brought to bear to examine currency exposure. This thesis has examined how management theory, in particular bounded rationality and agency theory, can be used to augment an understanding of currency exposure and its management and provide explanations for what is not otherwise understood.

#### **8.4 Suggested Improvements in Management Practice in Managing Currency Exposure**

It is suggested that this research has made a contribution to the practice of foreign exchange risk management by highlighting the following:

- **that currency management objectives and their relationship with other corporate and personal objectives should be agreed and understood by management so that they are capable of guiding management action**
- **that those involved in the management of currency exposure need to determine the degree to which they can forecast exchange rate movements satisfactorily in order to select currency management objectives**
- **that managers can measure their exposure by ex-post variance analysis in order to understand how and to what degree the corporation is affected by currency exposure**

- **that managers should pay attention to the opportunities afforded by currency exposure and not just to the threats**
- **that managers should focus their attention upon the management of economic as well as transaction and translation exposure**
- **that translation exposure should be managed if the value of the corporation is thereby increased or if failure to manage it will reduce that value**
- **that managers and management advisers receive timely training in the subject of corporate currency exposure and its management**
- **that those involved in the management of currency exposure need to acquire a better understanding of key aspects of the external and internal environment of the corporation in order to understand what influences the way they manage that exposure**
- **that currency exposure should be considered by all functional areas and levels of management in the business (and where appropriate joint venture partners) and the strategic direction should be provided by general management, if not by the group chief executive**
- **that a system of strategic management accounting be set up to gather information on the external corporate environment which influences corporate currency exposure**
- **that a system be set up to measure and monitor the effectiveness of methods employed to manage currency exposure and recommend improvements in the way currency exposure is managed**
- **that advantage be taken of techniques designed to help management process information systematically**

- **that managers be given the incentive to deal with the currency exposure under their control in a manner which benefits the corporation**

Each of these points is elaborated upon below.

- **that currency management objectives and their relationship with other corporate and personal objectives should be agreed and understood by management so that they are capable of guiding management action**

Broder (1984) found no links between reported corporate policies for managing currency risk and the nature of a corporation's exposure. In contrast this thesis has found some significant associations between strategic and attitudinal variables and methods used to manage currency exposure. The strong association between the use of hedging and the propensity to adopt risk averse policies was reported in Chapter 6. The even stronger one between the perceived effectiveness of methods used to manage currency exposure and strategic and attitudinal variables was reported on in Chapter 7.

The survey has illustrated that a range of currency management objectives can be and are adopted and that some of these are mutually incompatible. A number of them can be at odds with other corporate aims. Managers have personal objectives which can conflict with the goals of fellow managers and with those of the corporation. A failure to reconcile and agree currency management objectives within the context of these other goals can result in a lack of clarity of purpose, managers being at variance with each other, and sub-optimisation.

- **that those involved in the management of currency exposure need to determine the degree to which they can forecast exchange rate movements satisfactorily in order to select currency management objectives**

The survey found that managers were divided as to whether or not exchange rate changes could be accurately predicted. A majority said that they could not, but a substantial minority both believed that they could and took steps to obtain suitable forecasts.

The basis of the complexity of currency exposure management is the uncertainty surrounding future exchange rates. Managers' attitude to this uncertainty is usually expressed as their attitude to risk. Those who believe that they can forecast exchange rates accurately should see less uncertainty and be likely to be less risk averse. They can as "dealers" adopt a proactive policy of foreign exchange risk management which takes into account their views on which currencies will strengthen and which will weaken. In contrast, managers who believe exchange rates cannot be predicted accurately should identify considerable uncertainty. They are more likely to adopt risk averse policies, be "lockers" or "smoothers", and will minimise the risk of exposure or of dramatic swings in profits as a consequence. Attitude to the forecastability of exchange rates is logically the key to selection of currency management objectives.

Nevertheless, the only survey finding to suggest that managers are relating their attitude to uncertainty with their objectives is a significant association between their propensity to hedge all quantifiable exposures and believe that exchange rates cannot be accurately forecast. If managers are not relating their attitude to uncertainty more broadly with their objectives, are they adopting well-reasoned strategies to manage their currency exposure?

- **that managers can measure their exposure by ex-post variance analysis in order to understand how and to what degree the corporation is affected by currency exposure**

Managers need to appreciate the nature of their exposure in order to determine which methods should be used to deal with it. A major difficulty is the quantification of other than transaction and translation exposures. Predicting economic exposure ex-ante is complex, perhaps too complex a task, and is one reason for managers concentrating their efforts in managing transaction and translation exposure. This thesis has suggested that managers look back to see what has happened in the past as a guide to what will happen in the future and extrapolate, so when asked to forecast their economic exposure they effectively will do the same. If managers examine how different forms of economic exposure have affected them, by comparing forecast or budgeted exchange rates with actual exchange rates, the results can be extrapolated and then adjusted for changing circumstances. The taxonomy developed

in this thesis highlights the different forms of exposure as an aide memoir to managers who must carry out this process.

The survey found no relationship between a corporation's perceived currency exposure and either the methods it uses to manage it or those methods perceived highly effective in doing so, which poses questions about the recognition and assessment of corporate currency risk. If it is demonstrable that there is a logical link between the type of exposure experienced and those methods likely to be effective in dealing with it, why is no such link observed? Unless the way currency exposure is impacting the corporation is being incorrectly measured or reported, it is possible that the effectiveness of currency risk management can be improved if managers are more selective in the techniques they adopt. However, in order to do this, they need to understand better the nature of their exposure and the way it is impacting on their organisation.

- **that managers should pay attention to the opportunities afforded by currency exposure and not just to the threats**

Managers reading the popular, and much of the academic, literature on currency exposure may be misled into believing that exposure has entirely negative connotations and that it does not extend opportunities. Even though the survey does not totally support empirically the contention that currency exposure brings as many benefits as adverse consequences, it is seen to bring almost as many. Managers need to be aware of the opportunities regardless of whether they decide to take them or to match and hedge net exposures.

- **that managers should focus their attention upon the management of economic as well as transaction and translation exposure**

One of the paradoxes of foreign exchange risk management is that past surveys have consistently found that managers pay most attention to managing transaction and translation exposure, when the theoretical literature predicts, and this survey emphasises, that economic exposure is seen to be more important in the sense that it has a perceived greater impact on corporate profits. The greater difficulty of identifying, measuring and managing economic exposure is a challenge that managers must accept. The extent of the greater perceived

impact of economic exposure that this survey reveals means that by ignoring or not managing economic exposure, managers may fail to attend to most of the opportunity and the threat that currency exposure generates. By managing today's economic exposure, the shape of tomorrow's transaction and translation exposure can be changed and even much reduced. Using strategic methods to do so may provide prevention or a cure where other methods only temporarily relieve the pain or secure well-being. Holland (1992) has put it succinctly:

“Strategic and operational decisions create the corporate specific decisions for currency risk. Modifying these decisions first is the most direct way of tackling the risk management problems.” p 2.

This is not to denigrate the role of other methods and the importance of considering and comparing the effectiveness of the full range of methods available. The rise in the use of financial instruments, and an apparent decline in the use of operational techniques, has been accompanied by little argument as to their relative merits. Managers need to consider the merits of operational techniques before rejecting them.

- **that translation exposure should be managed if the value of the corporation is thereby increased or if failure to manage it will reduce that value**

Although translation gains and losses result in paper gains and losses, it is clear that paper gains and losses are seen by survey respondents to have real consequences and real secondary effects impact the corporation's standing. A modest number of British Times 1000 corporations report that translation exposure has the greatest profit impact of any form of currency exposure. Ross (1992) has catalogued circumstances in which translation exposure management is legitimate.

- **that managers and management advisers receive timely training in the subject of corporate currency exposure and its management**

Despite the finding that two thirds of British Times 1000 respondents say they rank currency volatility among the more difficult problems of doing international business, and

only one third of them believe that business in general is successful in dealing with problems generated by currency related matters, over two thirds also believe that few managers receive any training in or insight into currency issues early in their business careers. Ample scope exists for expanding the provision of training. A revealed lack of confidence in the abilities of advisers also suggests that this group need to sharpen their skills. Almost 40% of respondents assert that banks and other experts have done little to help them deal with the longer term impact of currency volatility, about the same proportion as use bankers' services. The same proportion also did not believe that taking advice on how to manage currency exposure would provide value for money. At 35% the percentage of respondents who believe that business in general has given and still gives insufficient attention to currency issues is high.

- **that those involved in the management of currency exposure need to acquire a better understanding of key aspects of the external and internal environment of the corporation in order to understand what influences the way they manage that exposure**

Although only a few links between market and regulatory variables and use of methods to manage currency exposure have been uncovered, significant associations between several regulatory and market factors and factors underlying use of operational techniques, organisational measures and strategic methods have been found, (see Section 8.2 above). If the shape of the external environment influences the way exposure is managed, managers need to understand that environment to comprehend the nature of these influences. Yet a number of respondents are unable to give details of their market environment.

Market and regulatory factors are also significantly associated with internal environmental factors. A large number of respondents report that their businesses do not involve planning, costing, purchasing, sales and marketing departments in any way in managing currency issues. Although this is not conclusive evidence that managers are not sharing their insights and information, there is evidence that some respondents have underestimated the degree of currency exposure to which they are subject.

- **that currency exposure should be given consideration by all functional areas and levels of management in the business (and where appropriate joint venture partners) and the strategic direction should be provided by general management if not by the group chief executive**

The finding that in many corporations involvement is largely restricted to the finance and treasury functions sits uncomfortably with the belief expressed by only 10% of respondents that currency issues are a finance matter and should be left to finance people. Bounded rationality theory attests to the dangers of dependence on a single or partial perspective. The chief executive and general management are likely to have a more comprehensive overview and can both mediate competing functional interests and ensure that capabilities which are the preserve of a particular function can be accessed.

- **that a system of strategic management accounting be set up to gather information on the external corporate environment which influences corporate currency exposure**

Survey respondents often were unable to report, even in broad terms, the point of origin of their inputs or the destination of their output. Under half of them report examining the impact of possible exchange rate changes on their competitive position and only a quarter say that they formally assess potential currency movements when determining prices. Managers need to avail themselves of information on the external corporate environment. Information on competitors, on potential competitors, on other countries, on suppliers, and on customers is rarely collected in management accounts which normally mirror financial accounts. This information is the focus of strategic management accounting.

- **that a system be set up to measure and monitor the effectiveness of methods employed to manage currency exposure and recommend improvements in the way currency exposure is managed**

Almost one third of survey respondents report that they mainly deal with currency matters informally. Nevertheless 30% of them reported that they were in the process of giving more attention to currency-related matters in their procedures. The paucity of information

presented in the literature on the effectiveness of the different methods available to manage currency exposure is symptomatic of a lack of and need for mechanisms within corporations to measure and monitor systematically the impact of methods employed to manage currency exposure.

- **that advantage be taken of techniques designed to help management process information systematically**

As noted above, over a third of respondents said that business has given and continues to give insufficient attention to currency issues and two third of respondents believe that currency volatility ranks among the more difficult problems of operating internationally. Almost 40% of respondents were unable to say whether, in general, exchange rate changes compensated for differing rates of inflation in prices relevant to them. One respondent in six reported finding it difficult to distinguish currency effects from other market influences. Systematic monitoring of complex phenomena involves the collection and processing of large amounts of information. Technological advance in information processing continues to be rapid. Inter alia, expert and artificial neural systems are becoming available to managers to help them process the large amount of information necessary to manage currency exposure and avoid the effects of information overload. Managers need to consider using them.

- **that managers be given the incentive to deal with the currency exposure under their control in a manner which benefits the corporation**

Survey respondents report that involvement of British Times 1000 managers in foreign exchange risk management is limited. Group treasury departments, in corporations which have one, are normally responsible for dealing with the issue. However with the exception of the group finance department, group chief executive and group directors, the involvement of any other personnel or departments in the parent company was no greater than in one corporation in seven. Formal committees of managers which consider currency issues were reported to exist in only one company in ten and informal ones in only one company in seven.

Respondents reported that a majority of chief executives of subsidiaries, their directors and even their finance departments had no involvement in dealing with currency issues. No other functional departments in subsidiaries were said to be involved dealing with currency issues in more than one corporation in five. This may partly be because local management have little incentive to deal with the issue. Respondents observed that a majority of their corporations set performance targets of foreign subsidiaries by reference to the local currency only, not that of the parent and that remuneration of management was linked to performance measures in local currency only. Little attention appears to be given to aligning the interests of the corporation with those of local management.

Agency theory highlights the differences in the interests of shareholders and managers. If managers face greater sanction when they fail to manage their currency exposure than reward when they manage it well, assuming that they are able to influence that performance, the danger of managers acting in their own more immediate interests rather than in the long-term interests of the corporation will be increased. The degree to which financial instruments are reported employed in managing currency exposure, when corporate currency hedging strategies may have little utility for shareholders, does focus attention on the issue of whose interests are being served. If the only incentive to manage currency exposure is driven by an emphasis on short-term profitability, managers will pay less attention to using foreign exchange risk management methods which only secure long-term benefit. To encourage managers to operate in the interests of the corporation, performance measures must be designed to reward managers for outcomes which most benefit the corporation.

## **8.5 Suggestions for Future Research**

The final section makes suggestions for future research to facilitate further contribution to, and refinement of, the theory and practice of currency exposure and its management.

This thesis has drawn attention to a paucity of empirical research into the way corporations are affected by currency exposure, how they manage it and what determines the way that they manage it. Only with the information from large scale surveys of management experience, backed by in-depth research, can our understanding of this complex

phenomenon develop confidently. There is no conflict here between the priorities of those who believe that research should be oriented towards aiding managers to manage the phenomenon as well as is possible and those primarily concerned with increasing knowledge of the principles which underlie management generally.

In this field a knowledge of the nature of a subject as complex as currency exposure has been seen as the key to understanding how to measure it and then analyze it. Nevertheless, the preoccupation with defining the phenomenon may now have reached the stage of diminishing returns, in the sense that no one set of definitional criteria is likely to emerge supreme. If this view is accepted, a shift in emphasis to definitions which stress measurability and utility may be justified. Basic research is still required to clarify issues of measurability, particularly if the impact of managers' responses to this phenomenon is to be analyzed. Quantifying method usage and effectiveness, for example, raises difficulties which have not been and remain to be resolved.

Qualitative research also underpins our understanding of phenomena. Currency exposure is only one of the issues which managers face. Like all issues, managers have perceptions about it, possibly have experiences of it, need to make decisions about it, need to work with it in the context of other issues, their own motivations and agendas, and need to take action and monitor that action in dealing with it. Much can be learnt from research into management processes generally and from organisational and behavioural research in particular. This thesis has identified opportunities to apply management research to currency exposure and for research into currency exposure to inform the discipline of management. Both largely remain to be exploited. The dysfunctionality of arbitrarily distinguishing management disciplines must not be allowed to outweigh the benefit of the convenience and focus achieved.

More specifically, research is needed to test further, and if necessary, redefine the taxonomy of exposures and the taxonomy of methods used to manage those exposures developed in this thesis, so that the research findings set out here can be corroborated or challenged and our understanding of the subject advanced. This thesis did not ask managers directly which methods they used to manage which exposures. It did not address their perception of the

effectiveness of specific methods in dealing with individual or specific combinations of exposures. Future research needs to do this, so that the exploratory exercise carried out in this thesis can be refined.

A broader range of corporations need to be surveyed and more in-depth observation of corporate foreign exchange management processes commissioned. This survey has concentrated on British Times 1000 corporations. There is a need to broaden this research to Non-British Times 1000 corporations, to smaller corporations and to corporations domiciled in other countries, so that data can again be collected on a consistent basis and comparative analysis completed. Longitudinal data also collected on a consistent basis will assist in developing understanding of the dynamics of the process, which a point in time survey, even when it seeks to obtain historical information, may not highlight.

Managers need to appreciate their limitations and their biases and manage with all the help that both theoretical and empirical research can provide.

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APPENDIX 1 LETTER TO TIMES 1000 CHIEF EXECUTIVES TO INTRODUCE THE SURVEY.

Dear

A SURVEY OF THE IMPACT OF CURRENCY VOLATILITY.

Persistent currency volatility has become a prominent feature of business life. Discussions with senior managers in a number of leading British multinationals have shown almost unanimous concern about the consequences and the need for an improvement in practice. Hence, we are seeking your organization's participation in a survey designed to promote an exchange of experience in Times 1000 British corporations.

We have sent our questionnaire to your Finance Director to complete and though we are not requesting that you also complete the questionnaire we enclose a copy for your interest. Preliminary work has shown that these matters are of direct concern to every Chief Executive and cannot sensibly be dealt with by the finance function alone. Indeed, Coopers and Lybrand have noted in a recent report that the dramatic swings in currency values can have a larger impact on corporate profits than any other factor.

A few minutes of your time spent examining the questionnaire, we believe, will convince you that a business which does not ask itself the questions that we are posing will be inadequately prepared to deal not just with the problems but also with the opportunities that result from currency volatility.

In return for your Finance Director's help we will be sending your company a complimentary copy of the survey results. We will also enclose an invitation to attend a seminar here at London Business School to review these findings and discuss their implications both with our faculty and with leading practitioners. We hope therefore that we can count on your company's support in participating in our survey.

This research is being undertaken under the auspices of John Stopford, Professor of International Business at London Business School. The source of the data we gather will not be identified, ensuring the complete confidentiality of information you give us.

In grateful appreciation of your assistance,

Yours sincerely

David Edelshain

Questionnaire attached.

APPENDIX 2 LETTER TO TIMES 1000 CHIEF FINANCIAL OFFICERS TO  
INTRODUCE THE SURVEY AND REQUEST PARTICIPATION.

Dear

A SURVEY OF THE IMPACT OF CURRENCY VOLATILITY.

The conventional view seems to be that the Finance function is responsible for dealing with all issues raised by exchange rate volatility. So, it must be deeply disturbing when a leading accounting firm reports that currency volatility has recently accounted for more variability in corporate profit than any other factor. But, if the Finance function can reasonably be expected to deal with quantifiable currency exposures, is it as reasonable to expect it to deal with the longer term "economic" exposures?

Our preliminary research has revealed that many Finance Directors and Treasurers believe that this responsibility lies with many different corporate functions co-ordinated by the Chief Executive. But do Chief Executives appreciate that members of the Finance function, particularly Treasurers, often quite reasonably do not have a detailed operational familiarity with the commercial structure of their business necessary to deal with longer term currency exposures? The danger exists, therefore, that the finance function is expected to carry out alone a role often more appropriately tackled by the management team as a whole.

Many Finance Directors and Treasurers have told us that they would like to have a better impression of how others are experiencing and dealing with the same problem: hence our research covering all Times 1000 British corporations. We are therefore asking you to fill out the attached questionnaire, which can be completed within one hour. In return for your help we will send you a complimentary copy of the results and invite you to attend a seminar here to review and discuss these findings both with our faculty and with leading practitioners. We are also, as a courtesy, sending a copy of the questionnaire to your Chief Executive to underline the importance of the subject.

This research is being undertaken under the auspices of John Stopford, Professor of International Business at London Business School. The source of the data we gather will not be identified ensuring the complete confidentiality of information you give us.

Please return the completed questionnaire in the prepaid envelope provided by January 6th.

In grateful anticipation of your assistance,

Yours sincerely,

David Edelshain

Questionnaire attached.

APPENDIX 3 SURVEY QUESTIONNAIRE ADMINISTERED TO TIMES 1000 CORPORATIONS INCORPORATING THE VARIABLE KEY CODE.

A QUESTIONNAIRE TO ESTABLISH THE IMPACT OF CURRENCY VOLATILITY ON TIMES 1000 BRITISH CORPORATIONS AND THEIR RESPONSE TO THIS EXPOSURE.

Instructions on how to complete the Questionnaire.

This Questionnaire consists of four parts. The first asks you to provide us with certain information about your business, the second seeks to establish how currency matters impact upon it. In the third part we ask you to tell us how you deal with such matters and in the final part we seek your views on this subject.

Instructions on how to answer each of the questions are given in the body of the questionnaire.

Please treat all questions as referring to the business AS A WHOLE unless the question is specifically asking about subsidiaries, divisions or different market operations. Please answer by reference to your most recently reported accounting year.

In some cases you will be asked to identify the one answer, amongst a number of mutually exclusive possibilities, which correctly identifies the position in your business and you should tick the appropriate box alongside that answer. In some questions more than one specified answer will correctly identify the situation in your business and you will need to tick all the relevant boxes.

Occasionally, we ask you to specify your own answer because one appropriate to your business is not listed. Please do so along the dotted line provided.

Against some questions we list "don't know" as an answer. Although you might be able to answer a question if you had plenty of time to do so, unless you think you can obtain the answer in a few minutes, (perhaps by a judicious telephone call), please tick the "don't know" box. However if you do not know the answer, and "don't know" is not listed as an alternative, you should just leave the answer section blank. But please give your best estimate in answer to each question unless you believe it would be no better than a guess.

Should you wish help in completing part or all of the questionnaire, please complete and send the lower half of the last page of the questionnaire in the prepaid envelope provided. We will then contact you to make an appointment to visit you.

Finally, if you come up against an apparently insuperable difficulty and would like guidance, please ring David Edelshain at London Business School [071-262-5050].

PART 1 SOME DETAILS ABOUT YOUR OWN BUSINESS.

We start by asking you for some details of your own business. The next four questions concern PURCHASES made by your business.

1. What percentage of all the PURCHASES, (of material, manpower and machinery etc), made by your business are international, i.e. imported from one country into another? Please TICK one box only. [PRCHIMP1]

- Under 1%
- Between 1% and 9%
- Between 10% and 24%
- Between 25% and 49%
- Over 50%
- Don't Know

2. What percentage of these international purchases are intergroup transfers (purchases from other companies in your group) as distinct from purchases from third parties? TICK one only. [PCT1INT2]

- Under 1%
- Between 1% and 9%
- Between 10% and 24%
- Between 25% and 49%
- Over 50%
- Don't Know

3. What percentage of your purchases supplied from sources in the same country in which they are used, do you estimate to have been imported further back along the chain of supply? (i.e. What is the average percentage import content of locally sourced purchases?) TICK one only.

[SPCHAIN3]

- Under 1%
- Between 1% and 9%
- Between 10% and 24%
- Between 25% and 49%
- Over 50%
- Don't Know
- Impossible even to estimate

4. Is it true to say that in either a majority or a minority of your business activities you can negotiate the currency in which your business makes purchases from third parties located in other countries?

(Tick as many minority boxes as apply but only ONE majority box. If only one of the alternatives below is relevant please TICK both the majority and minority box corresponding to it.)

- |  | Majority   | Minority   |
|--|------------|------------|
| Yes, for all inputs                              | [SPMAJOR4] | [SPMINR14] |
| No, suppliers dictate use of domestic currency   |            | [SPMINR24] |
| No, currency of supply is dictated by tradition  |            | [SPMINR34] |
| Yes, for purchases imported into Britain only    |            | [SPMINR44] |
| Yes, for purchases imported into other countries |            | [SPMINR54] |
| We have not tried to negotiate on currency       |            | [SPMINR64] |
| Other response, please specify:                  |            | [SPMINR74] |

.....

The next five questions concern SALES made by your business.

5. What percentage of the SALES of your British subsidiaries are sales made in Britain? TICK one only.

[BRSLSBR5]

- Under 1%
- Between 1% and 9%
- Between 10% and 24%
- Between 25% and 49%
- Over 50%
- Don't Know

6. What percentage of your sales exported from Britain are invoiced in Sterling? TICK one only.

[BRXSTRL6]

- Under 10%
- Between 10% and 24%
- Between 25% and 49%
- Over 50%
- Don't Know

7. What percentage of your Worldwide sales, including intergroup sales, are exported from Britain and what percentage exported from any one country to another? Please TICK one box in each column.

Sales from Britain only	Intercountry sales
[WLSLXBR7]	[WINTSLS7]

- Under 1%
- Between 1% and 9%
- Between 10% and 24%
- Between 25% and 49%
- Over 50%
- Don't Know

8. What percentage of your Worldwide sales to third parties only i.e. sales outside your group, are exports from one country to another? TICK one only.

[WTPSLS8]

- Under 1%
- Between 1% and 9%
- Between 10% and 24%
- Between 25% and 49%
- Over 50%
- Don't Know

9. Of your Worldwide sales, excluding those to group companies, what percentage NOT exported from one country to another, do you estimate will be exported at a later stage by your clients/customers or by those further down the distribution chain? TICK one only.

[W8XLATR9]

- Under 1%
- Between 1% and 9%
- Between 10% and 24%
- Between 25% and 49%
- Over 50%
- Impossible to estimate

The next four questions concern the assets and liabilities and the revenues and expenses of your business.

10. What percentage of the long term debt of the business is denominated in currencies other than Sterling? TICK one only.

[DEBTFC10]

- Under 1%
- Between 1% and 9%
- Between 10% and 24%
- Between 25% and 49%
- Over 50%

11. What percentage of the fixed assets of the business are located outside Britain? TICK one only.

[ASETFC11]

- Under 1%
- Between 1% and 9%
- Between 10% and 24%
- Between 25% and 49%
- Over 50%

12. For what proportion of your foreign subsidiaries, whose balance sheets must be translated into Sterling, are OTHER than exchange rates ruling at the accounting date used to do so? TICK one only.

[BSTRNS12]

- All of them
- The majority of them
- The minority of them
- None of them
- There are no foreign subsidiaries

If you have no foreign subsidiaries go next to Question 14.

13. What exchange rates are used for translating the trading results of foreign subsidiaries into Sterling for reporting purposes? TICK more than one if appropriate.

[PRLXRT13]

- Closing exchange rates
- Average exchange rates
- Other rates, please specify:

.....

**PART 2 SOME QUESTIONS REGARDING THE WAY CURRENCY MATTERS IMPACT ON YOUR BUSINESS.**

14. Is it true to say that you can negotiate the currency in which you export to third parties located in other countries in either a majority or a minority of your business activities?

(TICK as many minority boxes as apply but only one majority box. If only one of the alternatives below is relevant, please TICK both the majority and minority boxes corresponding to it.)

Majority      Minority

No, tradition dictates currency of sale	[SLMJOR14]	[SLMNR114]
No, third parties dictate use of their currency		[SLMNR214]
Yes, but customers expect a quote in their currency		[SLMNR314]
Yes, but we dictate use of the domestic currency		[SLMNR414]
Yes, we normally quote in a currency that suits us		[SLMNR514]
It is too misleading to generalise		[SLMNR614]
Other, please specify:		[SLMNR714]

.....

15. How many different operations, (perhaps defined as strategic business units or business segments, which may report separately to the chief executive or general management) are there in your business? TICK one box only.

[SGMNTS15]

- Only 1
- Between 2 and 5
- Between 6 and 10
- In excess of 10

16. What proportion of those operations do you believe have been (in recent years), and/or are currently vulnerable to currency volatility?

(Consider a business vulnerable if currency volatility noticeably affects the profitability of your business or does so until the business takes action to deal with the situation.)

Please tick one item in each column.

	HAVE BEEN	ARE NOW
All of them	[WASVUL16]	[ISVUL16]
Most of them		
Half of them		
A minority of them		
None of them		

If you answered, "None of them" in BOTH the "Have Been" and "Are Now" columns go next to Question 18, but if in only ONE of them, answer only the appropriate part of Question 17. But please read Question 17 to confirm your total lack of vulnerability.

It is most important that you make every attempt to answer the next two questions 17 and 18. If necessary please seek help in doing so from colleagues etc. However, if you do so, please put a TICK in this box [ ]. [HELP1718]

17. CIRCLE any of the following factors you believe have affected in the PAST and/or still (PRESENTLY) affect the vulnerability of your companies to currency fluctuations:

Please rate the degree of your vulnerability against each factor by circling the 5 if you were or are highly vulnerable to that factor, the 1 if only slightly vulnerable, and the 4, 3, or 2 for intermediate degrees of vulnerability. If not vulnerable to that factor leave it blank.

	PAST	PRESENT
Failure of suppliers to tackle their own vulnerability	1 2 3 4 5 [AGOSUP17]	1 2 3 4 5 [NOWSUP17]
Price rise of imported purchases (priced in LOCAL currency) due to local devaluations	1 2 3 4 5 [AGOLCP17]	1 2 3 4 5 [NOWLCP17]
Price rise of imported purchases (priced in FOREIGN currency) due to local devaluations	1 2 3 4 5 [AGOFCP17]	1 2 3 4 5 [NOWFCP17]
Currency induced price change reducing customer demand	1 2 3 4 5 [AGODEM17]	1 2 3 4 5 [NOWDEM17]
Market share lost to a competitor with less currency exposure		
-as competitor does not have purchases in the same currencies	1 2 3 4 5 [AGOSHR17]	1 2 3 4 5 [NOWSHR17]
-as competitor does not have sales in the same mix of currencies	1 2 3 4 5 [AGOMIX17]	1 2 3 4 5 [NOWMIX17]
Loss of margin on sales (priced in foreign currency) after revaluation of own currency	1 2 3 4 5 [AGOMRG17]	1 2 3 4 5 [NOWMRG17]
Those further down chain of supply fail to deal with their vulnerability	1 2 3 4 5 [AGOCHN17]	1 2 3 4 5 [NOWCHN17]
The impact on the business of consolidating foreign currency assets and liabilities (translation exposure)	1 2 3 4 5 [AGOTSL17]	1 2 3 4 5 [NOWTSL17]
The impact on the business of having exposure to foreign currency receivables (debtors) and/or payables (creditors) (transaction exposure)	1 2 3 4 5 [AGOTSA17]	1 2 3 4 5 [NOWTSA17]
Precontractual exposure to foreign currency quotations	1 2 3 4 5 [AGOQUO17]	1 2 3 4 5 [NOWQUO17]
The existence of long-term contracts with preset price structures	[AGOCON17]	[NOWCON17]
Other, please specify and rate:	1 2 3 4 5	1 2 3 4 5
.....	[AGOTHR17]	[NOWTHR17]

18. CIRCLE any of the following you believe is a factor which has accounted for in the PAST, and/or still (PRESENTLY) accounts for a lack of vulnerability or, for a reduction in vulnerability, to YOUR companies and/or to an enhancement in their performance as a result of currency fluctuations:

Please CIRCLE the 5 against the factors which you believe to have been or to be the most advantageous in the above ways, a 1 if only marginally advantageous and a 4, 3 or 2 for intermediate degrees of such advantage. If a factor has not been or is not advantageous leave it blank.

	PAST	PRESENT
Action by your suppliers or those supplying them to reduce the impact of currency volatility on their customers	1 2 3 4 5 [AGOSUP18]	1 2 3 4 5 [NOWSUP18]
Price reductions of imported purchases (priced in LOCAL currency) due to local revaluations	1 2 3 4 5 [AGOLCP18]	1 2 3 4 5 [NOWLCP18]
Price reductions of imported purchases (priced in FOREIGN currency) due to local revaluations	1 2 3 4 5 [AGOFCP18]	1 2 3 4 5 [NOWFCP18]
Currency induced price change increasing customer demand	1 2 3 4 5 [AGODEM18]	1 2 3 4 5 [NOWDEM18]
Market share gained from competitor with more currency exposure		
-as competitor does not have purchases in the same currencies	[AGOSHR18]	[NOWSHR18]
-as competitor does not have sales in the same mix of currencies	1 2 3 4 5 [AGOMIX18]	1 2 3 4 5 [NOWMIX18]
Gain of margin on sales (priced in foreign currency) after devaluation of own currency	1 2 3 4 5 [AGOMRG18]	1 2 3 4 5 [NOWMRG18]
Those further down the chain of supply taking steps to deal with their vulnerability	1 2 3 4 5 [AGOCHN18]	1 2 3 4 5 [NOWCHN18]
The impact on the business of consolidating foreign currency assets and liabilities (translation exposure gains)	1 2 3 4 5 [AGOTSL18]	1 2 3 4 5 [NOWTSL18]
The impact on the business of having foreign currency receivables (debtors) and/or payables (creditors) (transaction exposure gains)	1 2 3 4 5 [AGOTSA18]	1 2 3 4 5 [NOWTSA18]
The existence of long-term contracts with adjustable price structures	[AGOCON18]	[NOWCON18]
Other, please specify and rate:	1 2 3 4 5	1 2 3 4 5
.....[AGOTH18]	[NOWTH18]	1 2 3 4 5

19. Where it is true to say that in a majority or a minority of the markets in which you operate the following apply, TICK the appropriate box, and if any one of the following applies to ALL the markets in which you operate please tick both its majority and minority boxes.

Majority Minority

There is significant competition from businesses operating from a foreign base	[SIGCMP19]
Your customer demand is price sensitive	[PRSNST19]
Your customers can multiple source	[MLTYBY19]
You have few alternative sources of supply	[FEWBY19]
You do not manufacture	[NOMAKE19]
Market regulation reduces the impact of exchange rate changes	[REGHIT19]
Currency regulations are seriously restrictive	[CUREST19]
There is little competition to the business	[NOCOMP19]
You cannot influence the level of prices	[NOIMFP19]
Market regulation hinders currency management	[REGMAN19]
Much business is negotiated for long time periods into the future	[LONGTP19]
Profit margins are low	[MARGLO19]
You have few foreign currency sources of supply (for material, labour or other inputs)	[FEWCBY19]
Allegations of dumping occur	[DUMPOC19]
There is industry co-operation on currency issues	[COOPFX19]
Tariffs/duties exceed 10% of landed cost	[TARIFF19]

20. Has your business been exposed to the impact of the failure of currency exchange rates to be adjusted for relative inflation? (This could occur, for example, when a developing country experiencing inflation chooses not to devalue, causing an exporter to suffer or importer to benefit.)

Please TICK one box only.

[NOADJ20]

Frequently  
Occasionally  
Never

21. Overall, how would you describe the vulnerability of your business to exchange rate relationships, before any steps you actually take to mitigate that vulnerability? TICK one only.

[ALLVUL21]

Very vulnerable  
Moderately vulnerable  
Slightly vulnerable  
Totally invulnerable  
Other, please specify.....

22. As far as concerns the prices for purchases and sales of your business, is it generally true that exchange rate changes compensate for differing inflation rates? TICK one only.

[FCCOMP22]

Yes, both for purchases and sales  
Yes, but for purchases only  
Yes, but for sales only  
No  
Don't Know

**PART 3 SOME QUESTIONS ON THE WAY YOUR BUSINESS DEALS WITH ITS CURRENCY MATTERS.**

Practices and views may vary among the different parts of your business. In the remainder of the questionnaire your answers should reflect majority practices or prevailing views.

23. Which of the following correctly describe the way responsibility for currency issues is delegated in your business? TICK more than one box, if appropriate.

Each operation/subsidiary is solely responsible for dealing with all currency related matters and does so independently.

[INDSUB23]

Each operation/subsidiary if it decides to incur the cost of dealing with its currency exposure must do so with or through its parent/group

[PARDEL23]

All operations/subsidiaries are responsible for providing relevant currency-related information to their parent/group. The latter is responsible for dealing with currency related matters

[INFPAR23]

Details of all currency exposures are given to the parent/group, which uses its discretion to decide whether or not it will hedge these with the market

[PRDISC23]

It is the responsibility of the parent/group only to identify and deal with all currency related matters

[PARESP23]

The Treasury department is a profit centre rewarded for the money it makes on its currency dealings

[TRSPRF23]

Operations/Subsidiary unit managers have currency related gains and/or losses included in their performance assessments

[CRNPRF23]

The parent/group does not involve itself with the currency related exposures of its foreign subsidiaries in the same ways as it does with those of its domestic subsidiaries

This is because:

[FORDIF23]

.....[EXPLAN23]

.....

24. Which of the following describes the way your business organisation is structured? TICK more than one if appropriate:

1. Regionally only [ORGREG24]

2. By product/Service group only [ORGPRD24]

3. Functionally only [ORGFNC24]

4. A combination of 1 and 2 above [ORG1A224]

5. A combination of 1 and 3 above [ORG1A324]

6. A combination of 2 and 3 above [ORG2A324]

7. A combination of 1 2 and 3 above [ORG12324]

8. There is a separate international division [ORGINT24]

9. Each company has an export department [ORGEXP24]

10. No special organisation for international business [ORGNOT24]

11. The business is in the course of restructuring [ORGRST24]

12. Some other structure, please specify:

.....[ORGOTH24]

25. Where in the business does overall responsibility for dealing with currency issues reside and which other departments are regularly and formally involved or consulted only as necessary? TICK one box in responsible column and all relevant boxes in the other two columns.

Responsible Involved Consulted

Chief Executive (CE) of Group	[GPCHF25]
CE of Operation (Op)/Subsidiary (Sub)	[SUBCHF25]
Directors of Group	[GPDIR25]
Directors of Ops/Subsidiaries	[SUBDIR25]
Group treasury department (dept)	[GPTRSR25]
Ops/Subsid treasury department	[SUBTRS25]
Group finance department	[GPFIN25]
Ops/Subsid finance department	[SUBFIN25]
Group corporate planning dept	[GRPCP25]
Group purchasing department	[GRPCH25]
Ops/subsid purchasing department	[SBPRCH25]
Group marketing/sales department	[GPMRKT25]
Ops/Subsid marketing/sales department	[SUBMRK25]
Ops/Subsid cost/price estimating dept	[SUBCST25]
Others, please specify:	
.....	[OTHR125]
.....	[OTHR225]
.....	[OTHR325]

26. Please examine all of the following statements. Please TICK ALL those which apply to your business today. The business:

uses currency forecasting services to help it manage its foreign exchange exposure [UZFORC26]

believes exchange rate movements cannot be accurately predicted [NOACFC26]

does not formally attempt to predict future exchange rates [NOPRED26]

uses current exchange rates to cost/value foreign currency priced purchases and sales in the budgets of British subsidiaries [CURXBD26]

uses an estimated (an expected, as opposed to the current) exchange rate in the budgets of its foreign subsidiaries [ESTXBD26]

uses a target exchange rate in budgeting for foreign units [TGTXBD26]

formally assesses potential currency movements when determining prices [FRMXPR26]

sets prices in the light of the most recently available cost information [RECSPR26]

formally examines the cost/pricing structures of competitors [XMCMPR26]

examines the impact of possible exchange rate changes on its competitive position [MXCMP26]

incorporates anticipated/estimated exchange rate changes in its investment appraisal procedures [INCINV26]

The business:

sets performance targets of foreign currency subsidiaries with reference to the local currency only [PRFLOC26]

remunerates the performance of the management as measured in the local currency, not that of the parent [REMLOC26]

mainly deals with currency matters informally [CURINF26]

incorporates an assessment of its future costs in relation to market potential in setting prices [FUTINP26]

Other, please specify:..... [OTHER26]

27. We are interested in your practices in recent years, please TICK ALL of the following which correctly describe what has been happening in YOUR business regarding currency-related matters :

Responsibility has been decentralised within the last five years [RESDEC27]

Responsibility has been centralised within the last five years [RESCEN27]

We are currently reviewing our currency-related policies [POLREV27]

We are in the process of giving more attention to such matters in our policies [MORPOL27]

We are in the process of giving more attention to such matters in our procedures [MORPRC27]

Other, please specify..... [OTHER27]

28. Please examine the following statements. Please TICK ALL those which can be said to be true of your business:

Our philosophy is to make money from whatever opportunities present themselves including currency movements [MAKMON28]

Our policy is that all quantifiable trading currency exposures are hedged [QNTHDG28]

We hedge our long-term asset exposures where possible [FXASHG28]

Our policy is to try to balance assets and liabilities, revenues and expenses in each currency to minimize net exposures [BALIAS28]

Our view is that dealing with currency exposure is of secondary importance to other objectives like those concerning which markets to be in and which technologies to employ [SUBOBJ28]

We have no formal objectives regarding currency exposure [NOBJFX28]

We treat our currency exposure as a constraint which may influence the objectives of the business

[FXCONST8]

Our philosophy with respect to currency is to be totally risk averse

[FXAVRS28]

Our pricing strategy is not affected by the weakening or strengthening of Sterling

[NLNKPR28]

Our business accepts that sometimes currency impacts will be favourable and sometimes unfavourable and we therefore do not act specifically to deal with the problem

[NODEAL28]

We do not regard currency matters as sufficiently significant for our business to take action to deal with them

[INSIGN28]

Our strategy is to try to smooth out the impact on our business of currency related influences

[SMOOTH28]

Our objective is to make profit from the sale of our products and services, and we do not consciously seek to profit from supporting or non-trading activities

[GDSPRF28]

Other, please specify:.....  
.....[OTHER28]

29. Please TICK whichever of the following your business employs or uses to provide expertise in dealing with currency matters:

Consultants specialising in currency issues	[MPCON29]
Management consultants	[MPMANC29]
Accountants	[MPACC29]
Clearing Bankers (other than simply for transactions)	[MPCLER29]
Merchant Bankers	[MPMRB29]
Academics	[MPACAD29]
Literature on the subject	[MPLIT29]
Courses/Seminars	[MPCORS29]
Your own staff formally qualified as treasurers	[MPSTAF29]
Your staff with business/finance/accounting qualification	[MPQUAL29]
A formal committee of managers	[MPCMTE29]
An informal committee of interested managers	[MPINF29]
Discussion with peers in other firms	[MPPEER29]
Others, please specify:.....	[MPOTHR29]

30. Please tick which of the following are significant influences on the way you and other staff deal with currency related issues:

Expertise gained by previous experience	[INFLRN30]
Lessons learnt from past losses	[INFLOS30]
The past occurrence of windfalls	[INFGAN30]
Formal training in dealing with currency matters	[INFTRN30]
Other formal training	[INFTRN30]
Guidance from the Treasury department	[INFTRS30]
Use of outside experts	[INFEXP30]
Others, please specify:.....	[OTHER130]
.....	[OTHER230]

For the next question the variable code for highly effective methods has a Z prefixed and any letter omitted is specified.

31. Please consider EACH of the following instruments and/or techniques used for the purpose of managing currency issues and put a TICK in the Not Now Used Column, against each one you have used in the past but no longer use, and a TICK against each one you now use in your business in the Use column. Please also TICK those you regard as HIGHLY effective in the Effective column. Leave blank for those instruments/techniques you have never used:

	NOT NOW USED	USE	EFFECTIVE
Spot market contracts		[SPTCON31]	(N)
Forward market contracts		[FORCON31]	(N)
Futures contracts		[FUTCON31]	(N)
Option contracts		[OPTCON31]	(N)
Swaps		[SWAPS31]	
Collars		[COLLAR31]	(R)
Parallel loans		[PARLEL31]	(E)
Hedging a proportion of the risk		[PRPHDG31]	(D)
Insurance (Inconvertibility/export)		[INSUR31]	
Seeking/obtaining government help		[GOVHLP31]	(O)
Switching to using a different currency		[SWCHCR31]	(R)
Using re-invoicing centres		[REINVC31]	(C)
Using indexation in contracts		[INDXCN31]	(N)
Using reference to a stable currency		[BASCUR31]	(U)
Using reference to a basket of currencies		[BASKET31]	(E)
Changing the price to reflect exposure		[CNGPRC31]	(N)
Using international group transfer pricing		[TNSPRC31]	(S)
Leading and lagging payments/receipts		[LEDLAG31]	(A)
Delaying/speeding up sales/purchases		[SLPRTM31]	(M)
Timing of dividend remittances		[DIVRMT31]	(T)
Use of royalty schemes		[ROYLTY31]	(O)
Selecting assets in low correlation currencies		[LOCORL31]	(2ndO)
Using a centralised treasury		[CNTTRS31]	(S)
Using bank clearing intergroup flows systems		[INTGRP31]	(R)
Netting		[NETING31]	(I)
Matching assets/income with liabilities/expense			
in same currencies		[MATCHS31]	(S)
In different currencies:			
matching expenses with capital liabilities		[MCHXCL31]	(2ndC)
matching revenues with capital assets.		[MCHYCA31]	(2ndC)
Obtaining local currency denominated debt		[LCLDET31]	(E)
Selective subcontracting		[SUBCNT31]	(U)
Selective overseas plant location		[SELOCN31]	(O)
Matching competitor sources		[SAMSRC31]	(R)
Matching competitor markets		[SAMRKT31]	(R)
Moving to weak/weakening currency input sources		[WKINPT31]	(T)
Moving from strong/strengthening input sources		[STRNPT31]	(T)
Moving to strong/strengthening currency markets		[STRMKT31]	(T)
Moving from weak/weakening currency markets		[NWKMKT31]	(T)
Product differentiation programmes * (see below)		[PRDIFF31]	(F)
Changing level/emphasis of promotional activity*		[PROMCH31]	(O)
Productivity improvement programmes *		[PRODUP31]	(O)
Acquisitions and/or disposals of businesses *		[AQDISP31]	(I)
Use of Joint Ventures *		[JTVNT31]	
Use of Fiscal (tax) schemes		[FISCAL31]	(I)
Using currency sensitivity analysis in planning		[SENSIT31]	(E)
Asking others in supply chain to reduce exposure		[THEREX31]	(1stE)
Others, please specify.....		[OTHR31]	
.....		[OTHRB31]	

\* where primary policy reason was to deal with currency exposure.

PART 4 SOME QUESTIONS SEEKING YOUR VIEWS AND THOSE OF YOUR BUSINESS ABOUT CURRENCY MATTERS.

32. Please examine each of the following statements and TICK those you believe to be true or correct:

Business, in general, is successful in dealing with problems generated by currency related matters

[BUSSUC32]

Currency volatility ranks among the more difficult problems of doing international business

[VOLDIF32]

Our business is more successful than most in dealing with problems generated by currency related matters

[WESUCC32]

It is only since becoming a multinational that we have got to grips with our currency related issues

[OKMULT32]

Our business is less successful than most in dealing with problems generated by currency related matters

[WEFAIL32]

Business, in general, has given and still gives insufficient attention to currency issues

[BUSIGN32]

Our business has given and still gives insufficient attention to currency issues

[WEIGNR32]

Few managers receive any training in or insight into currency issues early in their business careers

[PREPOR32]

Exposure to currency volatility over the years has given us the experience to deal with currency related issues

[VOLEXP32]

There are no complete solutions to the majority of currency generated problems

[NOSOLN32]

In our business market restrictions or regulations obviate the need to concern us with currency issues

[REGOBV32]

We do not believe that the benefits of obtaining advice from experts on currency matters would outweigh the expense

[NORTH32]

The benefits of centralizing foreign exchange management do not outweigh the information processing costs required to do so

[INFCNT32]

It is very difficult to tell in our business whether changes are due to exchange rates or other market factors

[EQFRCE32]

Currency issues are a finance matter and should be left to the finance people

[FINISU32]

Our business needed to get to a critical size before we were satisfactorily able to deal with currency issues

[SATSIZ32]

The more international our business has become the more experienced we have become in dealing with currency issues

[INTEXP32]

The way we deal with currency issues has altered dramatically since we began to employ outside experts to assist us  
[EXPRTS32]

Banks and other experts have done little to help us deal with the longer term impact on our business of currency volatility  
[PORBNK32]

33. Will Britain's entry into the ERM (Exchange Rate Mechanism) in your view affect the way currency related matters impact on your business and will it affect the way the business deals with its exposure? Please TICK one box in each column.

Impact of currency matters on the business [ERMIMP33]	Influence way of dealing with currency matters [ERMNFL33]
--	--

- Very substantially
- Quite substantially
- Moderately
- Not very much
- Not at all

34. The space below (and overleaf if necessary) is for your comments and any additional information you would like to add:  
[COMENT34]

-----  
Please enter your name here:.....[NAME35]

Please enter your job title here:.....[JOB35]

Please enter your company name here:.....

Please enter your telephone number here:.....  
(Only to be used if we need to clarify something important.)

Please note that no information elicited in this questionnaire will be published or otherwise communicated in such a way that it will enable any respondent company to be identified.

You have now completed the questionnaire. Please return it in the prepaid envelope provided as soon as possible. Thank you.

If you have any queries or are having difficulty in answering any of the above questions, please contact David Edelshain at London Business School on 071-262-5050 who will be happy to discuss any points with you. He is also prepared to assist in any way he can to make the completion of this questionnaire as convenient an exercise as possible.

Please attach any material to your completed questionnaire, if it helps to illustrate your response.

Use the additional space below for your comments:

Additional information was added by the researcher and coded as follows:

Turnover (Sales Revenue in £m millions) [TURNVR36]  
Profitability (Return on Capital Employed in last completed  
accounting year [PROFIT37]  
Losses to < 15%ROCE 15%-<30%ROCE ROCE 30%+ [PROFIT40]  
Turnover £1 billion+ / £200m < £1 billion / < £200m [SIZE41]  
A five point invulnerability measure using direct and indirect  
exports, direct and indirect imports of under 10% and foreign  
competition in markets or otherwise [INVUL99]

APPENDIX 4 RAW RESULTS OF SURVEY QUESTIONNAIRE WITH COMMENTARY  
SENT TO SURVEY PARTICIPANTS.

A SURVEY TO ESTABLISH THE IMPACT OF CURRENCY  
VOLATILITY ON TIMES 1000 BRITISH CORPORATIONS  
AND THEIR RESPONSE TO THIS EXPOSURE.

**Background to the Survey.**

Following detailed interviews with executives in fifteen different companies a questionnaire was constructed, designed to reveal the nature of the impact of currency volatility on British corporations and to record how these same businesses dealt with that exposure. Whilst a number of surveys of corporate foreign exchange risk management have been carried out this is the first large scale survey with pretensions to be representative of its sample population.

Altogether just over 600 corporations were invited to participate. Usable questionnaires were received from 116 companies. A further 69 corporations replied that they were unable for a variety of reasons to take part. 27 of these believed they were totally unaffected by currency volatility, 13 had a policy of not responding to questionnaires, a further 11 advised that they are unable to cope with the number of requests they have to fill out questionnaires. Only 4 corporations felt unable to complete the questionnaire mostly on the grounds that their exposure and/or exposure management was too complex to allow them to respond or that to do so would seriously mislead. One of these was later persuaded to complete the questionnaire, the others it was agreed had substantially different ways of dealing with different exposures and their inclusion in the survey could indeed be misleading.

**Survey Findings**

It is significant that respondents were able, almost unanimously, to identify with the taxonomy of the different forms of exposure generating vulnerability or advantage for business as it was set out in Questionnaire questions 17 and 18. Essentially, the only respondent specified advantage and vulnerability was that which sought to draw a distinction between balance sheet translation exposure and such exposure in the trading account. Taxation was also seen as amplifying exposure. That said, most acute vulnerability was believed to result from the loss of margin on foreign currency priced sales following domestic currency revaluation and the most advantage in margin gains following devaluation of the domestic currency. Transaction exposure was regarded as the most pervasive in giving advantage as well as in causing vulnerability. Only 19% of respondents identified no vulnerability to this form of exposure. Translation exposure although almost as pervasive was not seen as particularly important, though as already noted, impact on the trading account was specified by a small number of companies as highly significant. CONTINUED HALFWAY DOWN PENULTIMATE PAGE  
The responses to the Survey begin overleaf.

**PART 1 SOME DETAILS ABOUT YOUR OWN BUSINESS.**

The first four questions concern PURCHASES made by the business.

1. What percentage of all the PURCHASES, (of material, manpower and machinery etc), made by your business, are imported from one country into another? Percentage Responding.

Under 1%	15
Between 1% and 9%	28
Between 10% and 24%	25
Between 25% and 49%	11
Over 50%	12
Don't Know	9

2. What percentage of these international purchases are intergroup transfers (purchases from other companies in your group)? Percentage Responding

Under 1%	60
Between 1% and 9%	21
Between 10% and 24%	4
Between 25% and 49%	1
Over 50%	7
Don't Know	7

3. What percentage of your purchases supplied from sources in the same country in which they are used, do you estimate to have been imported further back along the chain of supply? (i.e. What is the average percentage import content of locally sourced purchases? Percentage Responding

Under 1%	21
Between 1% and 9%	18
Between 10% and 24%	12
Between 25% and 49%	8
Over 50%	6
Don't Know/Impossible to say	35

4. Is it true to say that in a majority or a minority of your business activities you can negotiate the currency in which your business makes purchases from third parties (i.e. not from elsewhere in your group) located in other countries?

(More than one minority box may be ticked but only ONE majority box

	Percentage Responding	
	Majority	Minority
Yes, for all inputs	16	26
No, suppliers dictate use of domestic currency	31	27
No, currency of supply is dictated by tradition	21	17
Yes, for purchases imported into Britain only	11	22
Yes, for purchases imported into other countries	4	15
We have not tried to negotiate on currency	3	10
Other response specified	12	35
No response specified	2	2

The next five questions concern SALES made by the business.

5. What percentage of the SALES of your British subsidiaries are sales made in Britain? Percentage Responding

Under 1%	0
Between 1% and 9%	6
Between 10% and 24%	4
Between 25% and 49%	11
Over 50%	74
Don't Know	5

6. What percentage of your sales exported from Britain are invoiced in Sterling? Percentage Responding

Under 10%	38
Between 10% and 24%	7
Between 25% and 49%	9
Over 50%	37
Don't Know	9

7. What percentage of your Worldwide sales, including intergroup sales, are exported from Britain and what percentage exported from any one country to another? Percentage Responding

Sales from Britain only    Inter-country sales

Under 1%	30	34
Between 1% and 9%	30	20
Between 10% and 24%	15	10
Between 25% and 49%	10	5
Over 50%	8	8
Don't know	7	23

8. What percentage of your Worldwide sales to third parties only i.e. sales outside the group, are exports from one country to another? Percentage Responding

Under 1%	35
Between 1% and 9%	23
Between 10% and 24%	10
Between 25% and 49%	12
Over 50%	10
Don't Know	10

9. Of your Worldwide sales, excluding those to group companies, what percentage NOT exported from one country to another, do you estimate will be exported at a later stage by your clients/customers or by those further down the distribution chain?

Percentage Responding

Under 1%	54
Between 1% and 9%	13
Between 10% and 24%	4
Between 25% and 49%	2
Over 50%	4
Impossible to estimate	23

The next four questions concern the assets and liabilities and the revenues and expenses of the business.

10. What percentage of the long term debt of the business is denominated in currencies other than Sterling?

	Percentage Responding
Under 1%	34
Between 1% and 9%	10
Between 10% and 24%	11
Between 25% and 49%	10
Over 50%	34
Don't know	1

11. What percentage of the fixed assets of the business are located outside Britain?

	Percentage Responding
Under 1%	25
Between 1% and 9%	21
Between 10% and 24%	15
Between 25% and 49%	19
Over 50%	18
Don't know	2

12. What proportion of your foreign subsidiaries, whose balance sheets must be translated into Sterling, use other than current exchange rates to do so?

	Percentage Responding
All of them	4
The majority of them	2
The minority of them	4
None of them	69
There are no foreign subsidiaries	20
Don't know	1

13. What method is used for translating the trading results of foreign subsidiaries into Sterling for reporting purposes?

	Percentage Responding
Closing exchange rate	27
Average exchange rate	53
Not applicable, no foreign subsidiaries	20

**PART 2 SOME QUESTIONS REGARDING THE WAY CURRENCY MATTERS IMPACT ON YOUR BUSINESS.**

14. Is it true to say that you can negotiate the currency in which you export to third parties located in other countries, in a majority/minority of your business activities? (More than one minority box may be ticked but only one majority box.)

	Percentage Responding	
	Majority	Minority
No, tradition dictates currency of sale	16	18
No, third parties dictate use of their currency	10	17
Yes, but customers expect a quote in their currency	17	20
Yes, but we dictate use of the domestic currency	10	12
Yes, we normally quote in a currency that suits us	21	17
It is too misleading to generalise	11	28
Other specified responses	15	27

15. How many different operations, (perhaps defined as strategic business units, which may report separately to the chief executive or general management), are there in your business?

	Percentage Responding
Not specified	1
Only 1	8
Between 2 and 5	35
Between 6 and 10	19
In excess of 10	37

16. What proportion of those operations do you believe have been (in recent years), and/or are currently vulnerable to currency volatility?

(consider a business vulnerable if currency volatility noticeably affects the profitability of your business or does so until the business takes action to deal with the situation.)

	Percentage Responding	
	HAVE BEEN	ARE NOW
All of them	18	16
Most of them	24	24
Half of them	9	8
A minority of them	34	40
None of them	14	11
Unable to say	1	1

No respondent indicated that he or she had consulted colleagues in order to answer either Question 17 or 18.

Question 17 asks you to CIRCLE any of the following factors you believe has affected in the PAST and/or still (PRESENTLY) affects the vulnerability of your companies to currency fluctuations. Question 18 asks you to CIRCLE any of the items you believe is a factor which has accounted for in the PAST, and/or still (PRESENTLY) accounts for a lack of vulnerability or, for a reduction in vulnerability, to YOUR companies and/or to an enhancement in their performance as a result of currency fluctuations.

17. A 5 denotes highly vulnerable to that factor, a 1 indicates only slight vulnerability, 4, 3, or 2 denote intermediate degrees of vulnerability. A 0 denotes no vulnerability, 8 is for not stated, 9 for don't know.

	Percentage Responding															
	PAST							PRESENT								
	0	1	2	3	4	5	8	9	0	1	2	3	4	5	8	9
Failure of suppliers to tackle their own vulnerability	38	34	10	7	4	1	3	3	37	35	12	7	3	1	3	2
Price rise of imported purchases (priced in LOCAL currency) due to local devaluations	26	34	9	17	6	2	3	3	27	37	8	18	4	2	3	1
Price rise of imported purchases (priced in FOREIGN currency) due to local devaluations	30	23	9	15	13	4	3	3	28	24	9	22	8	4	3	2
Currency induced price change reducing customer demand	28	17	16	17	9	7	3	3	26	21	16	17	9	7	2	2
Market share lost to a competitor with less currency exposure -as competitor does not have purchases in the same currencies	34	32	15	9	4	0	3	3	34	34	14	10	4	0	2	2
-as competitor does not have sales in the same mix of currencies	40	35	10	4	4	1	3	3	40	37	8	3	6	1	3	2
Loss of margin on sales (priced in foreign currency) after revaluation of own currency	33	17	10	12	15	7	3	3	34	18	6	13	15	9	3	2
Those further down chain of supply fail to deal with their vulnerability	40	34	9	5	5	1	3	3	41	33	11	5	4	1	3	2
The impact on the business of consolidating foreign currency assets and liabilities (translation exposure)	25	26	15	14	5	9	3	3	23	29	18	16	4	5	3	2
The impact on the business of having exposure to foreign currency receivables (debtors) and/or payables (creditors) (transaction exposure)	22	19	15	16	12	10	3	3	19	22	15	21	8	11	2	2
Precontractual exposure to foreign currency quotations	29	26	11	13	10	5	3	3	28	26	12	17	9	4	2	2
The existence of long-term contracts with preset price structures	36	36	8	8	6	0	3	3	34	38	7	9	6	1	3	2
Others specified and rated	93	0	0	0	0	2	3	2	93	0	0	0	1	2	2	2

18. A 5 denotes a highly advantageous factor, a 1 indicates only slight advantage. 4, 3 or 2 denote intermediate degrees of advantage. A 0 denotes no advantage found, 8 is for not stated, 9 don't know.

	Percentage Responding															
	PAST					PRESENT										
	0	1	2	3	4	5	8	9	0	1	2	3	4	5	8	9
Action by suppliers or those supplying them to reduce the impact of currency volatility on their customers	39	31	10	11	3	1	2	3	39	30	12	10	4	1	2	2
Price reductions of imported purchases (priced in LOCAL currency) due to local revaluations	35	34	6	18	2	0	2	3	36	33	7	17	3	0	2	2
Price reductions of imported purchases (priced in FOREIGN currency) due to local revaluations	35	28	9	17	4	2	2	3	36	28	8	17	4	2	2	3
Currency induced price change increasing customer demand	35	25	16	14	3	2	2	3	35	26	17	14	3	1	2	2
Market share gained from competitor with more currency exposure -as competitor does not have purchases in the same currencies	44	30	9	9	3	1	1	3	43	33	8	8	3	1	2	2
-as competitor does not have sales in the same mix of currencies	42	33	8	8	3	1	2	3	42	34	9	7	3	1	2	2
Gain of margin on sales (priced in foreign currency) after devaluation of own currency	37	24	10	8	11	5	2	3	36	25	11	10	9	5	2	2
Those further down the chain of supply taking steps to deal with their vulnerability	44	35	9	5	2	0	3	2	45	35	8	5	3	0	2	2
The impact on the business of consolidating foreign currency assets and liabilities (translation exposure gains)	33	28	13	13	7	1	2	3	34	31	16	11	3	1	2	2
The impact on the business of having foreign currency receivables (debtors) and/or payables (creditors) (transaction exposure gains)	30	28	15	15	6	1	2	3	31	30	14	15	5	1	2	2
The existence of long-term contracts with adjustable price structures	40	35	4	10	4	2	2	3	40	35	7	9	3	2	2	2
Others specified and rated	94	0	1	0	1	0	2	2	95	0	0	0	1	0	2	2

19. Where it is true to say that in a majority or a minority of the markets in which you operate the following apply, TICK the appropriate box, and if any one of the following applies to ALL the markets in which you operate please tick both its majority and minority boxes.

	Percentage Responding			
	No markets	Minor	Major	All
	-ity	-ity	-ity	-ity
there is significant competition from				
businesses operating from a foreign base	20	43	24	13
your customer demand is price sensitive	12	22	51	15
your customers can multiple source	17	14	53	16
you have few alternative sources of supply	32	38	24	6
you do not manufacture	37	20	33	10
market regulation reduces the impact				
of exchange rate changes	50	40	10	0
currency regulations seriously restrictive	49	47	4	0
there is little competition to the business	53	41	6	0
you cannot influence the level of prices	31	34	30	5
market regulation hinders FX management	56	40	4	0
much business is negotiated for long time				
periods into the future	40	43	15	2
profit margins are low	29	36	27	8
Have few foreign currency sources of supply				
(for material, labour or other inputs)	40	28	25	7
allegations of dumping occur	60	36	3	1
Industry co-operation on currency issues	67	32	1	0
Tariffs/duties exceed 10% of landed cost	57	32	9	2

20. Has your business been exposed to the impact of the failure of currency exchange rates to be adjusted for relative inflation? (This could occur, for example, when a developing country experiencing inflation chooses not to devalue, causing an exporter to suffer or importer to benefit.) Percentage Responding

Frequently	3
Occasionally	43
Never	51
Not stated	3

21. Overall, how would you describe the vulnerability of your business to exchange rate relationships, before any steps you actually take to mitigate that vulnerability?

	Percentage Responding
Very vulnerable	16
Moderately vulnerable	41
Slightly vulnerable	37
Totally invulnerable	3
Other response specified	3

22. As far as concerns the prices for purchases and sales of your business is it generally true that exchange rate changes compensate for differing inflation rates?

	Percentage Responding
Yes, both for purchases and sales	22
Yes, but for purchases only	7
Yes, but for sales only	4
No	31
Don't Know	36

**PART 3 SOME QUESTIONS ON THE WAY YOUR BUSINESS DEALS WITH ITS CURRENCY MATTERS.**

23. Which of the following correctly describe the way responsibility for currency issues is vested in you business? More than one item can be ticked.

Percentage responding positively.

Each operation/subsidiary is solely responsible for dealing with all currency related matters and does so independently. 26%

Each operation/subsidiary if it decides to incur the cost of dealing with its currency exposure must do so with or through its parent/group 25%

All operations/subsidiaries are responsible for providing relevant currency-related information to their parent/group. The latter is responsible for dealing with currency related matters 39%

Details of all currency exposures are given to the parent/group, which uses its discretion to decide whether or not it will hedge these with the market 43%

It is the responsibility of the parent/group only to identify and deal with all currency related matters 21%

The Treasury department is a profit centre rewarded for the money it makes on its currency dealings 9%

Operations/Subsidiary unit managers have currency related gains and/or losses included in the calculation of performance related payments 22%

The parent/group does not involve itself with the currency related exposures of its foreign subsidiaries in the same ways as it does with those of its domestic subsidiaries 13%

24. Which of the following well describes the way your business organisation is structured? More than one item can be chosen by respondents. Percentage Responding

1. Regionally only	8
2. By product/Service group only	33
3. Functionally only	6
4. A combination of 1 and 2 above	26
5. A combination of 1 and 3 above	5
6. A combination of 2 and 3 above	7
7. A combination of 1 2 and 3 above	9
8. There is a separate international division	14
9. Each company has an export department	9
10. No special organ'n for international business	12
11. The business is in the course of restructuring	3
12. Other structures respondent specified	4

25. Where in the business does overall responsibility for dealing with currency issues reside and which other departments are regularly and formally involved or consulted only as necessary? More than one individual or department can share responsibility in some organizations.

	Percentage Responding		
	Responsible	Involved	Consulted
Chief Executive (CE) of Group	6	21	22
CE of Operation (Op)/Subsidiary (Sub)	7	15	13
Directors of Group	16	22	14
Directors of Ops/Subsidiaries	10	25	8
Group treasury department (dept)	43	14	3
Ops/Subsid treasury department	2	14	1
Group finance department	29	24	5
Ops/Subsid finance department	11	28	6
Group corporate planning dept	1	3	3
Group purchasing department	1	12	3
Ops/subsid purchasing department	1	13	5
Group marketing/sales department	0	10	6
Ops/Subsid marketing/sales department	1	14	2
Ops/Subsid cost/price estimating dept	0	10	3
Others departments respondent specified	3	3	0

26. Please examine all of the following statements. Please TICK ALL those which apply to your business today.

The business:	Percentage Responding Affirmatively
uses currency forecasting services to help it manage its foreign exchange exposure	34%
believes exchange rate movements cannot be accurately predicted	64%
does not formally attempt to predict future exchange rates	60%
uses current exchange rates to cost/value foreign currency priced purchases and sales in the budgets of British subsidiaries	30%
uses an estimated (an expected, as opposed to the current) exchange rate in the budgets of its foreign subsidiaries	49%
uses a target exchange rate in budgeting for foreign units	10%
formally assesses potential currency movements when determining prices	26%
sets prices in the light of the most recently available cost information	43%
formally examines the cost/pricing structures of competitors	35%
examines the impact of possible exchange rate changes on its competitive position	46%
incorporates anticipated/estimated exchange rate changes in its investment appraisal procedures	36%

The business:

sets performance targets of foreign currency subsidiaries with reference to the local currency only	57%
remunerates the performance of the management as measured in the local currency, not that of the parent	57%
mainly deals with currency matters informally	32%
incorporates an assessment of its future costs in relation to market potential in setting prices	11%
Other respondent specified applicable statements	4%

27. We are interested in your practices in recent years, please TICK ALL of the following which correctly describe what has been happening in YOUR business regarding currency-related matters

Percentage Responding Affirmatively

Responsibility has been decentralised within the last five years	12%
Responsibility has been centralised within the last five years	44%
We are currently reviewing our currency-related policies	15%
We are in the process of giving more attention to such matters in our policies	28%
We are in the process of giving more attention to such matters in our procedures	30%
Respondents specifying other matters	15%

28. Please examine the following statements. Please TICK ALL those which can be said to be true of your business

Percentage Responding Affirmatively

Our philosophy is to make money from whatever opportunities present themselves including currency movements	26%
Our policy is that all quantifiable trading currency exposures are hedged	53%
We hedge our long-term asset exposures where possible	39%
Our policy is to try to balance assets and liabilities, revenues and expenses in each currency to minimize net exposures	55%
Our view is that dealing with currency exposure is of secondary importance to other objectives like those concerning which markets to be in and which technologies to employ	45%
We have no formal objectives regarding currency exposure	15%

We treat our currency exposure as a constraint which may influence the objectives of the business 11%

Our philosophy with respect to currency is to be totally risk averse 29%

Our pricing strategy is not affected by the weakening or strengthening of Sterling 20%

Our business accepts that sometimes currency impacts will be favourable and sometimes unfavourable and we therefore do not act specifically to deal with the problem 11%

We do not regard currency matters as sufficiently significant for our business to take action to deal with them 11%

Our strategy is to try to smooth out the impact on our business of currency related influences 40%

Our objective is to make profit from the sale of our products and services, and we do not consciously seek to profit from supporting or non-trading activities 47%

Statements on strategy made by respondents 4%

29. Please TICK whichever of the following your business employs or uses to provide expertise in dealing with currency matters:

Percentage Responding

Consultants specialising in currency issues	10
Management consultants	3
Accountants	7
Clearing Bankers (other than simply for transactions)	45
Merchant Bankers	25
Academics	4
Literature on the subject	52
Courses/Seminars	36
Your own staff formally qualified as treasurers	48
Your staff with business/finance/accounting qualification	65
A formal committee of managers	10
An informal committee of interested managers	15
Discussion with peers in other firms	14
Others, specified by respondents	4

30. Please tick which of the following are significant influences on the way you and other staff deal with currency related issues:

Percentage Responding

Expertise gained by previous experience	91
Lessons learnt from past losses	34
The past occurrence of windfalls	20
Formal training in dealing with currency matters	41
Other formal training	18
Guidance from the Treasury department	49
Use of outside experts	21
Others respondent specified	2

31. Please consider EACH of the following instruments and/or techniques used for the purpose of managing currency issues and put a TICK in the Not Now Used Column, (Column 1) against each one you have used in the past but no longer use, a TICK against each one you now use in your business in the Use column, (Column 2), and a TICK against those you regard as HIGHLY effective in the Effective column, (Column 3). Leave blank for those instruments and/or techniques you have never used:

	Percentage	Responding	
Spot market contracts	2	74	44
Forward market contracts	3	78	67
Futures contracts	3	15	12
Option contracts	4	51	35
Swaps	1	40	29
Collars	3	14	8
Parallel loans	6	17	9
Hedging a proportion of the risk	3	46	30
Insurance (Inconvertibility/export)	3	17	7
Seeking/obtaining government help	4	10	3
Switching to using a different currency	1	34	13
Using re-invoicing centres	1	5	4
Using indexation in contracts	1	21	11
Using reference to a stable currency	2	16	10
Using reference to a basket of currencies	0	12	5
Changing the price to reflect exposure	0	23	9
Using international group transfer pricing	1	10	4
Leading and lagging payments/receipts	2	20	6
Delaying/speeding up sales/purchases	2	14	3
Timing of dividend remittances	0	26	8
Use of royalty schemes	1	10	3
Selecting assets in low correlation currencies	0	6	2
Using a centralised treasury	0	53	42
Using bank clearing intergroup flows systems	0	15	9
Netting	1	31	19
Matching assets/income with liabilities/expense in same currencies	0	61	41
In different currencies:			
matching expenses with capital liabilities	0	8	6
matching revenues with capital assets.	0	8	6
Obtaining local currency denominated debt	0	60	43
Selective subcontracting	0	14	7
Selective overseas plant location	0	12	4
Matching competitor sources	0	8	2
Matching competitor markets	0	5	2
Moving to weak/weakening currency input sources	0	7	3
Moving from strong/strengthening " "	0	4	3
Moving to strong/strengthening currency markets	0	4	2
Moving from weak/weakening " "	0	4	3
Product differentiation programmes * (see below)	0	1	1
Changing level/emphasis of promotional activity*	0	3	3
Productivity improvement programmes *	0	5	3
Acquisitions and/or disposals of businesses *	0	7	4
Use of Joint Ventures *	0	9	4
Use of Fiscal (tax) schemes	1	19	12
Using currency sensitivity analysis in planning	0	22	5
Asking others in supply chain to reduce exposure	0	9	3
Others, respondent specified	1	1	0

\*where primary policy reason was to deal with currency exposure.

**PART 4 SOME QUESTIONS SEEKING YOUR VIEWS AND THOSE OF YOUR BUSINESS ABOUT CURRENCY MATTERS.**

32. Please examine each of the following statements and TICK those you believe to be true or correct:

Percentage Responding Affirmatively

Business, in general, is successful in dealing with problems generated by currency related matters 32%

Currency volatility ranks among the more difficult problems of doing international business 64%

Our business is more successful than most in dealing with problems generated by currency related matters 30%

It is only since becoming a multinational that we have got to grips with our currency related issues 14%

Our business is less successful than most in dealing with problems generated by currency related matters 3%

Business, in general, has given and still gives insufficient attention to currency issues 35%

Our business has given and still gives insufficient attention to currency issues 13%

Few managers receive any training in or insight into currency issues early in their business careers 67%

Exposure to currency volatility over the years has given us the experience to deal with currency related issues 50%

There are no complete solutions to the majority of currency generated problems 66%

In our business market restrictions or regulations obviate the need to concern us with currency issues 4%

We do not believe that the benefits of obtaining advice from experts on currency matters would outweigh the expense 38%

The benefits of centralizing foreign exchange management do not outweigh the information processing costs required to do so 11%

It is very difficult to tell in our business whether changes are due to exchange rates or other market factors 17%

Currency issues are a finance matter and should be left to the finance people 10%

Our business needed to get to a critical size before we were satisfactorily able to deal with currency issues 14%

The more international our business has become the more experienced we have become in dealing with currency issues 56%

The way we deal with currency issues has altered dramatically since we began to employ outside experts to assist us 3%

Banks and other experts have done little to help us deal with the longer term impact on our business of currency volatility 38%

33. Will Britain's entry into the ERM (Exchange Rate Mechanism) in your view affect the way currency related matters impact on your business and will it affect the way the business deals with its exposure? Percentage Responding

	Impact of currency matters on the business	Influence way of dealing with currency matters
Very substantially	3	4
Quite substantially	25	17
Moderately	34	30
Not very much	28	33
Not at all	7	12
Unable to say	1	1
Don't know	2	3

34. 34% of respondents made additional comments.

The Job title of those responding to the questionnaire was as follows Percentage Respondents

Treasurer	40
Finance Director	37
Financial Controller	5
Company Secretary/FX Manager	5
Managing Director/Director	4
Chairman	3
Accountant	2
Project Leader	2
Not stated	2

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COMMENTS CONTINUED FROM PAGE 1

Apart from a reduction over time in the impact of translation exposure, little change in the extent to which the different factors have caused vulnerability or advantage were recorded. It was interesting that the level of vulnerability identified was perceptibly greater than the degree of perceived advantage. Nevertheless, the overall reported vulnerability was lower than expected, given the reported direct and indirect levels of both foreign purchases and sales and of foreign competition. There may therefore be some underestimation of indirect vulnerability.

The way respondents deal with their exposure is principally summarised in the response to question 31. Amongst the most universally employed financial instruments are forward market contracts, used by 78% of companies and rated highly effective by 67%, spot market contracts, (74% and 44% respectively), and option contracts, (51% and 35%). 46% of companies hedged a proportion of risks; two thirds finding this strategy highly effective.

An interesting survey finding is the extent of the structural hedging of currency exposure. 61% of respondents reported techniques matching assets and liabilities in particular currencies, two thirds of them finding the technique highly effective. 8% matched their liabilities among different currencies and a further 8% their assets among different currencies. 60% of companies reported obtaining local currency denominated debt and over two thirds of these saw this as a highly effective way to manage currency issues. When 56% of companies agree that the more international their business has become, the more experienced they have become in dealing with currency issues, they likely reflect the opportunity that multidomestic and global operators now have in diversifying their assets and liabilities to balance these within particular countries and among different currencies in different countries.

In terms of structuring the corporation to deal with its exposure, 53% of respondents reported employing a centralised treasury. That 44% report that responsibility for currency-related matters has been centralised in the last five years against 12% reporting it to have been decentralised, may be indicative of growing treasury and other interest in the subject as is the information that 28% and 30% of companies respectively are in the process of giving more attention to currency in policies and procedures.

This greater attention to currency matters is a welcome and warranted trend, both when 64% of respondents recognise that currency volatility ranks among the more difficult problems of doing international business and when 66% agree that there are no complete solutions to the majority of currency generated problems. Yet there is clearly still some way to go. Most companies employ surprisingly little external expertise to help and those that do, seem to depend on clearing and merchant bankers (45% and 25% respectively). Yet, 38% agree that banks and other experts have done little to help companies deal with currency volatility's longer term impact on business. Nor do companies believe their managers get an early grounding in the subject. Most are still left to learn to tackle the problem for themselves, many having to do so the hard way.

Regrettably, limited space allows only the most general of observations to be made here. A more detailed examination of the survey results will be published in due course and will be discussed at a seminar to be held for survey respondents at London Business School later in 1992. It only remains for the author to thank respondents for their often considerable efforts required in completing the questionnaire.

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Material from this survey may be quoted in published or thesis work by academic writers provided that it is attributed to David Edelshain, London Business School PhD Thesis 'British Corporate Currency Exposure and Foreign Exchange Risk Management (1992/3 Forthcoming.) Otherwise those wishing to quote from the survey should contact David Edelshain for permission to do so, at London Business School, Sussex Place, Regents Park, London NW1 4SA Fax (+44)(0)71 724 7875 Telephone (+44)(0)71-262-5050 X 546 or at home on 081-906-4504. c David Edelshain.

**APPENDIX 5 OPEN-ENDED RESPONSES TO THE SURVEY QUESTIONNAIRE.**

**SUMMARY OF OPEN-ENDED RESPONSES IN THE QUESTIONNAIRE TO ESTABLISH THE IMPACT OF CURRENCY VOLATILITY ON TIMES 1000 BRITISH CORPORATIONS AND THEIR RESPONSE TO THIS EXPOSURE.**

Each respondent is assigned a different case number.

To help interpret this appendix, Appendix 3 is a copy of the survey questionnaire which provides the key to the meaning of the variables' codes. The alphanumeric codes are to be found in heavy type beside the relevant questions. Each variable code consists of six letters followed by one or two numbers. The numbers refer to the question number in the survey questionnaire which defines the variable concerned.

Question 4 Method of determining currency of price of purchases.

**All markets**

"Varies by company, subsidiary and by country." Case 13,  
No response specified Case 27, 38, 48, 62, 102  
"Our international business is largely transfers between subsidiaries and we normally invoice in the currency of the purchaser." Case 30,  
"Suppliers dictate which currency." Case 51,  
"In most cases we can negotiate currency." Case 29,  
"All the above applicable." Case 35,  
"In looking for the most advantageous price we will buy/sell in most appropriate currency." Case 76,  
"We do not have direct imports or exports in our business." Case 100,  
"Not applicable." Cases 104, 107  
"Business too diversified to make general statement." Case 117,

**Majority of markets**

"Import so little that rarely relevant." Case 119.

**Minority of markets**

Not specified 20, 22, 24, 26, 28, 32, 36, 39, 45, 47, 58, 65, 66, 67, 68, 72, 73, 74, 77, 79, 80, 82, 83, 88, 89, 91, 93, 98, 103, 110, 115, 116, 119.

(In some of the above 33 cases it is probable that an "it is too misleading to generalise" category would have been ticked and should have been included. Of the above cases 9 had this category ticked for question 14 which asks the currency of price of sales.)

Question 13 Specified exchange rates used for translating the trading results of foreign subsidiaries into sterling for reporting purposes.

No other conditions were in fact specified.

**Question 14 Method of determining currency of price of sales.**

**All markets**

"Yes we dictate use of currency." Case 4,  
"Varies by business by country." Case 13,  
"No significant exports." Cases 22, 84, 110  
"We do not export." Cases 39, 42, 44, 82, 100  
"Not applicable." Case 55,  
"Service company." Case 56, 97  
"A very small export activity." Case 60

Illegible Case 67

"Not generally applicable." A store group. Case 78, 112.

**Majority of markets**

"Possibly all the above." Case 35,

**Minority of markets**

No response. Cases 15, 29, 32, 35, 36, 45, 47, 50, 59, 65, 68, 73, 80, 83, 112

"Ideally we quote in fs, failing that \$s and only local currency if convertible." Case 101.

**Question 17 Specified factors believed to have affected the vulnerability of the company to currency fluctuations.**

"All of these may be relevant at one time or another. Some causes may not be apparent to the business centrally." Case 13,

"Profit and loss account translation hedging." Case 15,

"Tax driven exposures." Case 17,

Not stated Cases 24 and 31.

"Translation of profits in overseas subsidiaries." Case 29,

"Probably each of the above apply. We have approaching 500 subsidiaries operating in over 50 countries in up to 10 different types of business." Case 35.

**Question 18 Specified factors believed to have generated advantage to the company as a result of currency fluctuations.**

Same comment as for Question 17 above. Cases 13, 15 and 35.

Not stated Cases 21, 31 and 116.

"Currency fluctuations on currency options." (Classified as gain from translation exposure.) Case 59,

**Question 21 Respondent specified vulnerability to exchange rate relationships.**

"Only vulnerable in accounting terms to translation exposure."  
Case 9,

Not specified. Cases 27 and 116.

**Question 23 Reason given why the parent/group does not involve itself with currency related exposures of its foreign subsidiaries as it does for its domestic ones. This is because: (Explan23)**

"practicality of distant operations." Case 24,

"It is the responsibility of the parent/group only to deal with 'a vast majority of' currency related matters." Case 25,

No answer specified. Case 31,

"Taxation." Case 33,

"Each operation/subsidiary if it decides to incur the cost of dealing with its currency exposure must do so through its parent/group, 'in most cases.' Details of all currency exposures are given to the parent/group, which uses its discretion to decide whether or not it will hedge these with the market, "for translation exposure. Some subsidiaries in other time zones cover locally under a group policy framework." Case 37,

"They are significantly less." Case 41,

"Group policy is for subs to deal with their own FX. However, they may go through HQ treasury if they so wish - Group FX exposure is very small - no hedging undertaken." Case 49,

"Due to different operational environments foreign subsidiaries operate [more] autonomously than UK ones." Case 59,

"Primary responsibility to identify position lies with group but foreign subsidiaries have dedicated powers to action locally." Case 60,

"Group and UK treasury run as one unit." Case 72,

"Immaterial." Case 74,

"Each operation/subsidiary is solely responsible for dealing with all currency related matters and does so independently, other than hedging of net assets." Case 76,

"Local expertise is considered adequate." Case 84,

"No foreign subsidiaries." Case 87

"They are domestic operations and impact on parent is only at P&L/Balance Sheet level." Case 101,

"It is group philosophy to centralise within the UK but not to centralise worldwide." Case 111,

"This is the case with only "partly owned" foreign subsidiaries." Case 116.

Question 24 Respondent specified organization structure.  
(Orgoth24)

"Each business sector has one or more 3rd World export companies." Case 15,

"There are individual subsidiaries in each overseas market." Case 84,

"Product/Service groups supported by central controls." Case 89,

"By dealership location." Case 100,

"Functionally organized within service group." Case 111.

Question 25 Respondent specified departmental involvement.  
(Othr125 only)

"Finance committee is responsible." Case 4,

"Accountants are involved." Case 14,

"Group Finance Director but not his department is involved." Case 32,

"Group tax department is consulted." Case 39,

"Tax department is involved." Case 83.

Question 26 Respondent specified practices. (Other26)

"The business sets and agrees formal targets in local currency but if the company is a subsidiary of a foreign parent, the parent is assessed in terms of its local currency - a conflict can therefore arise." Case 6,

"The business manages currency positions actively to create shareholder value and achieve other objectives" Case 29,  
(Classified as a 'dealer'.)

"Incorporates anticipated/estimated exchange rate changes in investment appraisal procedures depending upon the currency, sets performance targets of foreign country subsidiaries with reference to the local currency only in most cases, in Latin America for example and 'partly' remunerates the performance of the management as measured in the local currency, not that of the parent." Case 30.

**Question 27 Respondent specified processes. (Other27)**

"Responsibility has been centralised for more than 5 years." Case 5,

"Responsibility has been decentralised for over 5 years." Case 6,

"we constantly monitor our currency related practices." Cases 26, 30

"We pay a lot of attention to currency matters." Case 29,

"We review centralisation (the efficacy) periodically." Case 35,

"Responsibility has been centralised for a number of years- no major changes recently." Case 41,

"Responsibility has always been a judicious mixture of centralisation and decentralisation." Case 45,

"Responsibility has been centralised for many years." Case 51,

"Responsibility has been centralised for some length of time." Case 61,

"Transactional has always been decentralised, translational/ financial has always been centralised." Case 65,

"Responsibility is decentralised within policy guidelines laid down by the parent." Case 71,

"No change." Case 72,

"We have defined responsibility in the last 5 years Translation - all managed centrally." Case 76,

"Transaction exposures broadly decentralised, balance sheet exposures centralised." Case 77

"Responsibility has/is/will be centralised." Case 89,

"Negligible currency exposure." Case 94,

"Currency problems are not significant." Case 110.

**Question 28 Respondent specified strategies and attitudes. (Other28)**

"We regard forex profits as reductions to the cost of goods. Forward cover (against sterling) is expensive. Trading profits can offset this cost." Case 5,

"Sometimes takes a view on currency, strong or weak and acts accordingly." Case 12,

"We do not turn our backs on opportunities when presented." Case 40,

"Our strategy is to try to minimise the impact on our business of currency related influences." Case 111,

"Quantifiable trading exposures are partially hedged." Case 117.

**Question 29 Respondent specified providers of expertise.**  
(Mpothr29)

"Finance Committee." Case 4,

"Reuters monitor, (same as used by Forex dealers, also foreign banks." Case 5

"FX Dealers." Case 19,

"On the job experience by the treasury and dealers in banks - not necessarily in clearing banks." Case 25,

"Foreign bankers." Case 34,

"Treasury department, or consultation with CFO and CEO, as necessary on translation hedging." Case 35.

**Question 30 Respondent specified significant influences on the way employees deal with currency related issues.**  
(Other130 only)

"Policy." Case 57,

"Bank forecasts and literature." Case 115.

**Question 31 Other techniques used to manage currency exposure specified by respondents.**  
(Othra31 only)

Respondent indicates that he advises company against the use of option contracts though it uses them. The business also no longer hedges transaction exposure. Case 11,

"Selective overseas plant location is made with currency management in mind but it is a secondary reason." Case 18.

(There were no entries against zotha31 or zothb31.)

**Question 34 Respondents general comments.**

1-18 inclusive,

" you should distinguish between options purchased and options 'written' (or sold)."

"The sooner we have a common European currency, the better." Case 25,

"Gosh! I hope that is helpful. It really all comes from experience covering several decades." Case 26,

"I thought the questionnaire to be very poorly thought out and difficult to fill in." Case 28,

"With subsidiaries in over 50 countries, it is extremely difficult to answer some of your questions." Case 30,

"As a retailer currency exposure is a business risk... there is nothing fancy about it. To a bank currency exposure is a business, i.e its very fancy. I believe the problems that have surfaced of late were in part due to the financial community of the mid to late 80s wanting the business community to be more fancy! The results speak for themselves." Case 33,

"The group requires all subsidiaries to do their own currency hedging within a strict group policy which generally requires the purchase of currency when needed at spot. The reason for this is that one of the group's primary activities is the import and wholesaling of [a raw material] Prices of this raw material in sterling terms generally move in relation to spot currency rates. Transaction at spot gives the traders a firm sterling price against which they can manage their stock exposures." Case 42,

"Centralizing foreign exchange management is much less effective."

"Although the value of dealings in currency is high, few currencies are involved and the contracts involving currency are readily identifiable. We do not see currency exposure control as a difficult problem for us, provided it is given attention. We have only one overseas subsidiary whose figures at the moment are not material in the group context." Case 43,

"As treasurer I believe [the business] should be doing more to evaluate the extent of the FX exposure and adopt appropriate hedging techniques and currency matching procedures to cover it. However, this is not an opinion shared by the Board of Directors as they believe the FX exposure to be insignificant, even though they are unaware of its extent." Case 49,

"Currency equates to 0.025% of sales." Case 57,

"Please note that our principal exposure relates to a world price commodity - there is a theoretical/real risk that is not dealt with in the questionnaire - namely that to take a position in currency (hedge or not hedge) can open up an operational business or market risk equal or opposite." Case 60,

"We are a professional services business and not representative." Case 72,

"This report is not relevant to us. The only effect currency matters have on us is when the pound is strong against another currency, people from that country do not travel to the UK in such large quantities. We have to anticipate this and do our best to make up the shortfall from countries where the pound is relatively weak." Case 73,

"The group's exposure to currency fluctuations is very limited as our one and only operating subsidiary is based [overseas] and supplies [that country's] manufactured goods to [its own] customers. Payments between this country and the UK parent company happen only once or twice a year." Case 82,

"(a) The .... industry for export sales is heavily affected by EEC regulations, which can affect any currency gains/losses created by inflation and/or valuations. (b) Question 33 is difficult to answer, ERM [ influence on way of dealing with currency matters] could be quite substantial if no EEC intervention on trade prices." Case 89,

..."However, it should be noted that we are a medium sized group and not publicly quoted. We have no overseas subsidiaries and very little involvement outside the UK. You may wish to disregard this questionnaire in your sample." Case 92,

"As a domestic electricity business we have no exports and a negligible level of imports. Our competitors are in a similar position until [current] contracts expire. Our sales prices are strictly regulated. We have added nothing to your survey!" Case 94,

"With a large proportion of profits being US and Canadian \$ based, the translation effect on our UK reporting has at times a large impact and is therefore a major problem." Case 95,

"We buy in £ from a major US auto manufacturer and sell exclusively to UK customers. We do not have overseas subsidiaries." Case 100.

"Our main concern is currently translation risk, firstly on profits, secondly on balance sheet. Trading exposure is minimal." Case 104,

"This questionnaire is geared primarily for an international manufacturing company.... We do not buy or sell or manufacture any raw materials. Our fixed assets are our buildings, offices and furniture equipment and computers." Case 107.

