

# Currency management strategies within Scottish companies.

BOYLE, J.J.

1998

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CURRENCY MANAGEMENT  
STRATEGIES WITHIN SCOTTISH  
COMPANIES

J. J. BOYLE

Ph.D.

1998



# **CURRENCY MANAGEMENT STRATEGIES WITHIN SCOTTISH COMPANIES**

**JOHN J BOYLE**

## **ABSTRACT**

This thesis seeks to provide the first extensive study into the currency management strategies adopted by companies in Scotland, the vast majority of which are small or medium-sized, to manage the increasing risk to their business caused by volatile exchange rates. Evidence is presented of the distinguishing characteristics of the Scottish economy and Scottish business culture that justifies an examination of Scottish companies' performance in this area.

The thesis examines all aspects of currency management in Scotland through data obtained from questionnaire and interview research and statistical analysis of the data.

The results presented from this research are examined in conjunction with similar studies completed in the field world-wide since volatile exchange rates became a serious business problem in the early 1970s. The use of statistical analysis in the current research allows for many previous findings to be fully tested.

An overview is also presented of the existing empirical evidence in the field and of the academic debate that has taken place on a number of currency management issues. The research seeks to resolve some of these debates and add to the empirical evidence by highlighting how corporate currency management is operating now in practice.

As part of this process, seven key hypotheses are tested, derived from previous models and theories:

1. Use of currency management methods is dependent on the currency exposures incurred.
2. Currency exposures incurred are related to the internal corporate environment.
3. Use of currency management methods is related to the internal corporate environment.
4. Currency exposures incurred are dependent on company size
5. Currency management methods used are dependent on company size.
6. The internal corporate environment is dependent on company size.
7. Currency management performance is related to corporate performance.

The first five of these hypotheses are confirmed, the last one is rejected and hypothesis 6 is neither confirmed nor rejected.

The research concludes that currency management has improved in small and medium-sized companies in recent years, demonstrated by a greater awareness of currency exposures and currency management strategies among these companies than in previous similar studies, but many small and medium-sized companies still have a tendency to ignore currency exposures or manage them in an unsophisticated fashion. The management of currency risk by Scottish companies does not appear to differ significantly from that of UK companies. However, it does appear to be the case that large companies and companies with an international dimension are the most advanced in managing their currency exposures.

**CURRENCY MANAGEMENT STRATEGIES  
WITHIN SCOTTISH COMPANIES**

John Joseph Boyle

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in collaboration with the Association of Corporate Treasurers

August 1998

To My Parents

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## ABBREVIATIONS

ACT	Association of Corporate Treasurers
DTI	Department of Trade and Industry
EC	European Community
EEC	European Economic Community
ECGD	Export Credit Guarantees Department
ECU	European Currency Unit
ED	Exposure Draft
EMH	Efficient Markets Hypothesis
EMS	European Monetary System
ERM	Exchange Rate Mechanism
EU	European Union
FAME	Financial Analysis Made Easy
FASB	Financial Accountancy Standards Board
GDP	Gross Domestic Product
MNC	Multinational Corporation
NYSE	New York Stock Exchange
PPP	Purchasing Power Parity
SME	Small or Medium-Sized Enterprise
SSAP	Statement of Standard Accounting Practice

## CHAPTER 1

### INTRODUCTION

#### *1.1. Rationale*

In the early 1970s, the collapse of the Bretton Woods System moved the world away from a regime of relatively fixed exchange rates and widespread exchange controls and into a period of floating exchange rates. For many companies this meant increased uncertainty and risk as the domestic currency value of their foreign exchange denominated transactions, assets and liabilities and their future cash flows could now vary considerably as a direct result of fluctuations in exchange rates. Concurrently, there was an increase in the volume of currency exposures as companies increased their international trade, acquired foreign subsidiaries and increased the proportion of investment portfolios held in overseas securities and other markets.

At first it may appear that these two occurrences of increased exchange rate volatility and increased international trade are incongruous. Due to the growth in international trade, authors such as Willett (1986) and Barone-Adesi and Yeung (1990) have argued that the evidence indicates that exchange rate volatility over the past decade has not been as damaging as could have been expected. Willett argues that exchange rate volatility has been more of a reflection, rather than a cause, of economic instability. However, the benefits of international diversification may have offset some of the costs of international trading risk and currency risk should not necessarily be viewed purely as a negative feature, as exchange rate movements do help economies to adapt to and absorb shocks as well as offering opportunities for companies to profit. It may also be the case that international trade has grown in spite of exchange rate volatility. Both Willett and Barone-Adesi and Yeung do still accept that the costs to companies of exchange rate exposure have been significant. The volatility of exchange rates has removed some of the certainties of international trade and has put the value of company cash flows and assets and liabilities at risk. Coopers and Lybrand have concluded that currency exposure may have caused more variance in U.S. corporate profits than any other factor (Czinkota et al 1989).

The combination of greater exchange rate volatility and an increase in the volume of currency exposures from the early 1970s meant that there was a pressing need for companies engaged in international trade or affected by international competition to employ effective currency management strategies to protect themselves against the downside of currency risk. However, as will be shown in this thesis, effective management of this risk is complicated and can be troublesome, even for sophisticated companies with much experience of these matters. In his survey of large UK corporations, Edelshain (1995) found that many companies recognised the difficulties of implementing such strategies, with 64% of his sample agreeing with the statement that, "currency volatility ranks among the more difficult problems of doing international business."

Currency risk is now one of the most pertinent risks that companies have to be aware of and manage and much research work has been done on the subject in the last fifteen years. However, as a review of previous studies (chapter 4) will later highlight, the bulk of this work has concentrated on the larger companies, especially the multinational corporations (MNCs), because of the vast volume of their currency transactions and their geographical dispersion. Until recently, almost all of the research has concentrated on large companies in the United States, as one leading commentator puts it;

"There is little systematic information available on the current practices in the area of treasury management among companies outside the US." (Soenen 1989. P.59).

This has led to a genuine lack of information concerning the currency management performance of many other companies, especially companies in small countries like Scotland, of which the great majority are small- or medium-sized enterprises (SMEs). It seems particularly vital to rectify this situation given that Scotland depends disproportionately in the UK on foreign sales and, as the European Commission points out, smaller companies are at a distinct disadvantage in a world of floating exchange rates;

"The suppression of exchange rate variability will be more important for small firms and countries with less developed financial markets that do not have access to sophisticated hedging

techniques." (EC Commission 1990).

Empirical evidence also suggests that industries in smaller, more open economies, such as Scotland's, are likely to be highly exposed to exchange rate movements (Bodnar and Gentry 1993). Chapter 2 will also illustrate that Scotland has a distinctive economy and business culture that justifies an examination of corporate currency management within Scotland.

These facts demonstrate the necessity for further research in this area, which a key Scottish advisory body has also highlighted;

"It is widely held that, despite the range of facilities available, SMEs remain unsophisticated in the planning and organisation of their export finance .... However, no publicly available research appears to have been done to substantiate these beliefs. Without such information it is difficult to assess what, if anything, needs to be done to ensure that smaller exporters are fully aware of the options already open to them to maximise profit and minimise risk in their export business." (Scottish Council for Development and Industry's Business Development Committee 1991. P.8).

Even the majority of studies that have been completed to date do not go much further in their results and analysis than simple statistical frequency tables. There is a need for a more analytical, statistical approach to this subject area to properly test previous conclusions and to ascertain new information.

The above sets out the rationale for this thesis. The task of this research will be to present the first extensive study of the management of currency exposures by Scottish companies, an area that until now has been relatively ignored.

## *1.2. Aims and Objectives*

The aim of this research is to undertake a detailed evaluation of the currency exposures, currency management strategies and currency management performance of Scottish companies. The research will also seek to ascertain if the nature of the Scottish economy, with its own banking and government institutions and its distinctive business culture, directly impacts on corporate decision-making in the area of currency

management. The thesis will therefore seek to address the following issues:

- The nature of currency exposures in Scotland and how it affects companies.
- How currency exposure management is perceived in Scotland.
- How corporate currency management strategy is developed and implemented in Scotland.
- The successes and failures of current corporate currency management strategies and the possible impacts these have on Scottish company performance.

The purpose of the thesis is not to fully examine related technical, but tangential, issues such as exchange rate forecasting and the nature of the foreign exchange market. These matters have been examined comprehensively elsewhere, but, as explained above, the context in which currency exposure management takes place in Scotland has hitherto been an area relatively neglected in the literature.

The initial chapters will explain the environment in which Scottish companies operate and in which currency management takes place in order to provide the research with a theoretical underpinning and give an outline of the empirical evidence to date. Chapter 2 will assess the uniqueness of Scottish business culture by studying the distinguishing features of the Scottish companies' behaviour and the Scottish economy. Chapter 3 will explain the types of foreign exchange exposures that companies incur and provide evidence from the debates, which predominantly exist in the academic literature, concerning the nature of these exposures and the applicability of a corporate management strategy regarding each. This chapter will also detail the currency management methods and strategies that companies have at their disposal, explain what they involve and attempt to evaluate their level of usefulness.

All of these issues will be examined in conjunction with a review of previous studies, contained in chapter 4, which will outline research



completed to date on corporate currency management, with theoretical and methodological critiques of these works where appropriate. This chapter will also provide a useful source of comparison for the results from this study that will be detailed later in chapter 6. Chapter 5 will explain the research methodology used and detail the activation of the research in a manner consistent with its aims.

Chapter 6 will provide the core investigation into currency risk management within Scottish companies. It will be based on questionnaire and personal interview research results, coupled with a series of quantitative methods, and will cover all aspects of corporate currency risk management in Scotland. Previously generated models will be tested using the newly compiled database to test the applicability of previous research findings to small and distinctive economies, such as Scotland's, and new statistical models will be derived based on the results from this study. The areas under close scrutiny will be the core areas of the currency management function: exposures that companies incur, the methods and strategies that companies employ to manage currency exposure and the implementation of currency management strategy. The sample companies will be classified by their size, degree of internationalisation, regional location and industrial sector to find if any of these variables have an impact on the corporate currency management function.

The results section will test seven key hypotheses, some of which are based on existing models:

1. Use of currency management methods is dependent on the currency exposures incurred.
2. Currency exposures incurred are related to the internal corporate environment.
3. Use of currency management methods is related to the internal corporate environment.
4. Currency exposures incurred are dependent on corporate size.

5. Currency management methods used are dependent on company size.
6. The nature of the internal corporate environment is dependent on company size.
7. Overall corporate performance is related to currency management approach.

The reasoning behind this choice of hypotheses is explained at the beginning of chapter 6.

There is some obvious circularity in a number of these hypotheses, but this does not mean that any are redundant. For example, if currency exposures incurred are related to the internal corporate environment and currency exposures incurred are dependent on company size, this does not automatically mean that the nature of the internal corporate environment is dependent on company size, as later results will show. When confirming or rejecting any of the hypotheses, this research will try to rely more on evidence rather than inference.

In addition to these results, an examination will be made of the attitudes and operations of two of the major groups of players in the field: the banks and the advisory organisations. This will provide evidence regarding the behaviour of the supply-side of the corporate currency management market and can be compared directly with the behaviour of the demand-side, based on company questionnaire and interview results. Any disparities between the two sides of the market will be closely examined.

As will be detailed in chapter 6, a significant percentage of the sample companies responded that they believed the issue of corporate currency management was not particularly relevant to their operations. As every effort was made to ensure that all sample companies faced at least one form of currency exposure, these companies were further analysed to ascertain the reasons why they were dismissive of the research and if they had any characteristics in common. These results are found towards the end of chapter 6 and this issue will be elucidated there.

The main findings from the research will be examined in relation to the



original hypotheses, above, the review of previous studies and other existing empirical and theoretical evidence.

The research findings in chapter 6 will provide the main basis for the final conclusions in chapter 7 that will state the contribution of this research to the field of corporate currency management and identify related areas in which more work can be undertaken.

As a vast amount of information is presented in this thesis, to improve the thesis' readability, important information, arguments and results will be highlighted in **bold** print.

## CHAPTER 2

### THE SCOTTISH ECONOMY AND SCOTTISH BUSINESS CULTURE

#### *2.1. Introduction*

Although Scotland has its own culture, Church, legal system and educational system, its political and economic union with England, as part of the 1707 Act of Union, was a complete one. Scotland retained no economic rights, with one of the main purposes of the Act being the assimilation of trading conditions throughout Great Britain. The Act of Union between England and Scotland led to a unified state, a single currency, a single system of taxation and a common economic policy. However, this did not mean that Scotland did not retain distinguishing economic characteristics or that British business culture became homogenous.

The purpose of this chapter, by illustrating recent Scottish economic history and focusing on the distinguishing features of the Scottish economy and business culture, will be to show that Scotland is, in certain respects, different from the UK as a whole and worthy of particular attention. It will also be shown that Scotland's history and distinguishing characteristics make it an interesting case study in the field of currency management. Evidence will also be found in this chapter to derive hypotheses about the performance of currency management in Scotland and to support some of the findings throughout chapter 6. However, it must be remembered that evidence in this area is in quite short supply;

“The reader interested in trying to understand the historical development of Scotland in the twentieth century is certainly not spoiled for choice.” (Devine 1996. P.1).

#### *2.2. A Brief Economic History of Scotland Since the Act of Union*

After its Union with England, Scotland's geographical position allowed it to benefit from international trade, giving it access to American markets in

the West and European and Indian markets in the East. Scotland also had a wealth of tradable natural resources, such as coal, timber, iron and wool.

From the Industrial Revolution to World War I, Scotland experienced a structural transformation and economic growth comparable to what was happening in the rest of Great Britain;

“Shipbuilding on Clydeside mirrored the same industry on the Tyne and Wear, mining in Central Scotland had its counterparts in South Wales, Durham and Yorkshire, Glasgow was a centre for engineering like London and the Midlands and the Edinburgh financial centre mirrored the City of London. The economies of the Union had created a seamless industrial and financial web.” (Lee 1995. P.17).

Economic expansion in this period was thus primarily within heavy industry and its ancillary activities. In Scotland, the expansion mainly occurred in the Central Belt of Strathclyde, Lothian and Fife. The other regions continued to rely quite heavily on agriculture, especially the Highlands.

By the turn of the twentieth century, Scotland had, to some extent, become economically separate from the rest of the UK, as ownership and control of Scottish industry lay extensively within Scotland and it had a distinctive industrial structure that was much more dependent on heavy industry than the UK as a whole. It would be fair to say that Scotland was one of the great manufacturing centres of the world at this time, but its industrial structure created problems after World War I. Between the Wars, Scotland consistently suffered from an over-reliance on heavy industry and agriculture, sectors characterised by small-scale production, labour intensity and limited resources, which were occasionally severely hit by the forces of international competition and were, by this time, in inevitable decline. The control of Scottish industry began to pass out Scottish hands in this period, with the rationalisation and restructuring of many of the heavy industries.

Post-World War II, Scotland was designated as a Development Area and benefited substantially from government subsidies. This encouraged much inward investment, particularly from US companies which found

Scotland a suitable location from which to enter European markets. By the 1950s, estimates of industrial structure showed that there were only slight differences between Scotland and the rest of the UK. Scotland was oriented more towards agriculture, forestry and fishing and public administration and less towards distribution, financial services and manufacturing, especially the new manufacturing industries such as vehicles and chemicals.

From the 1960s, the post-war subsidies and investment partially redressed the imbalance in the Scottish economy and the discovery of North Sea oil continued the expansion of the Scottish economy from the 1970s. There was also considerable expansion in the new manufacturing industries from the early 1970s and in electrical and instrument engineering in the 1980s, with corresponding declines in the old manufacturing industries. The services sector has also been on the increase in Scotland for the last forty years, contributing virtually all of the economic growth in the Scottish economy since the 1970s. Scotland now, similar to the UK and other developed countries, is a service-oriented economy for production and employment.

This is not to say that Scotland has not suffered economic difficulties in recent times. Just as the 1970s saw the growing importance of currency risk and currency management, forcing Scottish companies to deal with the problems created by exchange rate volatility for the first time, it also witnessed radical change in the Scottish economy, with successive oil price shocks, the enlargement of the EEC, the diffusion of the electronics industry and the growth of the oil industry. Some of these changes exposed the lack of competitiveness of much of Scottish industry and there was a significant erosion of its traditional industrial base. A similar rationalisation and restructuring exercise that occurred in the 1930s happened again in the 1980s in the oil industry, when the price of oil fell significantly and the economy underwent a recession. Many Scottish companies were forced out of business and the oil industry became increasingly dominated by a few very large US companies. Again, similar to the 1930s, many Scottish companies paid the price for labour intensity and a low level of technology. They also lacked the financial resources to ride out these type of shocks.

Even though the control of Scottish industry has been moving out of Scotland since the end of World War I, first to England and then further abroad, by 1990, 64% of the top 200 firms in Scotland were still Scottish-owned, with 18% being owned in the rest of the UK and 11% in the US (Dow 1992). Some authors, such as Ashcroft et al (1991), argue that Scotland has a relatively high level of external ownership, but the fact that Scotland has retained the headquarters of many of its major firms is a significant achievement given the size of the Scottish economy. However, the evidence would appear to suggest that foreign-based companies have performed better, both in terms of output and employment, than indigenous Scottish companies, even after allowances are made for differences in industrial structure and plant size between these two groups of companies (Ashcroft 1996).

The Scottish economy has thus changed considerably in the twentieth century, with its structure much different from the 1950s let alone the pre-war years. The traditional agriculture and manufacturing industries have declined and have been superseded by services industries, particularly public administration and banking. The period since World War II has seen the Scottish economy slowly modernising, sometimes painfully, and attracting new industries together with foreign-owned enterprise and capital, but much of Scottish industry remains Scottish-owned and as long as that remains the case, the Scottish economy will continue to be distinctive. Whether this is beneficial to Scotland, however, is open to question.

### *2.3. Distinguishing Features of the Scottish Economy and Business Culture*

Is Scotland genuinely different from the rest of the UK to make it an area worthy of special consideration? As the previous section highlighted, the Scottish economy has been intertwined with that of the rest of the UK since the beginning of the eighteenth century, but it has followed its own path and the fact that most of its major firms remain indigenous perhaps demonstrates a cultural loyalty to Scotland.

It would be true to state that, at least in terms of industrial structure, Scotland is significantly different from the South of England, but not so from the North of England or the even the West Midlands. In terms of crude socio-economic indicators, Scotland is not greatly different from the UK as a whole. Kellas (1984) argues;

“Scotland’s economic problems differ from those of England in degree rather than kind, and the trend is towards assimilation in industrial structure, earnings and level of employment.” (P.16).

The narrowing of this economic gap was referred to in the previous section and became observable from the 1970s, with the decline of Scotland’s traditional industries, the rise of the new industries and the arrival of North Sea oil. On the negative side, the performance of the Scottish economy since the end of World War II, like that of the UK, has been dogged by low economic and employment growth compared to leading industrial countries.

However, Scotland’s economic position as a peripheral economy is different from that of the UK. Dow (1992) demonstrated this using dependency theory and cumulative causation theory. Dependency theory relates peripheral economies to a concentration of activity in the primary sector, a reliance on capital inflows for financing investment and a high degree of foreign ownership. In contrast, cumulative causation theory suggests a tendency towards net capital outflows in peripheral economies and low rates of return. However, both theories would conclude that peripheral economies have relatively low per capita incomes and high levels of unemployment, characteristics that have consistently been found in Scotland relative to the UK, despite the harmonisation process of recent times. There has also been relatively weak employment growth and a heavier reliance on the primary sector in Scotland compared to the UK and Scotland has also consistently suffered from net out-migration. Dow argues;

“Peripheral economies may be characterised by defensive financial behaviour as a response to a long experience of economic vulnerability.” (P.630).



It will be interesting to see from the results in chapter 6 if Scottish companies are significantly more risk-averse in their management of currency risk than companies elsewhere.

It may be the case that such theories are too simplistic. For example, they would not adequately explain why areas of the Scottish economy, such as oil and electronics, have been developed and favourable to growth in the 1970s and 1980s. In a study of SMEs in unfavourable regional environments, Vaessen and Kebble (1995) demonstrated that economic conditions in peripheral Britain, including Scotland, do not inevitably negatively affect the performance and growth of SMEs based in peripheral regions.

What then accounts for Scotland's economic under-performance? Ashcroft (1996) put it down to a series of factors: lower income per head, small market size, over-commitment to traditional industries, low productivity, high unit labour costs, serving markets from a peripheral location, managerial weakness, institutional and organisational failure, the differential impact of UK macroeconomic policy, the loss of specific world markets, the loss and diversion of capital and skilled labour and the loss of industrial control. In short, there are no easy answers to Scotland's under performance, making the finding of satisfactory solutions extremely difficult. In particular, however, Ashcroft (1996) draws attention to Scotland's low rates of innovation in manufacturing and formation of new firms;

"Scottish companies have failed to develop an innovation culture .... Scottish companies are generally less willing, compared with the UK, Ireland and particularly Germany: to undertake research and development; to formalise the innovation process; to involve key employee groups, such as designers, marketing/sales and engineering and technical staff, in all phases of the innovation process; and to collaborate with other companies and other organisations." (P.27).

This factor could be significant. Successful and sophisticated firms can arise from strong local competition, forcing firms to upgrade and innovate. Scotland has a low rate of new firm formation that, consequently, could lead to a lack of new competitors for existing firms and a lower level of success and sophistication. However, again this theory may be too

simplistic. For instance, it could be argued that the less competition a company has, the more specialised and secluded its niche market, allowing it to develop more quickly. Vaessen and Kebble (1995) demonstrated that business growth is possible under different levels of competition and they found no consistent link between research and development and SME growth (the latter finding also supported by Oakey et al 1988).

Scotland does have its own financial institutions, government bodies and business advisory organisations, an important distinction from the English regions. In the area of currency management, this distinction could be particularly relevant as the banks and advisory organisations play a central role in advising on strategy and product selection. Ostensibly, having your own national banks and government and advisory bodies may appear to be an advantage. As Bain and Reid (1984) argue, the Scottish banks have two important advantages over their competitors: their lines of communication are short and they have a greater long-term commitment to the local economy. The first of these advantages means that they are usually on-hand to offer quick advice and the second advantage improves the confidence of their customer companies, who are aware that the banks must give close consideration to community as well as commercial interests. Studies by Robertson (1991) and Baur (1993), further discussed in chapter 4, show a strong company-bank relationship in Scotland.

However, it is questionable whether government and advisory bodies have much impact in the field of corporate currency management (see chapters 4 and 6) and Scottish banks are typically much smaller and less specialised than their English and overseas counterparts. As a direct effect of this, it may be expected that Scottish companies are less knowledgeable about currency management and are less capable in helping companies to implement an effective currency management strategy than their counterparts in England and elsewhere. This could have serious consequences for Scottish companies, as Scotland is a small and open economy exposed to shifts in international production and trade. On the other hand, the closeness and communitarian nature of many of the Scottish banks could be more in keeping with the interests of Scottish companies.



Scotland's reliance on international trade is borne out in a study (quoted in Dow 1992) that demonstrated that most sectors of the Scottish economy had lower than average UK profit margins. The main exceptions were the high exporting sectors, proof of the importance of international trade to the Scottish economy and the significance of any study examining currency risk management in Scotland.

Hood and Young (1982) highlight that the contribution of large foreign-owned companies to the Scottish economy has been fitful and Scotland, thus, depends heavily on its indigenous firms. Scottish industry and the Scottish economy remains distinct.

The Scottish economy itself is also diverse. The West, once in rapid decline due to the fading fortunes of heavy industry, is now partially revitalised as a services centre. The East has remained relatively prosperous, with thriving professional and financial services sectors and with the introduction of new industries, such as electronics. The North-East has greatly benefited from North Sea oil and its off-shoots. However, much of the North, including the Highlands, remains in decline. This area of Scotland remains remote and underdeveloped and probably does not conform to Scottish, let alone British, norms.

#### *2.4. Conclusions*

It does appear to be commonly accepted that Scotland does have distinctive economic characteristics and a distinctive business culture. Kellas (1980) argues;

"If a Scottish economy does not in reality exist, then the illusion of it is firmly established." (P.216).

Scotland also has a significant reliance on international trade and these facts make it an interesting case study in the examination of corporate currency management. Being an open economy has been something of a double-edged sword. Scotland has gained from inward investment and the introduction of new industries and companies, but it has lost through outward migration of industries and people and has also been vulnerable

to the fluctuations of exchange rates and the sometimes capricious nature of multinational decision-making.

The combination of greater exchange rate volatility and a greater reliance on inward investment and foreign enterprise has had consequences for the Scottish economy since the 1970s. Hood and Young (1982) list exchange rate instability as one of the key factors that led to the “multinational retreat” from Scotland in the late 1970s and early 1980s, with significant consequences for employment levels and economic growth. **The importance of the exchange rate to Scottish economic performance is therefore clear, making the management of the currency risk created by exchange rate volatility of particular relevance.**

The performance of the Scottish economy since the Act of Union has been erratic. In the twentieth century, the industrial structure of the Scottish economy has been dominated by the decline of heavy, labour-intensive manual industry and its substitution by new rapidly growing services, electronics and energy industries. However, despite evidence of harmonisation in recent times, the Scottish economy has been a relatively poor relation to that of England.

An interesting question, in relation to this current study, to address is, does the poor performance of indigenous Scottish companies relative to foreign-owned Scottish companies have anything to do with experience of and capability in currency risk management given the importance of international trade to Scottish companies? Such a question is almost a subject for a thesis by itself, but the final set of conclusions (chapter 7) will give this matter consideration in the light of the evidence that it has been possible to gather in chapter 6. It may also be the case that a low level of firm formation in Scotland leads to a low level of competition and a lower level of sophistication compared to the UK as a whole.

Scotland does appear to have the characteristics of a peripheral economy. This does not only distinguish it from England, but, it has been suggested, makes defensive financial behaviour more likely. This will be tested in relation to corporate currency management policy in section 6.5.

It has also been hypothesised that Scottish companies are less innovative, consultative and collaborative and this detrimentally affects their performance. This matter will also be addressed in section 6.5.

The fact that many major Scottish firms choose to remain in Scotland possibly reflects a degree of cultural loyalty. There also appears to be a loyalty factor in company-bank relations in Scotland, but whether this is of a benefit to companies is debatable and will be further considered in section 6.9 and chapter 7.

Attention has also been brought to the industrial and regional diversity within the Scottish economy. This may have consequences for corporate currency management in Scotland and will be reviewed in section 6.7.

The purpose of this chapter has been to attempt to describe the nature of the companies that will be studied and the nature of the economy in which they operate. In doing so, a number of hypotheses and suggestions concerning how these factors may influence corporate currency management have emerged and these will be more closely scrutinised in chapter 6.

## CHAPTER 3

### THE CONCEPT OF FOREIGN EXCHANGE EXPOSURE AND THE PRACTICALITIES OF ITS MANAGEMENT

#### *3.1. Introduction*

This chapter will, firstly, outline the individual currency exposures companies face and, secondly, assess the general corporate practices in managing these exposures.

#### *3.2. The Concept of Foreign Exchange Risk*

At the start of this chapter it is important to be clear about some key definitions in order to avoid later confusion. **Foreign exchange risk** is derived from the variability of the home currency value assets, liabilities and operating incomes caused by unanticipated exchange rate movements. **Foreign exchange exposure** is what is actually at risk. This is an important distinction between two terms that are often used interchangeably.

The use of the word “unanticipated” should not be overlooked. Risk arrives from unexpected movements in exchange rates, as known future movements are already reflected in the value of the underlying asset, liability or cash flow.

The terms “risk” and “exposure” are often thought of negatively, both in the literature and by currency management practitioners, but they can also provide opportunities for companies by allowing them to gain profit, market share or competitive advantage from favourable exchange rate movements.

A common problem in the field has been the often over-vigorous debate on exposure definitions, a problem that Edelshain (1995) directly addresses;

“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 experienced in deriving universally acceptable

definitions" (P.37).

It is the intention of this thesis to present a summary of the basic foreign exchange exposure types that companies can incur. Therefore, although an often lively debate will be reviewed, an effort will be made not to get too involved in semantics. The major foreign exchange exposures, transaction, translation and economic, will be considered in this section, which will also provide arguments regarding the applicability of a currency management strategy for each.

### *3.2.1. Transaction Exposure*

Transaction exposure arises from the risk that the domestic currency value of a foreign currency denominated transaction will vary as a direct result of changes in spot exchange rates. The exposure will last between the time the contract is agreed and the time the transaction is settled.

#### *3.2.1.1. Sources*

Transaction exposure has a number of sources;

- a) International Trade Transactions. A UK company will face transaction exposure if its international trade transaction is denominated in the counterparty's currency or in a third currency. This is the most direct and common source of transaction exposure.
- b) International Non-Trade Transactions. This is the same principle for non-trade items, for example the payment or receipt of dividends and royalties.
- c) Capital Transactions Denominated in Foreign Currency. For example, this could include payments of interest and repayments of principal in respect of foreign currency borrowings, inflows from maturing investments and planned overseas acquisitions where currency exchanges are involved.
- d) Domestic Transactions Denominated in a Foreign Currency. Two UK companies may transact business in a foreign currency if that currency is the accepted unit of exchange in the global industry, for example UK

oil companies agreeing to pay/invoice in US dollars.

e) Domestic Currency Transactions whose Final Value will be Influenced by a Foreign Exchange Rate. This will occur when a UK company buys goods in Sterling from a UK supplier, but the final price may be influenced by foreign exchange movements if, for example, that supplier is a foreign-owned subsidiary or depends on foreign companies for its raw materials.

#### 3.2.1.2. *Measurement*

Measuring transaction exposure is necessary to evaluate its significance and to manage it. The size of the exposure should be measured with reference to the currency of invoice (the more volatile the currency, the greater the potential loss if uncovered), the time between the contract and settlement date (the longer the time period, the greater is the potential uncovered exposure) and the value of the contract (the larger is the value of the contract, the greater will be the potential uncovered exposure).

#### 3.2.1.3. *Management*

One view of currency exposure management is that it is a zero-sum game, where gains and losses will eventually level out. However, if a firm makes a large loss on a single foreign currency receivable or payable, it may not be around long enough to take advantage of any offsetting gain. **Hedging currency exposures can avoid financial distress and can thus add value to the company.** The costs of financial distress are not just those relating to bankruptcy, but in a falling share price, the possibility of higher contracting costs, adverse relations with employees, customers and suppliers and a lower bank credit rating leading to higher interest costs and less access to bank credit.

There are other arguments that support the view that companies legitimately attempt to hedge against potential currency exposure losses. Froot et al (1993) observed that if external sources of finance are more costly to corporations than internal sources of funds, because of factors such as capital market imperfections, hedging is beneficial because it helps ensure that the corporation has the necessary internal funds to take advantage of investment opportunities. There is evidence from Hoshi et



al (1991) that corporate investment is sensitive to the levels of internal cash flow. **In this real world of imperfect markets and financial distress, it can be beneficial for a company to reduce its cash flow volatility by managing its currency exposures.** Lewent and Kearney (1990), in justifying the use of hedging at the US MNC Merck, argue;

“In the current competitive environment, success in the industry requires a continued, long-term commitment to a steadily increasing level of research funding .... The cash flow and earning uncertainty caused by exchange rate volatility leads to a reduction of growth in research and spending.” (P.26).

It is generally more advisable for firms, rather than their shareholders, to hedge currency exposures because of institutional barriers to hedging, the presence of fixed transaction costs, the ability of the firm to pool currency exposures and the firm's information advantage.

The most common method of hedging transaction exposure is to use a forward contract, which gives a company a guaranteed exchange rate for a future settlement. For instance, an exporter anticipating a foreign currency receipt could sell foreign currency forward and therefore gain protection against the foreign currency depreciating against the domestic currency.

There are a number of other methods that can be used to cover this exposure and these will be considered later in this chapter.

### *3.2.2. Translation Exposure*

Translation exposure, sometimes called accounting exposure, is the risk that the reported domestic currency values of foreign currency assets and liabilities and profits of overseas subsidiaries will vary as a direct result of changes in exchange rates. Translation exposure will therefore have an impact on a company's balance sheet and profit and loss account. The changes in balance sheet values have no impact on cash flow, but will lead to fluctuations in the values of overseas subsidiaries in a way that has nothing to do with their performance.

The measuring and managing of translation exposure are controversial issues in currency management and therefore it seems pertinent to

discuss both at length in this chapter.

### 3.2.2.1. *Measurement*

There are several different methods by which translation exposure can be measured, but increasingly one method is being used universally. A brief resume will be given of each method, but particular emphasis will be placed on the method most commonly in use at present.

- a) The Current/Non-Current Method. This method translates current items at the closing rate (the rate prevailing at the balance sheet date) and long-term items at the historical rate (the rate at the time the asset was purchased.) The translation exposure in this instance is the net current asset position, as this is what is exposed to potential change should exchange rates fluctuate. This method has problems, however, in that inventory and short-term items held abroad are exposed but long-term debt and long-term items fixed in the parent currency are not exposed. This is a serious problem for this method since long-term debt is often regarded as the largest component of translation exposure (Walker 1978).
- b) The Closing Rate Method. Under this method, all foreign currency denominated items are translated at the closing rate of exchange. If a parent's currency appreciates against its subsidiary's, there will be translation losses. Translation gains will be made with a parent currency depreciation. This is the method now most commonly used in the US and the UK, although it does leave all foreign currency denominated items exposed.
- c) The Monetary/Non-Monetary Method. With this method, monetary items are translated at the closing rate and non-monetary items are converted at the historical rate, the translation exposure being net monetary assets. Monetary items include cash, accounts receivable and payable and long-term debt, whereas non-monetary items include inventory, fixed assets and long-term investments. This method has two major faults. Firstly, some items, such as bonds and negotiable notes, have monetary characteristics (contractual rights to money) and non-monetary characteristics (changeable selling prices) and it is not



clear at which rate they should be translated. Secondly, non-monetary items carried out at current cost or replacement value are still translated at historical cost, which seems counter-intuitive.

d) The Temporal Method. This method uses the closing rate for all items stated at replacement cost (the amount required to buy a similar asset at the balance sheet date), market value (the amount the company would receive if it sold the asset at the balance sheet date) and expected future value (the amount the company can expect to receive for the asset in the future). The historical rate is used for items stated at historical cost. This is a similar method to the monetary/non-monetary method, but it deals with the flaws highlighted above in the monetary/non-monetary method. For instance, the temporal method would not support translating a current price, non-monetary item at the historical rate. The temporal method attempted to preserve accounting principles used to value assets in a foreign subsidiary's accounts. The former US translating method FASB 8 supported the temporal method.

The accounting practice for foreign exchange gains and losses in the UK currently is SSAP 20, which has been effective since 1983. This was a change from ED 27 and a move towards the closing rate method. Exposure management is now considered to be more concerned with pursuing economic measures of risk rather than accounting measures. The US underwent a similar change from FASB 8 to FASB 52 in 1981. SSAP 20 supports the use of the closing rate for balance sheet translation and the closing rate or an average rate (not specified) for translating profits and losses. The temporal method is supported in certain exceptional circumstances where the subsidiary is viewed as an extension of the parent company, rather than a separate body, and the parent company's currency is therefore in effect the functional currency of the subsidiary.

Under the closing rate method, exchange gains and losses are taken to reserves unless borrowings are in excess of the monetary amount of the assets being covered. A gain or loss on the excess borrowings goes to the profit and loss account and a gain or a loss on foreign assets goes to reserves.

### 3.2.2.2. *Management*

There are strong arguments for and against managing translation exposure, both of which will now be examined closely, along with some compromise solutions that have been put forward in an effort to find a consensus.

In the Bretton Woods period, the accounting approach to currency risk was appropriate as exchange rates were relatively stable and any adjustments were usually expected. Companies were able to deal with exchange rate matters using fairly simple accountancy rules. However, once the Bretton Woods system collapsed, the wisdom of focusing on the accountancy approach to currency risk and managing translation exposure, began to be seriously questioned.

**The main argument against managing translation exposure is that because it has no effect on cash flow and if adverse accounting results can be explained by companies to their investors as the result of fluctuating exchange rates that are not damaging their investments, there is no need to actively manage this exposure.**

Buckley (1990) highlights the danger that in covering the potential paper loss of translation exposure, a company may incur a real transaction loss. He gives the example of ITT, which sold \$600M of foreign currencies forward to hedge balance sheet exposure. The dollar depreciated, resulting in a translation gain but a loss on forward cover when ITT, in fulfilling its forward contract, bought dollars at a more expensive rate than for which it sold them initially when purchasing the foreign currency. Buckley argues that evidence suggests that the US stock market is not fooled by translation gains and losses and therefore concludes that translation exposure should not matter.

Dufey (1972) also showed the dangers of basing management decisions on accounting data. He gives the example of a French subsidiary of a US multinational that is told to reduce its working capital balances because of an expected depreciation of the French franc. However, the subsidiary is selling all of its output in Germany and Belgium and a depreciation of the franc could enable it to boost its profits in these markets. The subsidiary

should therefore be expanding, not contracting, its operations in response to the franc's depreciation.

Walker (1978) states;

"Accounting practices used by companies throughout the world in their treatment of foreign subsidiaries are so diverse that their identification of accounting exposure is an arbitrary process." (P.6).

Thus, different levels of, and different responses to, translation exposure emerge because of the different approaches to consolidating foreign subsidiaries' assets and liabilities in various countries. There is no universal standard to enable fair judgement and effective comparison of companies world-wide. This problem, he argues, is heightened by inadequate disclosure.

Walker's second argument against the recognition of translation exposure is that;

"Financial statements are .... composed of figures which are static and historically-oriented: cash in the bank, receivables booked and liabilities assumed. By definition then the accounting approach to exchange risk ignores the future effects of currency movements." (P.27).

This is when economic theory states that the value of an asset is the discounted net present value of all future cash flows from it.

The Efficient Markets Hypothesis would argue that firms should not try to smooth out fluctuations in results arising from accounting procedures as it believes, at least in its semi-strong form, that all publicly available information is used in arriving at the firm's share price. Thus, a re-presentation of the information in a different form, by covering translation exposure, should not affect the share valuation.

A survey by Touche Ross of institutional shareholders (Ross 1992a) would seem to support the thrust of these arguments. In this survey, 63% of institutional shareholders said they would prefer companies not to hedge translation exposures and instead allow shareholders to make their own currency risk management decisions.

However, as will be shown in section 4.3, the results from this survey were inconsistent and another survey of fund managers, equity analysts and bankers by the Midland Montagu Exposure Management Team (1991) produced very different results. Most respondents said they would expect a company to adopt measures to minimise the effects of exchange rate movements on translation performance, particularly on reported profits;

"Over half of those investors polled stated that companies that adopt hedging policies designed to minimise profits-translation exposure are a more attractive investment than those in the same sector on similar price/earnings ratios that leave positions unhedged." (P.38).

The authors also argue that banks would prefer to see translation exposures hedged as this will aid stable earnings growth and safeguard the base currency value of a company's assets.

The Efficient Markets Hypothesis argument that translation exposure does not matter has empirical difficulties. EMH has been found wanting in empirical tests, such as Bilson (1981), Baillie et al (1983) and Callen et al (1989.) The stock market may not be efficient in dealing with exchange rate changes due to a lack of a full understanding of the complexities of currency risk and investors may react to the effects of exchange rate movements on translation performance because they are unsure as to its future implications for the company.

In a later book, Buckley (1992) admits that there are circumstances when translation exposure should be managed. Firstly, if loan covenants place a cap on the gearing (debt to equity ratio) that a company is allowed and unfavourable exchange rate movements could lead to a company's debt to equity constraint being breached. Secondly, when converting the subsidiary's profit or loss into the company's consolidated results, although Buckley does not accept this as a pure translation exposure as it represents cash generation.

Kenyon (1990) accepts that currency risk should be managed with a view to its cash, rather than accounting, effects, but argues that the accounting effects cannot be neglected because solvency tests, borrowing powers and gearing ratios in loan agreements and other debt instruments are often governed by accounting definitions. Kenyon observes;

"If a manager is accountable in one language, he will find it hard to ignore that language." (P.107).

The evidence from the review of previous studies (section 4.3) and the results (section 6.5.9) would seem to support this statement, as **the evidence clearly suggests that companies do attempt to cover translation exposure to appease shareholders and directors and to minimise the adverse effects on the company balance sheet and profit and loss account.** However, to many economists this remains a sub-optimal approach to currency management because of the emphasis on accounting and not economic exposures and thus a search has been on for some form of compromise.

Ross (1992b) argues that it is the view of the shareholders that the company should take into consideration foremost;

"There is serious doubt as to whether corporate treasurers should routinely hedge translation risk. Translation strategy should at least be discussed with shareholders in advance. This will ensure that any action by corporate management to protect accounting figures is not pointless or counter-productive in terms of its key responsibility: to generate shareholder value." (P.26).

However, management should be aware that shareholders with diverse portfolios may favour greater risk and this may not be in the interests of the company.

Aggarwal (1991) argues that in evaluating whether to actively manage translation exposure, a firm should take into account "agency" and "political" costs. The agency costs refer to uncovered translation exposure positions possibly leading to a lower level of reported income. This in turn may lead to a lack of confidence in the company displayed by its shareholders, suppliers and customers and the company's investment and contracts may be detrimentally affected. Political costs arise from the managing of translation exposure leading to higher levels of reported income. This could generate a succession of demands for higher wages and dividends and lead to the increased probability of the attraction of new competitors.

Aggarwal concludes;



"In view of the opposing effects of agency and political costs, firm preference for accounting procedures that result in a higher reported income will depend on the balance between these two costs." (P.11).

These "compromise" solutions appear sensible; **a firm should consult shareholders and should weigh the possible costs and benefits before deciding to embark on any translation exposure management strategy.** However, the evidence from the review of previous studies (section 4.3) would seem to indicate that such a consultative and evaluative framework is rarely in place and many firms simply manage translation exposure as a matter of routine.

In his study of UK MNCs, Walsh (1986) almost completely dismisses translation exposure, "because it is no longer considered an important issue" (P.75). However, the above evidence shows this conclusion to be peremptory and translation exposure management will be considered in the results of this study.

Regarding the practicalities of managing translation exposure, the forward contract may be a very useful device for managing transaction exposure, but it is, in general, not appropriate for managing translation exposure. The problem with using a forward contract in this instance is that it can be difficult to estimate accurately a subsidiary's profits or losses and net asset position at the end of the financial year and therefore it is not possible to decipher the size of a forward contract a company should take out in advance of the reported figures. Another danger for a UK parent company would be that after selling foreign currency forward, Sterling depreciated against the foreign currency. The paper translation gain would be offset by a real transaction loss, as the company would be buying Sterling forward at a more expensive rate than it had sold Sterling in purchasing the foreign currency.

The best way of covering translation exposure is by creating a liability to match the asset. This could effectively be done by foreign currency borrowing, asset and liability management or through the swaps market. The change in the value of the asset as exchange rates fluctuate will be equal and opposite to the change in the liability. This method is flexible as assets and liabilities can be altered with a changing net asset or profit

position. However, the use of such methods requires careful management and timing. The use of these currency management methods is further elaborated in section 3.3.2.6.

A company could also use average exchange rates, for example the average rate over a period of twelve months, and not year-end rates for translation purposes, thus smoothing-out the effect of exchange rate movements on profits and net assets.

Much of the review of previous studies (section 4.3) suggests that firms still manage translation exposure, but do not prioritise it to the same extent as transaction exposure. As Collier et al (1990) point out, transaction exposure's relative importance is because it reflects all foreign currency cash flows in a given period, whereas translation exposure is simply the exposed foreign currency net worth. Thus, the costs and rewards of covering are normally minimal in the case of translation exposure because of the smaller net exposure that usually arises. However, the evidence from this and other surveys, such as Soenen and Aggarwal (1989), indicates that there does seem to be a greater willingness to manage translation exposure in the UK than in other countries.

### *3.2.3. Economic Exposure*

Economic exposure is the risk that the future cash flows generated by a company's activities will vary in domestic currency terms as a result of changes in exchange rates.

#### *3.2.3.1. Sources*

The reasons for the rise to prominence of economic exposure is well summarised in this quote from Dickens (1988);

"Economic risk is not a new idea. Treasurers first started talking about it seriously in the early 1970s. But it is only in the last few years that they have turned theory into practice. The change has been triggered by unparalleled long-term moves in exchange rates in the early 1980s and the substantial changes in the relative values of the dollar, Deutsche mark and Far East currencies in particular." (P.11).

It is not known for certain who first coined the term “economic exposure”, but Dickens is right to say that treasurers began to take the risk seriously from the early 1970s, when the term also started to be used and debated in the academic literature. Dufey (1972) saw it as a general exposure to economic variables and at this time economic exposure was widely thought of as being a subset of transaction exposure. Dufey was the first to examine exchange rate changes affecting costs, revenues and volumes of the foreign subsidiary. This challenged Heckerman (1972), who had assumed that foreign currency cash flows were known and fixed with respect to size and timing. Ankrom (1974) defined economic exposure as the sum of the other two exposure types minus any double-counting, for example when treating inventory. However, it was the ideas of Dufey that later authors developed. Prindl (1976) saw that exchange rate changes could have effects in the short-term on a company’s liquidity and in the long-term on its profits, cash flows, operations and financial structure. The whole range of such risks he called economic exposure. Shapiro (1976) thought of economic exposure as a real operating exposure, with changes in real exchange rates affecting a company’s competitiveness. Economic exposure is sometimes called operating exposure.

Rodriguez (1979) observed that the traditional definitions of transaction exposure and translation exposure did not adequately deal with a company’s economic value as measured by future cash flows. Cash flow exposure is then not simply exposures to transactions entered into, but exchange rate changes will, through their effects on prices, affect aggregate demand and future cash flows. Rodriguez admitted that the term “economic exposure” did mean different things to different people, but thought that it was now being generally accepted that it was a measure that attempted to identify the actual impact of exchange rate fluctuations on company value rather than the paper impact.

**It was the rise of global competition in the 1980s, coupled with the aforementioned sharp movements in the major currencies that brought economic exposure to the fore. Companies’ costs and revenues were more affected by exchange rate changes than ever before and the affect real exchange rate changes were having on the competitiveness of operations began to become clear. As the subject was further explored, the definitions of economic exposure became more**



complex.

After an examination of UK MNCs and their Irish subsidiaries, Walsh (1986) categorised economic exposure according to four subsets;

- I. Sticky price exposure - The time lag between a change in costs brought about by exchange rate changes and the firm changing its prices accordingly. For an exporter, the period would include the time lag between the sale of its goods or services and the receipt of cash in home currency. Transaction exposure was included in this subset. Walsh believed that a substantial number of UK MNCs only had economic exposure to this extent.
- II. Traded good exposure - A firm will be exposed when its markets are not self-sufficient with respect to its inputs, outputs, factors of production, products and services. The costs of these elements can all vary with exchange rates. This is a competitive exposure. Walsh thought that it, "was not of enormous importance to many UK MNCs." (P.335).
- III. Parallel import exposure - For example, customers of a subsidiary's parent may be able to buy more cheaply from the parent than the subsidiary can because of exchange rate changes and, in turn, be able to sell into the subsidiary's market. This exposure can also arise from individuals or companies crossing borders to purchase cheaper goods.
- IV. Macroeconomic and sectoral consequences - For example, price-setting mechanisms that determine output prices, a fall in customer demand where the government is the customer and exporters burdened with an overvalued domestic currency.

This is a reasonable attempt to concisely define a complicated exposure type, but Walsh was unsure whether his classification was exhaustive. In a more ambitious endeavour, Edelshain (1995) attempted to define all possible forms of economic exposure. He separated out the different exposure forms as follows;

- I. Supply exposures - These exposures concern inputs and can occur

regardless of whether supplies are priced in local currency or foreign currency. There will be a local currency price impact when exchange rates alter the supplier's price: this is the exposure to the company of prices changing with exchange rates. There is also the supply margin exposure (or foreign currency price exposure) when supplies are priced in foreign currency and the foreign currency price does not change, but the cost to the company in terms of domestic currency does change with changing exchange rates.

- II. Value chain exposures - Firstly, there is supply chain exposure, when indirect suppliers shift exposure onto direct suppliers who then shift it onto the company. Secondly, there is demand chain exposure, when customers attempt to shift their exposures up the chain or when exchange rate movements have an impact on customer demand.
- III. Revenue exposures - These exposures concern outputs. Firstly, there is elasticity of demand exposure, the exposure to a company of revenue changes resulting from changes in demand caused by exchange rate movements. Secondly, demand side margin exposure, the exposure to margin changes in foreign currency price revenues resulting from exchange rate movements. The foreign currency price cannot be adjusted in line with exchange rate changes and, therefore, the domestic currency revenue from foreign currency receipts will change.
- IV. Competitive exposures - On the input side, a company will have competitive supply exposure when it is exposed to changes in its market share through having a different currency profile in its costs to that of its competitors. On the output side, it will experience competitive demand exposure when its currency profile of revenues differs from that of its competitors.
- V. Quasi-economic exposures - Long-term contract exposure exists when amounts payable are subject to uncertainty. Quasi-contractual exposure exists when the company is bound to a contract by the decision of another party, for example in tendering.

Edelshain (1995) further separated out transaction exposure, as an

exposure type that could be classified as economic exposure, and translation exposure, as a non-economic exposure type. He believed that all these different forms of exposure could generate vulnerability or advantage for the firm.

Moffett and Karlson (1994) went further than most authors in further dividing cash flow exposures into transaction, economic and anticipated. Anticipated exposures were taken to arise from “firmly anticipated” future cash flows producing future transaction exposures. These anticipated exposures are another subset of economic exposure. Moffett and Karlson see economic exposure as being composed of predictable and unpredictable cash flows and the competitive environment, involving the product, the market and the responses of the firm and its competitors to exchange rate movements.

It should be clear from the above definitions that economic exposure does not just possess a conversion effect, like the other two exposure types, but also a competitive effect, with the firm's cash flows being sensitive to the effects of exchange rate changes on its inputs, outputs, markets, its indirect suppliers and customers and the interaction between it and its competitors in response to exchange rate movements. Bradley (1996) terms these concepts as direct economic exposures (conversion effect) and indirect economic exposures (competitive effect).

Economic exposure is also different from the other two exposure types because of the driving force behind it, as Flood Jr. and Lessard (1986) highlight;

“Unlike the traditional exposure approach, where the currency of the item under consideration is of major importance, operating exposure is determined primarily by market characteristics, not by the currency in which prices are quoted.” (P.34).

The early 1980s emphasised to US companies the impact of economic exposure, when the dollar's rise led to US companies switching production to low cost countries and brought overseas competition into once solely domestic US markets.

It is important to stress that for economic exposure it is real, not nominal,

exchange rates that are valid. If a foreign currency's depreciation is simply a response to its country's higher inflation rate and it moves in line with Purchasing Power Parity (or PPP, the theory that argues that changes in the equilibrium exchange rate are proportional to changes in relative price levels), the competitive position is unchanged. However, if the foreign currency depreciates more than is required by PPP, the Sterling-equivalent costs of the foreign company will be less than the costs of the UK company and hence the foreign company will be at a competitive advantage in the British market. It is not the task of this research to examine the viability of the PPP theory, but it appears to be generally accepted that PPP may not hold, at least in the short- and medium-term, for a number of reasons; a) price adjustments can take time, b) the inflation rate is a general price index and there may still be relative price risk and c) speculation and government intervention could prevent the exchange rate from attaining its equilibrium level. Jorion (1990) provided compelling evidence of why PPP cannot hold in the short- to medium-term at least;

"The monthly volatility of relative changes in exchange rates is around ten times the volatility in inflation rates, thus most of the movement in exchange rates cannot be accounted for by changes in inflation rates." (P.334).

When PPP does not hold, economic exposure can be highly relevant to many companies.

**It should be obvious from this analysis that economic exposure can affect companies operating entirely domestically, if they have foreign competition in their markets. It will also affect companies that invoice foreign sales in their own currency (through this competition effect and because exchange rate movements will put volume of sales at risk). Not many companies are in the position to ignore economic exposure;**

"The unceasing drive towards the internationalisation of markets caused by converging tastes, falling tariff barriers and the need to amortise research and development and capital expenditures means that no country market segment is immune to the penetration of foreign competitors." (Adkins 1991a. P.1).

A company's economic exposure will be dependent on the number of currencies and the competitive conditions in its market. If it is exposed to many currencies that tend to move in different directions to one another, it will find much of its risk diversified away because if it is in an unfavourable position relative to a group of currencies, the likelihood is that it will also be in a favourable position against another group of currencies. If the company's competitors are many and all from the same country, there will also be minimum economic exposure because any unfavourable currency movement against the company will be shared, in terms of market share and/or profits, among its competitors.

There is an even more complicated view of economic exposure that emerged in the late 1980s. This view is best illustrated by Oxelheim and Wihlborg (1989a, 1989b) and it is concerned with how the firm's profits, cash flow and value are affected by the economic environment as a whole. They argue that a company should examine not just the effect of exchange rates movements on the firm, but also the effects of inter-related shocks, such as interest rate changes, movements in inflation and changes in wage levels. The sensitivity of the firm's profits, cash flows and value to unanticipated changes in these macroeconomic variables may be ascertained by regression analysis, which will assist the firm in developing a hedging strategy.

Donaldson (1987) is of the view that in most international businesses, economic exposures are so fundamental, they cannot be ignored. It is difficult to argue with this assessment.

#### *3.2.3.2. Measurement*

Whereas it is relatively easy to measure transaction and translation exposures from the values of contracts and accounting statements, the measurement of economic exposure is much more problematic. With transaction exposure, the firm is only dealing with one uncertainty, i.e. the domestic currency equivalent of a foreign currency denominated contract. However, with economic exposure, the value of the cash flow in foreign currency terms is also uncertain as an exchange rate change alters costs, prices and sales volumes. To quantify the exposure, a company will have to make some attempt to evaluate the elasticities of demand, the behaviour of costs and the effects of foreign competition on exchange rate



movements. These are all factors that are very difficult to measure with a reasonable degree of accuracy. A company will obviously have to understand the nature of the market in which it and its competitors sell and incur costs and their flexibility to change markets, product mix, sourcing and technology. However, as Glaum (1990) argues, in the end it will come down to a company's judgement;

"A measurement of economic exposure will always be subjective; it consists of estimations of future cash flow components and is based on an arbitrary time horizon." (P.68).

For these reasons, corporate exposure to currency risk is unlikely to be accurately measurable.

A methodology for exposure measurement is proposed by Edelshain (1997). He observes that many companies appear to calculate their currency risk by projecting past experiences, comparing past budgeted performance with past actual performance. He proposes an analysis of the resulting variances to be used to assess ongoing and future exposures. Budgeted exchange rates can be adjusted to reflect any forecast changes in currency exposures that will be later used for comparison with actual rates in variance analysis. With variance analysis, companies will be able to run simulations that compare budgeted exchange rates with other possible future exchange rate changes. The possible variances will be highlighted and those that go beyond a certain level can be the subject of preventative action.

This type of analysis assumes that exchange rate volatility is largely unchanging and that expected future changes in the exposures can be factored into the variance analysis. However, it may be difficult to assess the pure affects of exchange rate changes and it appears, as chapters 4 and 6 will later show, that many managers do not even know the various forms of economic exposure let alone how to conduct a variance analysis on them. Edelshain also makes the point that to ask managers to assess the possible impacts of possible exchange rate changes is to ask them to speculate on a huge number of possible outcomes and the whole analysis is dependent upon the availability of the necessary information. However, even if the analysis is not wholly successful, it will encourage managers to become more informed about their currency risk.

Cornell and Shapiro (1983) propose a methodology for measuring cash flow exposures as a whole. It requires the firm to forecast the relationships between exchange rates, relative prices and the company's real cash flow. The impact of future of exchange rates are then assessed for their projected impact on relative prices, sales, costs and capital requirements. This will enable the firm to calculate the effect of exchange rate changes on cash flow. Probabilities can be assigned to each exchange rate scenario, making it possible to estimate the expected level of cash flow and its variability in each instance. To limit costs, management should focus on the scenarios with a high probability of occurring that would have significant impacts.

However, like Edelshain's methodology, while sound technically, the resources, costs and expertise this kind of system would require probably puts it out of reach of the vast majority of small and medium-sized companies.

#### 3.2.3.3. *Management*

Not surprisingly, given the difficulty in measuring this exposure type, managing it can prove to be a daunting task, especially as many of its major determinants are external to the company. Walsh (1986) argues;

"Given the difficulties inherent in measuring economic exposure, the possibility of immunising economic exposures is unlikely, and at best one can hope for partial hedges of economic exposure." (P.123.).

Edelshain (1995) is of the clear view that the management of economic exposure is a challenge to which firms must respond. In his study, he found economic exposure to have a greater perceived impact on companies than the other exposure types and, therefore, by ignoring it management was failing to attend to the main sources of advantage and threat that currency exposure brings. He also thought that by managing economic exposure, the firm could influence and reduce its future transaction and translation exposures;

"How the corporate 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 exposures.” (P.55-56).

He thus advocates companies having a total exposure strategy.

Dickens (1988) and Buckley (1990) suggest using the forward and, particularly, the options market. The flexibility of options makes them more suitable for hedging economic exposure. For instance, unlike a forward contract, currency options would not lock a company into a rate when it tenders for a contract that it does not secure. However, as is explained later in this chapter, such financial instruments will have a limited use in managing economic exposure.

Lessard and Lightstone (1986) argue that the main difficulty of managing economic exposure arises from the exposure moving with changes in real exchange rates, whereas the financial instruments and policies of foreign exchange management move with changes in nominal exchange rates. They advise a form of a long-dated currency swap. This hedge is a contractual arrangement between two companies with opposite economic exposures with respect to the same real exchange rate. A company cannot make any long-run economic gain or loss because any expected change in the exchange rate is incorporated into the initial pricing of the contract. Any decrease (increase) in normal operating profit due to short-run exchange rate movements will be offset by a corresponding gain (loss) on the hedge contract. The variability of operating earnings associated with real exchange rate movements is then reduced.

These different types of foreign exchange contract are fully explained later in this chapter.

Companies could also adopt a strategic approach. For example, product diversification could be an effective way of avoiding foreign competition and therefore leave the company with little real net economic exposure (sometimes called “the portfolio effect”). Management could also relocate the company to another country to enable it to better match its costs and revenues, and therefore limit economic exposure, and/or allow the

company to enjoy a more suitable exchange rate environment.

Bryans (1993) states that the most appropriate way of managing economic exposure is in the strategic planning process. The management of economic exposure should therefore be based on long-term trends;

"Forecasts of real exchange rate movements can be built into the scenarios of the company's competitive environment along with other critical variables. The effects of exchange rates on the costs of input and price of goods production will therefore be a contributing factor to strategic decisions such as the choice of markets, product mix, sourcing of inputs, location of product sites." (P.16).

Other functions outside the finance department should therefore be involved when decisions on the management of economic exposure are being made.

Donaldson (1987) regards the long-term nature of business decisions to be an even greater problem than uncertainty when managing economic exposure, for example with a sourcing decision locking a company into a specialist supplier for several years. He emphasises the role of cash forecasts in assisting the firm to gain some idea of the size of the exposure it could be facing. This is expanded further by Buckley (1992), who also adapts the ideas of Cornell and Shapiro (1983) and Oxelheim and Wihlborg (1989a, 1989b), in suggesting that a company could generate a statistical model to demonstrate the impact of exchange rate changes on other economic variables and on cash flow and thus help it to act quickly to hedge actual or anticipated exchange rate changes.

Srinivasulu (1983) clearly showed the consequences of this long-term planning process, involving lock-in effects, contractual arrangements and the long lead times to develop new markets, products and services. This must mean that to be managed properly, economic exposure management must be an integral part of global strategic planning by the firm.

The fullest response to the question of how to manage economic exposure is arguably best presented by Lessard (1986) and Lessard and Nohria (1990), later adopted by Soenen and Madura (1991). These

authors present three alternative strategic responses to economic exposure;

1. Adjust operating policies to respond to long-term movements in exchange rates, with flexible sourcing, manufacturing and financing, segmentation and selection of markets and using different product strategies (specialisation or differentiation) depending on circumstances.
2. Matching inflows and outflows in the same or correlated currencies.
3. Building up a portfolio of businesses with offsetting exposures.

However, Lessard (1986) and Lessard and Nohria (1990) do point out that the last two options may require a departure from optimal configuration in implementing (and a corresponding reduction in expected profits) and the last option may increase administrative costs with the extra running costs of diverse businesses. Only the first option can increase expected operating profits as well as decreasing their variability.

Srinivasulu (1981) was of the opinion that both strategic and financial methods could be used to manage economic exposure. Strategic management, and the choice of products, markets, sources, he thought, should be the primary technique, but he also saw a role for the financial side, particularly in the choice of currency of denomination of debt, place of issue and maturity structure as a source of additional revenues for managing economic risk. He goes on to provide an example of how Volkswagen coped with its economic exposure to the US dollar in this way. After suffering huge losses from mismanagement of its currency exposures, Volkswagen changed the denomination of a part of its loans from Deutsche marks to dollars because its revenues were suffering from an appreciating Deutsche mark. It started to purchase its component parts in the US and set-up plants there and it also created an inter-subsidiary linkage with subsidiaries in countries with appreciating currencies required to purchase from subsidiaries in countries with depreciating currencies.

Lessard and Nohria (1990) were also of the opinion that financial

instruments had a role to play in the management of economic exposure;

"None of these is exact, since they are keyed to nominal rather than real exchange rates, but they have the advantage that when competitively priced they reduce the variability of operating profits with little or no reduction in the anticipated level of such profits." (P.194).

Strategic responses to economic exposure have their dangers, as exemplified by the US company Caterpillar in the early 1980s. It moved plants overseas to combat the appreciating dollar increasing its costs relative to its Japanese competitors. Sales initially rose, but plummeted when the dollar started to fall. A company has to be confident in its view of long-term trends before it can take such strategic decisions and it has to be highly flexible in its operating policies. Lewent and Kearney (1990), in illustrating the strategy of the US MNC Merck, argued that for some companies, relocation of staff or resources overseas may not be a practical or a cost-effective option. They suggest that firms should simulate a number of alternative strategies and chose the most cost-effective strategy that is in keeping with their risk tolerance profile.

Using financial instruments to manage economic exposure can carry even greater dangers than strategic responses. Besides the obvious danger of using financial hedges on contingent exposures, highlighted in section 3.2.2.2, the typical financial hedge actually works against changes in nominal, not real, exchange rates and hence will not be effective where real and nominal exchange rates diverge significantly. It is also the case that, with the competitiveness aspect of economic exposure, hedging may put the firm at a disadvantage relative to its competitors if its competitors decide not to hedge and currencies move in their favour. Kenyon (1990) denounces financial hedges as "a temporary palliative" (P.132) and recently a senior British businessman put financial hedging in its proper place regarding the management of competitive exposures;

"Hedging is an important part of any exporter's business activity, but can only defer the impact of violent currency swings." (Rennocks 1997).

Six-month forward and options contracts are unlikely to have much impact on an exposure that is governed by long-term movements in exchange

rates and the continuing changing nature of markets and competitors' actions.

Economic exposure can then be managed, but the evidence from the review of previous studies (section 4.3) suggests that this is only recognised by the larger companies operating in highly competitive markets. Many other companies seem to accept economic exposure as just another risk of business and appear more concerned with the impact of transaction and translation exposures on the company's short-term results, but even though economic exposure is difficult to measure and manage, the above arguments and the actions of some sophisticated companies suggest that it can and should be done.

Some companies have gone out of business as a direct result of failing to manage this type of exposure. To consider Freddie Laker's airline, Laker Airways, it generated half its revenues in Sterling and half in US dollars. Much of its costs were denominated in dollars, for example fuel and debt payments. Laker borrowed heavily in early 1981 in US dollars, incurring more dollar debt repayments and thus increasing his dollar economic exposure. However, with the dollar's sharp appreciation, the firm's revenues could not meet its expenses. Laker Airways eventually went bankrupt, with this policy of dollar borrowing playing a significant part in its demise. This was a failure of not recognising and reducing economic exposure, for instance by increasing dollar-denominated revenues or decreasing dollar-denominated costs.

#### *3.2.4. Overlaps Between the Exposures*

So far, this chapter has viewed the exposures separately, but there are significant overlaps between all three main exposure types that no summary of them can ignore and neither can any company that actively has to manage them.

As mentioned earlier in this chapter, it could be argued that all transaction exposures are economic exposures because the present value of all uncovered foreign exchange exposures will vary as exchange rates vary. Economic exposures will become transaction exposures on the placing of orders by a company.



Transaction and translation exposures can overlap because remitted profits from subsidiaries can be treated as both: they are part of the impact a foreign subsidiary will have on the parent company's profit and loss account when its profits are translated, but this is also a clear international non-trade transaction. These exposure types also overlap in the case of long-term foreign currency denominated borrowing, a liability on a company's balance sheet, but the home currency equivalent to pay the loan will vary as exchange rates vary (by this reasoning it could also be an economic exposure). Another example of an exposure that falls into each of the overlapping areas between the exposures is a transaction exposure at the beginning of the financial year.

Kenyon (1990) takes a different approach from most other commentators. He believes the principal distinction is between economic risks, movements in real exchange rates threatening competitive costs, and financial risks, which arise from movements in nominal exchange rates. He prefers the term competitiveness risk to economic risk as he believes the latter term to have been too widely applied in the past. He does not believe in differentiating between transaction risk and translation risk because, he argues, that they are different ways of examining the same external threat. He groups these two risks together and calls them position risk, with the exposure being the net position in a currency. However, in an attempt to get the semantics right, Kenyon only further confuses the issue. Grouping together transaction risk and translation risk seems particularly contentious given that one will effect cash flow and one will not.

One does have to be aware of the overlaps between the exposures, but the evidence from chapters 4 and 6 is that the exposures, broadly, can be distinguished and treated separately for companies, especially where the degrees of interaction between the exposures are limited, with transaction exposure resulting from firm, agreed contracts; translation exposure arising from the existence of overseas subsidiaries whose balance sheets and profit and loss accounts must be consolidated at the financial year end; and economic exposure encapsulating future, contingent and strategic exposures. Later analysis is conducted with this general framework in mind. However, as highlighted in the previous section, **where companies have to face some or all of the exposure types,**

they must be conscious of the fact that in managing one, they could be affecting the shape of the other exposures. They therefore must have a general, and not a series of specific exposure strategies.

### *3.3. The Practicalities of Foreign Exchange Risk Management*

This section will review the methods, issues and general practices involved in companies' management of their currency exposures.

On the methods side, it will be necessary to examine the various techniques and instruments companies have at their disposal. No list of such methods is likely to be exhaustive, so an attempt is made to describe those methods in common use and which are likely to be most applicable to the sample companies. Many of these methods, however, are not applicable for covering exposures in exotic currencies, defined in section 3.3.5. This is a growing problem with many Scottish companies now seeking to tap into new markets abroad and therefore the special difficulties of managing these currencies will be examined.

The issue of centralising currency management operations and the various currency management strategies and policies available to companies will be major points for discussion. A problem area highlighted by the review of previous studies (section 4.9), performance measurement in currency management, will be closely considered.

#### *3.3.1. The Internal Techniques of Currency Management*

The instruments and methods to manage currency exposures can broadly be divided into two groups: internal and external. The former are generated from within the company and the latter are obtained from outside institutions. The internal techniques will be reviewed first. These techniques should be a company's first port of call when engaging in currency management as they can substantially reduce exposure positions and, at the same time, are usually inexpensive, simple to manage and do not use up bank foreign exchange lines. However, as will be shown, some of the techniques do have high set-up costs if they are to be fully utilised, for example they may involve the creation of a central treasury. They also may not give the firm a complete hedge.



#### *3.3.1.1. Netting*

Netting is where companies within a group settle their indebtedness for the net amount of foreign currency owed. Payments and receivables are netted out leaving just the net exposure position to be covered. This technique can dramatically cut-back on net foreign currency volumes and exposures. It can be done bilaterally, between two companies within a group, or multilaterally, among all the companies in a group. The latter method will make greater savings, but does require the creation of an in-house treasury and the surrender of currency management powers by group companies.

Exchange controls in many countries apply restrictions on netting, but the absence of any exchange controls in the UK makes it an ideal centre for netting.

#### *3.3.1.2. Matching*

Matching is similar to netting, except it can be done either intra-group or with a third party. The principle is much the same, to match foreign currency receipts and payments to decrease exposed positions. Natural matching takes place in the same currency and parallel matching takes place in currencies expected to move together against a domestic currency, for example when the ERM was successfully operating pre-1992, matching French franc payables and Deutsche mark receivables would have been possible for a UK company because these currencies moved together against Sterling within the confines of the ERM.

Matching can also be constrained by exchange controls in some countries, but is not in the UK.

#### *3.3.1.3. Leading and Lagging*

Leading and lagging is usually applied intra-group, but can also be employed when dealing externally. Leading means remitting a payment or collecting a receipt in advance of a due date if the foreign currency of payment/receipt is expected to appreciate/depreciate by the settlement date. Lagging involves delaying a foreign currency payment/receipt to

take advantage of an expected depreciation/appreciation in the invoicing currency. Leading and lagging is more usually employed intra-group because they may not be tolerated by customers and suppliers and could seriously damage the trading image of the company. A company employing such a technique must also take into account relative interest rates and after-tax effects.

Again, in some countries this technique is subject to exchange controls because it can detrimentally affect balance of payments figures. This technique also relies on forecasting which currencies will appreciate and which will depreciate, but, as there is no exact science of exchange rate determination, judging the direction of currency movements can be difficult.

#### *3.3.1.4. Price Variation*

A company may increase its prices to offset unfavourable exchange rate movements or pass onto customers the benefits of favourable exchange rate movements in the form of lower prices. This may contravene the fair, market price, but if a company has enough market-power and is able to circumvent government regulations, it could employ such a tactic.

Obviously, where a company does not have this power or where a government is not reluctant to intervene in the name of competition, this instrument is less valid.

Of course, customers do not like too many price changes and companies may be further constrained in varying prices by their planning and budgeting processes, but by setting price lists and tenders via the forward rate instead of the spot rate, some element of future exchange rate changes can be incorporated into a company's pricing strategy.

#### *3.3.1.5. Invoicing in Domestic Currency*

This is a common, rudimentary method employed by many companies to combat currency risk. Evidence from the review of previous studies (section 4.8) and the results from this study (section 6.5.3) suggest that many companies believe it to be a technique that fully eliminates currency risk, but this is a simplistic and mistaken assumption.

This technique does not completely eliminate risk, but merely transfers it onto the company's customers. For example, if the company's currency appreciates, its buyers may purchase less. By seeking to avoid currency risk through this tactic, a company can put other aspects of its business at risk, in this case sales.

Domestic currency invoicing may eliminate transaction and translation exposures for the company, but it does not guard against economic exposure. In fact, by invoicing in its own currency in foreign markets, a company could be putting itself at a serious disadvantage against its competitors.

Prindl (1976) observed these problems twenty years ago:

“The author has dealt with dozens of companies, particularly in the US and the UK, which have traditionally billed in dollars and Sterling respectively. Even after sharp and continued devaluation of either currency, little thought is given to billing in other currencies where possible.” (P.62-63).

This statement is as applicable today as it was then.

The argument that currency invoicing eliminates currency exposure is even found in the literature, although for abstract situations. Rao and Magee (1980) attempt to demonstrate that the currency of denomination is not relevant if both the exporter and the importer are equally risk averse. However, their hypothesis rests on a number of simplifying assumptions of equal risk aversity, constantly adjusting goods prices and export markets, interest rate parity and PPP holding in the short-run and the absence of regulations, product differentiation and market power. This work is useful by demonstrating the kind of unrealistic conditions that have to exist to make the currency of denomination an irrelevant issue.

#### 3.3.1.6. *Invoicing in Foreign Currency*

A company may agree to invoice in foreign currency to attract an appropriate buyer, to aid an overseas tender, to enable more rapid payment if it is the standard currency within an industry or if there is disagreement between the company and the customer over the currency

of payment. However, a company should always choose a foreign invoicing currency in which there is an active forward market at least as long as the payment period in order to protect itself against exposure.

Foreign currency invoicing can also be a subtle way of changing prices. For instance, when market conditions are poor and the company wants to maintain its market share by decreasing its price, it could invoice in a weakening currency that, when it depreciates, will be akin to the customer receiving a discount. Similarly, a company may invoice in a strong currency when market conditions are strong and it wants to increase its price.

ECU invoicing could be a way of smoothing exchange rate fluctuations as the ECU is a more stable currency than most, being derived from a basket of currencies, where fluctuations in one currency are likely to be balanced by fluctuations in another. It will also reduce foreign exchange and payment commissions and facilitate netting and matching. However, the ECU remains predominantly a currency for settling inter-central bank payments, although this may change as the process of European Monetary Union gets further.

In countries with few exchange controls and an active forward market, foreign currency invoicing should not be a pertinent currency management tactic, as companies can, through use of the various markets, be long in strong currencies if desired. However, in countries where these conditions do not apply, foreign currency invoicing must be taken more seriously and the company must try to strike a balance between reducing currency risk and being attractive to potential buyers.

#### *3.3.1.7. Asset and Liability Management*

This technique can be used to manage balance sheet, income statement or cash flow exposures. A firm could adopt an aggressive strategy and denominate assets and currency inflows in currencies expected to strengthen and denominate liabilities and currency outflows in currencies expected to weaken. This strategy contains the risk that currencies may not move in their expected directions. The risk averse strategy would be for a company to match assets and liabilities and currency inflows and outflows in their respective currencies or in currencies with which they are

correlated, with no regard as to whether the currencies are strengthening or weakening.

#### *3.3.1.8. Currency Diversification*

By being exposed to a range of currencies not well correlated with one another, a company could cover itself against currency risk as if it loses on one currency, it may gain on another.

However, this method, like many internal techniques, may not create a perfect hedge, where the net exposure is fully covered. Its only guarantee is that it will smooth-out currency fluctuations and for many companies it may not be practical to be exposed to many currencies at once if they only have limited foreign operations.

#### *3.3.1.9. Other Internal Methods*

Adkins (1991a) argues that firms should not just use currency diversification to curtail currency risk, but differentiate products, as they are less price sensitive than standardised products. However, this also means there is less of an opportunity for taking advantage of favourable exchange rate movements, so Adkins advises supporting, by a marketing effort, differentiated products in times of volatile exchange rates and standardised products when there is an opportunity to take advantage of favourable exchange rate movements. However, this strategy requires considerable flexibility and accurate timing on the firm's behalf. It may also generate significant costs and create much uncertainty and thus for many firms it will not be a suitable technique.

For firms that cannot diversify in this fashion, Adkins (1991b) advises "applying capability." This involves firms building up reserves of strength in periods of favourable exchange rates as a defence of their competitive position when exchange rates turn against them. By reserves of strength, he means price and product competitiveness and liquid assets. Operating efficiency could be increased in favourable times by improving the cost structure and modernising capital equipment. Product competitiveness could be boosted by enhancing product attributes and perceived customer benefits. A company could also build-up cash reserves as a buffer against the inevitable adverse exchange rate movement, although they



will be eroded by inflation.

This strategy may prepare a firm for adverse exchange rate shifts, but involves much planning and requires the firm to be flexible and to have an acute sense of timing. It is probably only large companies or companies heavily exposed to international competition that would prioritise currency management to this extent.

Other strategic methods for managing currency risk are examined in section 3.3.4.

### *3.3.2. The External Techniques of Currency Management*

There are also a myriad of external techniques from which a company can choose to cover itself against adverse currency movements, but such tactics are spurned by many companies because they regard the use of external techniques as speculative and/or they are worried about their expense. However, not hedging currency exposures can be seen as being more speculative than hedging. For instance, if a UK firm is awaiting a large dollar payment and has not hedged, it is hoping for a dollar appreciation, but running the risk of a Sterling appreciation. If it covered the exposure by hedging, it could obtain a minimum guaranteed return. Many of the instruments for hedging purposes are inexpensive and there is evidence that the costlier, more flexible instruments are falling in price and should not be beyond the reach of even the smaller companies (London 1992).

#### *3.3.2.1. Forward Contracts*

A forward foreign exchange contract is an agreement between two parties to exchange one currency for another at some future date, with the exchange rate, the delivery date and the amounts involved fixed at the time of the agreement. The purchasing party then locks itself into a guaranteed rate of exchange and thus cannot be punished by unfavourable spot rate movements between agreeing and settling a contract. Forward contracts are available in most major currencies.

Simple forward contracts are useful instruments for hedging firmly anticipated currency exposures. For example, a UK exporter expecting a



\$1M receivable in three months time could sell \$1M forward for three months at a guaranteed dollar/Sterling rate and when the dollar receivable arrives at the end of the three months, the exporter, to fulfil the forward contract, delivers the dollar receivable and receives Sterling at a guaranteed rate of exchange, regardless of what has happened to the dollar/Sterling rate in the intervening three months.

The main advantage of a forward contract is that it can reduce many forms of exchange rate risk at a low cost. There is a transaction cost involved because the bid-ask spreads in the forward market are larger than in the spot market, but it is usually very small, around 0-2% of the value of the contract for small amounts and decreasing with contract size.

The main disadvantage with the simple forward contract is that an exporter still has to supply the agreed currency to the bank if its export deal falls through, for example if it fails to secure a tender or if payment is not received within the forward contract period. This means the exporter would need to buy the currency in the market at the going rate, leaving open the possibility of a large loss. When there is uncertainty regarding the size of contract or the possibility of payment, a simple forward contract should not be used. Neither does a forward contract allow a company to take advantage of favourable movements in the spot rate and thus will not be competitive if rival firms benefit from being uncovered. The forward markets are highly developed in the major currencies, but are not well developed in some and non-existent in others and thus for many currencies the forward contract is not applicable. Forward markets also become thinner as delivery dates become more remote and beyond one year, forward transactions can become very expensive.

The attraction of forward contracts is their simplicity and low cost, but their inflexibility make them undesirable in certain situations. Attempts have been made to temper this disadvantage, although at extra cost (see section 3.3.2.5.).

#### *3.3.2.2. Futures Contracts*

A futures foreign exchange contract involves two parties exchanging a standardised amount of foreign currency for a standardised future

settlement date. Business can only be transacted through authorised brokers and is limited to a small number of major currencies. A clearing house eases the flow of funds, with the buyer and the seller having obligations to the clearing house, which becomes the opposite party to each customer. There are two costs involved: a direct commission charge to the brokers and a margin payable to the clearing house as a provision against unfavourable price movements of the futures contracts, usually about 1-5% of the value of the contract.

For the purposes of hedging, financial futures, like forward contracts, can provide a guaranteed rate of exchange for future currency transactions. Foreign currency receivables and payables can be hedged using financial futures by taking a position that is equal and opposite to an existing exposure. Of course, a market has to exist in the foreign and home currencies. Financial futures can also be used for speculating on future interest rate and exchange rate movements. A trader could sell a contract not yet purchased if he believes the currency will fall in value or its interest rate will increase. If exchange rates or interest rates move as anticipated, the trader can then make a profit after buying in the contract at a reduced price before the delivery date.

Unlike forward contracts, futures do not use up bank credit lines and they can be liquidated before maturity. However, being standardised, they are very inflexible and do not offer companies much more than a forward contract. In addition, they are potentially more costly, with the company having to allocate capital up-front and possibly having to increase its allocations to provide against adverse price movements of the futures contract. This margin cost is marked to the market daily, requiring daily entries in the company's accounts, which can be onerous on the company's administration. Futures are also only available in a handful of major currencies.

For these reasons, few companies operate in the futures markets, as the results (section 6.5.3) and surveys by Aggarwal and Soenen (1989) and Glaum and Belk (1992) demonstrate. It is mainly a den for speculators and institutions that want to offset a large volume of exposures rather than for companies seeking to cover specific exposures. It is only really in the US, with a more accessible market, that futures are readily used by

companies.

#### 3.3.2.3. *Currency Options*

A currency option gives the buyer the right, but not the obligation, to buy or sell a currency for an agreed price before or up to a specified date. Buyers of options can therefore gain protection from unfavourable currency movements and simultaneously take advantage of favourable exchange rate movements. There is an up-front premium to be paid for this protection and flexibility. This premium will depend on the currency's volatility and the length of time before the option expires: the more volatile the currency and the greater the expiration period, the more likely it is that the option will be exercised at a profit and this is reflected in the higher price.

To take the example in section 3.3.2.1 again, a UK exporter with a \$1M receivable could purchase a number of call options (the right to buy Sterling for dollars) of the value of \$1M. If Sterling appreciates against the dollar so that the spot rate on expiration of the option is greater than the option exercise price, the exporter is protected with a guaranteed rate (the exercise price) and could sell or exercise the option for a profit if this amount is greater than the premium paid for the option. If Sterling depreciates, the exporter would let the option lapse and deal at spot, taking advantage of a favourable exchange rate movement in a way that would not be possible with a simple forward contract. The exporter's only loss would be the option premium.

Options can be tailor-made, by the banks, using the over-the-counter market to meet a company's precise needs, or exchange-traded in an options market with fixed sizes, prices and maturity dates. Exchange-traded options have the advantage of confidentiality for the company as they are transacted through a clearing house, but they are usually restricted to the major currencies and there are no maturities over two years. For these reasons, companies prefer to use over-the-counter options.

The banks have devised a series of differentiated option products. To give a few examples;

- A contingent premium option involves the payment of no premium unless a predetermined adverse exchange rate movement takes place.
- A compound option is an option on an option and is particularly useful for tendering, with the company taking out the first leg of the option when submitting its tender and only taking up the second leg if its tender is successful.
- The tender-to-contract option involves the customer in a tender paying only a percentage of the option premium and only paying the rest if its tender is accepted.
- The option premium can be reduced using a collar option, a cylinder option or a participating forward, but only by giving up some of the profit potential.
- An average rate option also has a lower premium. The relevant exchange rate is the average rate for a certain period and thus exchange rate movements are smoothed out. If the average exchange rate is worse than the option exercise price, the bank will pay the difference between the two rates and if it is better than the exercise price, the company can take advantage of the superior rate.
- A forward reversing option incorporates the cost of an option into a forward contract rate. With unfavourable currency movements, the forward rate is taken and the option lapses and with favourable currency movements the option can be exercised to obtain a better rate than the forward rate, although within limits.
- The lookback option uses the most favourable exchange rate among all the spot rates during the option's life and is for this reason more expensive than ordinary options.

However, many of these exotic options are not generally well-known and many banks do not have the expertise and resources to market them. There is therefore a lack of liquidity in the market, which raises problems if a company wants to sell this type of option back to the market. Neither

do these options have a generally traded market, making it more difficult to follow the price of an option through its life-span and therefore making it more difficult for the company to judge when to close-out the option.

Companies can design their own option strategies. For example, in times of significant volatility, a company could use a “straddle.” This involves buying both a put (the right to sell a currency) and a call (the right to buy a currency) with a common exercise price equal to the forward exchange rate. If the spot rate is greater than the exercise price, the call is exercised. If the exercise price is greater than the spot rate, the put is exercised. However, the company would have to pay a premium for both the call and the put, thus the spot rate's move from the exercise price does have to be significant. This is in effect a bet by the company that its forecast of currency volatility is better than the market's.

Options can be useful for combating economic exposure. For instance, with a company incurring competitive exposure, options allow it to take advantage of favourable exchange rate movements along with its competitors and it is well protected in periods of adverse currency fluctuations. If a British company was competing with a German company in the US, it could buy Deutsche mark put options. If the Deutsche mark depreciates against the dollar, the British company could use its profits from its option to match the German company's price cuts in the US. If the Deutsche mark appreciates, the option expires worthless, but the British company still has its price advantage. If a company was tendering for a contract unsuccessfully, by using currency options the cost is limited to the price of the premium, but there would be a possible unlimited loss if the company was committed to a forward or futures contract. Other contingent exposures can be similarly well managed with currency options. If a company is very uncertain about future currency movements, currency options may be a better choice than dealing at forward or spot. However, due to the relatively short maturity of most options, exposures can only be hedged for a limited period of time and this is a serious problem in the managing of long-term economic exposures.

The evidence from previous studies suggests that currency options and the other relatively new financial engineering products are still viewed sceptically by many companies (section 4.8). The majority of companies



prefer to use the tried and tested methods, such as the forward contract. The main factors discouraging them from using options are the up-front premium, which is much more expensive than the cost of a forward contract and may be looked upon as a waste of resources if the option is not exercised, and the fact that options need to be constantly reviewed and managed, for example deciding whether to sell the option or let it lapse, when the company may have more pressing concerns. It is also only possible to buy long-term options in a handful of currencies.

There are strong arguments against this view of the currency option as a luxury commodity;

"On average, currency options cost approximately 6% a year on major traded currencies. Compared with annual fluctuations in exchange rates over recent years, 6% seems reasonable. The £/\$ exchange rate, for example, has fluctuated by an average of 13% a year since floating exchange rates were introduced in the early 1970s." (Howcroft and Storey 1989. P.24).

An option can also be sold back to the market or exercised when it matures for a profit. Cost could further be reduced if several UK companies competing for one foreign tender shared the premium for the option that only one will need.

However, evidence to date would suggest the former argument is holding sway among companies: options are too expensive and forward contracts and other instruments and techniques give companies the necessary protection that they seek. Glaum and Belk (1992) even found this to be the case for UK multinationals. In Aggarwal and Soenen's (1989) survey, 60% of US MNCs cited cost as a disadvantage of options.

Nevertheless, currency options are still well-used among the more sophisticated operators in currency management and their use is spreading;

"Options are not short-lived phenomena that are likely to fade from view any time soon." (Furer 1992. P.44).

#### 3.3.2.4. *Currency Swaps*

A currency swap involves the exchange of interest and principal by at



least two borrowers. It can thus enable a company unable to raise funds in its preferred currency to do so if it can find another company that wants to swap into a currency in which the initial company enjoys favourable credit status. A borrower could, by using the swap market, raise funds in the currency of its choice, but pay interest and principal payments in the currency of its most accessible market. Currency swaps, therefore, allow transacting parties to participate in a form of financial market arbitrage, with these arbitrage opportunities capable of arising because the world capital market is not fully integrated.

The three basic steps of a swap deal are as follows:

1. principal amounts are exchanged at an agreed rate of exchange on a physical or notational basis. The swap participants simply convert the principal amounts in the required currency at a rate acceptable to both (usually via the spot market),
2. interest payments on the principal amounts are exchanged on an ongoing basis at an agreed rate,
3. finally, the principal amounts are re-exchanged on maturity of the contract.

A currency swap can allow a company access to acceptable money market rates that may not otherwise be available and swaps can offset currency risk by allowing the company to alter its mix of liabilities and assets. Relative to loan deals, they are usually less cumbersome to arrange in terms of documentation and normally they have low transaction costs.

The main disadvantages of swaps are their high minimum values (around US\$3M), the extent of the documentation still to complete and the risk of counterparty default that could possibly leave the company's financing and hedging strategies in ruin. To counter this last disadvantage, an intermediary bank could be used to guarantee the parties' swap commitments, although for extra cost.

### 3.3.2.5. *Other Types of Foreign Exchange Contract*

There are other forms of foreign exchange contracts that companies use, some of which will now be reviewed. They are usually hybrids of “first generation” currency management instruments that are designed to temper some of the disadvantages and limitations of their predecessors.

- Spot/forward contracts involve the simultaneous purchase or sale of an amount of foreign currency for two different dates, one spot and one forward, and can therefore extend the settlement date of a maturing contract to meet a hedged currency receivable/payable when the settlement date is uncertain.
- Forward/forward contracts involve the simultaneous sale or purchase of foreign currency for two different future dates and therefore can also extend the period of the hedged position if this is desired. These contracts usually have the necessary flexibility to allow companies to hedge uncertain cash flows.
- The range forward contract is a hybrid of the forward contract and the currency option. It provides a floor to limit the risk of unfavourable exchange rate movements to the contract holder, but there is also a ceiling on how far the contract holder can take advantage of favourable movements. If on maturity, the spot rate falls within the range, the bank simply executes the deal at spot. A degree of flexibility is therefore obtained by the company to take advantage of favourable exchange rate movements whilst gaining protection against unfavourable movements and no premium is required.
- The option forward contract allows an option on the date of maturity of a contract.
- The break forward contract can be unwound at a predetermined date; a company locks in at an agreed fixed rate, but if exchange rates should move in its favour, it can break the forward contract. The company can choose the fixed rate and allow the bank to calculate the rate at which the contract can be unwound (the break rate) or, alternatively, the company can set the break rate and the bank attaches a fixed rate.

- A risk-sharing contract between two parties is where they both agree to share exchange rate gains and losses.

#### 3.3.2.6. *Short-term Borrowing*

Short-term borrowing is an effective and widely used method for creating an opposite exposure to cover a foreign currency denominated asset. It would also enable an exporter to borrow the sum of a currency exposed and convert it to Sterling immediately and allow an importer to borrow Sterling and convert it to the currency denomination of the payable, with loans repaid at the end of the contract period. Currency has to be available to pay the loan interest, but interest can be earned from investing the proceeds of the converted loan.

The applicability of this technique is dependent on credit availability and exchange controls may restrict its use in some countries. The rates of interest may also vary, affecting the cost of the borrowing and the management of the hedge, although the exporter may further protect itself by selling the approximate amount of interest in foreign currency forward. The eurocurrency market does provide fixed interest rate borrowing, but only the largest firms can usually operate in this market and even then they need a proven credit rating in the currency of the loan. Under the international Fisher effect, the difference in interest rates equals expected changes in the spot exchange rate and any interest gain (loss) will be balanced by a depreciation (appreciation) in the currency borrowed, but this is more of a long-run phenomenon and, for this reason, money market hedges of this sort have to be carefully reviewed.

#### 3.3.2.7. *Currency Accounts and Overdrafts*

To reduce foreign exchange exposures, a company could open up a currency account in the currency of exposure and net off sales against purchases, leaving only the balance at risk. Other advantages of currency accounts include the possibility of higher than domestic interest rates on surpluses and the saving on administration and conversion costs with a readily available supply of foreign currency. For importers, a currency account will hedge foreign currency payables. Exporters could match the amount of foreign currency receivables with an overdraft in that

currency of an equal amount, constituting a hedge against adverse spot currency movements.

However, holding a currency overdraft to cover foreign currency receivables could be costly if there are higher interest rates in the importer's currency than the exporter's and the international Fisher effect does not hold. Similarly, there is an opportunity cost when holding a currency account to cover foreign currency payables when the exporter's interest rates are lower than the importers.

#### *3.3.2.8. Government Exchange Risk Guarantees and Export Credit Insurance*

Many governments try to assist exporting companies by providing them with an agency where they can insure against export credit and exchange rate risk and gain access to export finance in return for a premium. Up until recently, this service was provided in the UK by the Export Credit Guarantees Department (ECGD), but the part of the ECGD that handled short-term export credit insurance was privatised a few years ago and bought by the Dutch credit insurer NCM Credit Insurance Limited. This gave NCM 70% of the UK export credit insurance market, with Trade Indemnity on 20% and the rump of the ECGD left with just 10% (Jack 1993). There is evidence that this extra competition in the insurance market decreased premiums (Financial Times 1993 and Marsh 1993).

However, there is also evidence that companies are not satisfied with the help they are receiving in international trade from a government extolling them to export. The Royal Bank of Scotland Quarterly Survey of Exporters stated in August 1992;

"Some respondents drew attention to specific aspects of UK or overseas government's policies, the most common complaint being the lack of support for small- and medium-sized exporters offered by the UK government." (P.15).

Neither does the UK government provide insurance for UK companies seeking to operate in many parts of Central and Eastern Europe, whereas other European governments, such as Germany, are providing this service. UK companies are concerned that this is placing their competitors at an advantage in these new, expanding markets (Scottish

Business Insider 1993b). In the UK, a company also usually has to have a sizeable minimum amount of currency exposure before the ECGD will agree to help.

#### 3.3.2.9. *Factoring, Discounting and Forfaiting*

Factoring, discounting and forfaiting are all methods to cover export receivables, with a third party providing payment of receivables in the domestic currency if desired.

Factoring is a service offered to companies by arms of commercial banks or by specialised factoring institutions. The exporter sells his export receivable to the factor and receives home currency in return for a fee. It is the factor's job to collect the payment for the receivable. This can be a particularly helpful technique for companies with little foreign exchange expertise or experience of international trade. Using such a specialised service with agencies world-wide should enable quicker collection of debt and therefore save money on interest, but some importers may feel aggrieved at being under the auspices of a factor and the technique does usually depend on the existence of local factoring agencies in the buyer's country to effectively collect payment, which is not always the case, especially in countries with strict exchange controls.

Discounting is a service provided by the banks. If an export receivable is to be settled by a bill of exchange, the exporter could discount the bill. A bank in the customer's country will then give the exporter the foreign currency immediately at the spot rate and a bank in the exporter's country will give it the home currency equivalent immediately. The cost is the discount rate charged by the bank. It is not a recommended technique if the exporter is doubtful about payment as the bank usually has recourse against the exporter should the buyer refuse to pay.

Forfaiting is the provision of non-recourse fixed interest rate finance, usually for large contracts, but it can be done for smaller contracts. Bills of exchange or promissory notes are sold for up to 100% of the contract value, which the bank receives on maturity. The exporter again receives immediate payment, but with interest and additional charges. As the bills are the forfaiter's only security, they may have to be endorsed or



guaranteed with an acceptable bank.

There is evidence that more companies are now beginning to see the benefits of these techniques;

"Both factoring and invoice discounting are growing rapidly in popularity as mechanisms for companies to improve their cash flow and sharpen their sales administration .... The amount of trade they account for has soared from less than £3Bn in 1982 to over £14Bn last year. In the first quarter of 1992 alone, turnover jumped 12% to £3.75Bn from £3.34Bn in the same period last year." (Hughes 1992. P.26).

However, most of this increase is in domestic business. In volume of domestic factoring, the UK is the third largest in the world, but its internationally factored business is just 6% of the total (The Independent 1992). The cost of these techniques would appear to be the main impediment to their growth.

### 3.3.3. *Centralisation*

One of the most keenly debated issues in recent times is the extent to which a company should centralise foreign exchange operations, usually at group headquarters, to minimise risk or maximise return.

The main argument for centralisation is that it will move cash management towards optimisation. Firstly, because a central treasury dealing in larger volumes of currency will gain access to better market rates and the major currency markets. Secondly, the cost of hedging will be reduced, with more opportunities for effective netting and matching, less premium wastage on options and the reduction of dealing spreads. Centralisation also concentrates limited expertise, avoiding the duplication of staff, and ensures the company as a whole follows a consistent policy.

Porter (1986) favourably contrasts Japanese industry's experience post-war with that of the United States and Europe and argues that this was due to the extensive global co-ordination of Japanese firms. Industry in Europe and the US were more country-centred and they had long legacies of local subsidiary autonomy. This, he argues, left them poorly equipped to rationalise and co-ordinate their operations when they were



put under competitive pressure by the Japanese.

However, the centralisation approach also contains a number of disadvantages and costs that no company should ignore when considering the possibility of centralising foreign exchange operations. Rigid centralisation takes no account of local operating conditions. This can be a problem if a foreign subsidiary is operating in a distanced market, if it has major product differentials with the centre or if there are complex local business/government relations. If such conditions exist, it may be more beneficial to leave currency management to the subsidiary as the function is complicated by a number of factors that only the subsidiary is in a position to fully comprehend and deal with quickly as changes arise. The argument goes that in order to attain efficient utilisation of local information, decisions should be made at the level that possesses the best decision-relevant information. The motivation of the subsidiary to maximise accounting profit may also be subdued in a centralised system, possibly affecting reported operating results for the group, and a large percentage of group staff will gain no expertise in currency management. Neither can the subsidiary shop around for the best rate, in a rigidly centralised structure, but must take the central treasury rate, which may not be competitive. There are also costs in setting up a central function, such as staff and computer hardware and software.

For many of these reasons, Prindl (1976) favours decentralisation under strong guidelines and communications;

"This type of decentralisation can be seen to improve and deepen financial controls in a fragmented world. There is a feeling of constant questioning, evaluation and communication which this structure fosters. The interchange of personnel and ideas strengthens the group .... The costs of [overseas] headquarters .... are far outweighed by the benefits of fuller understanding, better strategy, cash management savings and losses not incurred." (P.93).

However, he berates an overly decentralised approach as being incapable of providing the group with a coherent policy or optimal strategy.

Kenyon (1990) would appear to support this. He does favour the centre setting guidelines on exposure limits, enforcing the early reporting of exposures, controlling the net group exposure by adjusting its own positions in markets and even acting as a compulsory banker, but believes that subsidiaries should be allowed to manage their currency positions within this framework in order to maximise managerial motivation.

Wihlborg (1980) questioned the increasing acceptance of centralisation of foreign exchange management operations. He accepted that accounting exposure had to be managed centrally, but thought economic exposure was different;

“The MNC needs information about planned transaction currencies in order to manage the exposure of the short-term monetary claims and liabilities of the subsidiary. When the exchange rate is correlated with relative prices among goods, the firm needs information on planning purchases too. This kind of information may be most easily available on the level where the operating decisions of subsidiaries are made.” (P.18).

Thus, Wihlborg puts forward a convincing case for subsidiaries at least to be consulted in the management of economic exposure if company headquarters are to obtain all the relevant information on this complex exposure type.

A company must organise itself to try to ensure that the advantages and cash savings of a centralised management function are not outweighed by its inherent disadvantages and costs. A possible compromise solution put forward by Ross (1988), to obtain some of the gains and mitigate the drawbacks of centralisation, is to allow subsidiary managers to make their own transaction decisions, but to do so at market rates with the central function. The treasurer or finance director will therefore be able to identify the group exposures and can control the group function and, at the same time, the local manager is still responsible for his subsidiary's gains and losses.

A centralised foreign exchange function must also know the activities it can and cannot pursue. For example, it could be allowed to manage debt and hedging contracts, but not be allowed to manipulate inventory and

local currency receivables and payables.

The review of previous studies (section 4.5) suggests that companies that take currency management seriously centralise their operations, particularly the multinationals (for example, see Jilling 1978 and Houston and Mueller 1988). However, the degree of centralisation does vary. Over 40% in a survey by Belk and Glaum (1990) of UK MNCs devolved decisions on the timing and means of hedging to their subsidiaries, with the parent company providing the services. **Companies appear to be accepting the need for centralisation of currency management operations, but not rigid centralisation.**

#### *3.3.4. Strategy and Policy*

Any company interested in the efficient management of its currency management function will obviously have to have a strategy and a policy or set of policies for implementing that strategy. A lot of the literature distinguishes between the use of financial hedging and strategic responses. Lessard (1990) distinguishes between hedging, which is about reducing risk, and responsiveness, which involves the creation and implementation of operating options. Glaum (1990) views strategy as the firm matching its activities to its environment. Lessard and Zaheer (1996) define strategic responses as requiring one or more of the following;

“a) assessment of strategic interaction between competitive firms, b) evaluation of partially or totally irreversible commitments, c) assessment of current circumstances and their unfolding dynamics and d) integration of expertise across functions.” (P.514-515).

Examples of strategic responses to exchange rate movements that Lessard and Zaheer provide are use of pricing, sourcing, plant citing and capacity loading. Therefore, strategic responses require an anticipatory approach in currency risk management, something that Prindl (1976) saw;

“The best dataset imaginable is of little use when it contains no forecasts of future positions. Strategy based solely on a perception of present risk can be costly or misguided in a period of changing corporate positions.” (P.122).

Section 3.2.3.3. showed how strategic responses can often be more

appropriate in the management of economic exposure, especially competitive exposure. A further example would be that of Volkswagen in the early 1970s. After the appreciation of the Deutsche mark relative to the US dollar, the company found it could no longer compete in the US on the basis of price. It therefore revised its product line and sold higher priced cars to the middle-income bracket of consumers on the basis of quality rather than cost.

Strategic responses generally involve the adjustment of operating policies, the matching of currency inflows and outflows, diversification or the use of pricing strategies to respond to changes in the competitive environment or the macroeconomy. Strategic responses are also more appropriate when the firm has a continuous foreign currency cash flow. It could use a chain of forward contracts, but if the foreign currency is appreciating (depreciating) against the home currency over time, each successive forward buy (sell), in home currency terms, will be more expensive. Neither will such a method guarantee the company protection from declining market share or profitability. As Srinivasulu (1981) points out, this is a tactical response to a strategic problem and will be of little benefit. Empirical evidence to support this view was provided by Soenen and Madura (1991), who assessed quarterly data on spot and 90-day forward exchange rates between 1978 and 1989. They concluded;

“The standard deviations of quarterly percentage changes in forward rates are almost identical to corresponding spot rates. In fact, the forward rates of four out of five currencies are slightly more volatile. This implies that the volatility of dollar cash flows needed to cover payables would have been higher when hedging than not hedging for four out of five currencies. While the differences are somewhat negligible, our comparison clearly illustrates that repeated short-term hedging does not reduce long-term contractual exposure .... Since short-term forward rates are as volatile as spot rates, repeated hedging will exhibit the same risk as an unhedged strategy when viewed over several periods.” (P.122).

**This is not to say that strategic responses do not also have their dangers, as the experiences of Caterpillar in the 1980s showed (see section 3.2.3.3.), but on the whole they are often a more suitable response to long-term and competitive exposures than financial hedging techniques, as the evidence above demonstrates.**

If currency management therefore requires strategic responses and long-term planning, it will need to become integrated with overall company policy and thus a number of departments and senior managers will have to be involved in currency management decision-making and not just financial managers;

“Just as war is too big to be left to the generals and politics is too big to be left to the politicians, so is foreign exchange risk too big to be left to the treasury department.” (Srinivasulu 1981. P.22).

Lessard and Nohria (1990) were of the opinion that the treasury should be responsible for financial foreign exchange management, but strategic and tactical aspects should lie with operating units and corporate planning staff.

Cornell and Shapiro (1983) provide a different view by arguing that most of the burden of currency risk management should fall on marketing and production executives, with financial managers coping with residual operating exposure. However, this is probably going too far, as Glaum (1990) observes;

“In long-range strategic planning all corporate decision making areas are closely interrelated. This is particularly true for financial planning, because virtually every decision making problem has a financial aspect to it.” (P.70).

Srinivasulu (1983) sees the strategic response as involving the optimal choice of products, markets, sources and financial policies. However, any currency management strategy is unlikely to be optimal. Edelshain (1995) argues there is bounded, rather than objective, rationality in the management of currency risk. The theory of bounded rationality is well-covered in the literature by authors such as Simon (1961), Loasby (1976) and Sent (1997). Simon (1961) defined bounded rationality as;

“Intendly rational, but only limitedly so.” (P.xxiv).

There are a number of different views and interpretations of the term, “bounded rationality”, but it is applied here as it is applied by Simon and others to mean the use of satisficing routines by firms.



For objective rationality to exist, a firm has to know all the possible alternatives available in making a decision, the consequences of each alternative and then select one of these alternatives using a system of values. However, in the field of corporate currency management, there is incomplete knowledge and opportunity. For example, when deciding on a combination of methods to control a particular exposure, the various different combinations will produce a huge number of alternatives. Anticipating the consequences of all of these various alternatives would be a thankless and almost pointless task. Loasby (1976) argues;

“A detailed consideration of a small number of moves selected by informal judgement is more effective than an attempt to evaluate every possible move .... One may be able to optimise a model; one cannot optimise a situation.” (P.42).

In other words, decision-making involves the search for solutions and the search is likely to end before the optimal solution is found.

It is also the case in an organisation such as a firm that the behavioural possibilities will be broad in range and there is always liable to be conflict between different interests (for example, shareholders and managers) as well as a lack of consistency between the objectives of the firm and each individual member of the firm.

**A firm should certainly attempt to improve the efficiency of its currency management function, but should also recognise the constraints present in attempting to do so. In summary, firms are more likely to engage in satisficing rather than optimising behaviour.**

Financial hedging still has a significant role to play in currency management, especially in the hedging of transaction exposures and short-term exposures. In addition, the costs of frequently changing operating policies can be excessive, sometimes meaning that financial instruments are a firm's only effective choice in managing currency risk. Regarding the circumstances in which to use certain financial instruments, Giddy (1983) believes a firm should use both forward contracts and currency options when it has a view on the volatility but not the direction of a currency movement, by using forwards to protect itself against the



currency moving in an adverse direction and taking a bet on volatility by using a straddle option (see section 3.3.2.3). If a firm has a view on direction and volatility, Giddy favours the use of options because the firm gains protection while being allowed to take advantage of favourable currency movements. If the firm has a view on direction, regardless of volatility, an open position, forwards or futures would be better than options as the cost of the option premium is not justified if the firm is sure a currency will move in a certain direction.

However, it seems from the evidence presented in chapters 4 and 6 that too much attention is paid by companies to the use of simple hedging techniques and the day-to-day management of currency risk, with little thought given to the long-term effects of this risk or a formal strategic approach.

It is also the case that many companies appear ignorant of the different tax treatments on foreign exchange gains and losses. For example, in the UK, capital gains tax applies only to assets, not liabilities, therefore foreign exchange gains and losses relating to long-term liabilities are neither taxable nor allowable under hedging. Long-term debt is not brought into the tax net, but holdings in a foreign currency are chargeable to capital gains tax. The consequence of this is that a hedge and a transaction may not be matched after tax, thus a proposed hedge needs to be evaluated to ensure its tax treatment makes its use suitable.

It would appear that most companies are still at the lower evolutionary stage in the development of a currency management strategy. The formulation and evolution of corporate currency management strategy is best described by Earl (1985). From his own research of UK MNCs, Earl concludes;

“The typical MNC seems to develop its management of FEE [Foreign Exchange Exposure] in an evolutionary path, explained by experiential learning and the stimuli of environmental change.” (P.43).

Earl saw four stages to a MNC's approach to foreign exchange exposure;

Stage 1 - Gestation. At this stage no formal management of foreign

exchange exposure is carried out because the size of the exposure is not large enough, the significance of the exposure is not recognised or management does not believe in formally managing foreign exchange exposure. There is a lack of awareness and understanding of currency exposure and its management. Any management attention is focused on transaction exposure and there is no corporate policy, organisation, measurement or systems relating to currency exposure.

Stage 2 - Realisation. Management awareness of foreign exchange exposure increases as unforeseen gains and losses arise, often met with confusion, and, therefore, foreign exchange exposure becomes an important concern. Hedging and other avoiding techniques are experimented with and there is an appreciation that foreign exchange exposure can be measured and managed. However, the company's approach to currency exposure will be ad-hoc and not systematic and it will focus on rather simple and straight-forward solutions to currency problems.

Stage 3 - Systemisation. Senior financial and corporate management agree on the systematic, corporate-wide management of foreign exchange exposure, with the management of some exposures centralised. The procedures of the previous stage are refined and formalised and previous mistakes in the management of the exposure are recognised. Policies emerge to prescribe risk attitudes and levels. Information systems are created to capture exposures across divisions in a timely way, to forecast exchange rate movements and to implement new strategies and policies. The MNC seeks optimal hedging of foreign exchange exposure.

Stage 4 - Reconciliation. A move towards this stage occurs when the currency management function becomes isolated and inflexible. There will be criticisms about the centralised system and local conditions (for example, exchange controls, product markets and changing business trends) that begin to defeat the centralised system. Greater emphasis is therefore placed on local autonomy and the management of commercial exposures. Policies are replaced with guidelines that understand the complexities of the MNC's organisation and compromise replaces optimisation as the company's currency management objective.

Earl modestly labels his model as a “simplified abstraction”, but the evidence from chapters 4 and 6 would certainly seem to support the existence of stages 1-3. The existence of a stage 4 is perhaps more questionable, but this will be more fully discussed later in chapter 6 and in the final conclusions.

In currency management firms can follow a passive or an active strategy. The former is a strategy of risk aversion, where firms adopt a cost and loss minimising approach by covering against exchange rate movements by up to 100%. The risk-averse company is willing to pay a cost, for example by purchasing an external currency management instrument, in order to avoid uncertainty itself, regardless of whether it expects gains or losses. An active strategy involves firms seeking to profit from currency movements through active risk management, where they try to make gains on underlying exposures and by speculative trading, based on anticipated movements of currencies with no underlying exposure required. Generally, firms following the former strategy are called cost centres and firms following the latter strategy are called profit centres, but it would be wrong to treat these labels too simplistically. Cost centres can often look to profit from currency positions and profit centres may cover completely in some instances when the risk justifies it. However, whereas cost centres tend to be more interested in hedging, profit centres are more interested in trading.

Some treasuries now seem to prefer the description of service centres, attempting to add value to the divisions and the group instead of trying to make a profit or minimise cost, but the evidence from the review of previous studies (section 4.7) and the results (section 6.5.1) suggests that this is not as yet a common approach.

The evidence from the review of previous studies (section 4.7) and the results (section 6.5.1) suggests that most companies, including the multinationals, adopt a risk averse approach to currency management most of the time because of the volatility and unpredictability of the currency markets (for example, see Jilling 1978, Rodriguez 1981 and Belk and Glaum 1990). Speculation is generally frowned upon, with companies seeing themselves as manufacturing, service or business units and not currency market speculators. The imposition of controls on

currency management operations is thus quite normal. This can put the treasurer or person in charge of the currency function in a difficult dilemma. He/she has to hedge successfully when the market runs against him/her, but may not be allowed to profitably speculate when it is running in his/her favour.

Not all companies are so conservative about currency management. Many do take risks, but run serious hazards. The history of currency management is littered with foreign exchange disasters, perhaps most famously in recent times at Allied-Lyons, where £150M was lost speculating on currency movements. Many companies do not appear to have learned from this unfortunate experience and several disasters have occurred since, including the Danish company SCS Holding, which wiped out its annual treasury profits in a weekend, a Japanese subsidiary of Shell lost millions of pounds in the foreign exchange derivatives markets and the Scandinavian corporate Skanska suffered from a lack of treasury controls and strategy (Goodhart 1992 and Johnson 1993). These highly publicised experiences provide suitable discouragement to many companies from speculating in the currency markets. The main currency management policy employed would appear to be one of risk assessment: covering when necessary, but taking advantage of obvious favourable movements on an underlying exposure, particularly if using a flexible hedging product. However, most companies that adopt this policy attempt to profit in this way only to a limited extent; minimising costs remains the primary objective.

### *3.3.5. Exotic Currencies*

Companies that have set up operations in, for example, Latin America, Africa, certain Asian countries or more recently in Eastern Europe face the problem of dealing with illiquid or semi-liquid currencies. An illiquid currency is one where it is difficult to find a commercial counterparty or where a transaction can only be undertaken expensively through a central bank. The volatility of such currencies is often significant and sizeable devaluations have occurred in the past. Therefore, the risk for companies trading in these countries is far greater than in the First World economies and there are few tools available for hedging. Volatile currencies are a result of unstable economies and instruments such as forwards and

options are generally not available, with sometimes rampant inflation providing no adequate credit environment necessary for a successful currency market to operate. Where forward markets are available, they tend to be tightly controlled by governments, seeking to repel speculation against their currencies.

What can companies do to cover exposures in these currencies? A number of options still remain.

- They could balance their local currency assets and liabilities.
- Some banks can offer companies forward prices on a negotiated basis, especially in the Latin American countries.
- In some Latin American countries, US dollar denominated commercial paper can be bought, enabling companies to lock into a price in dollars one month or so in advance of payment.
- Companies can attempt to manage an illiquid exposure by hedging through a liquid currency that is positively correlated with the exotic currency against the base currency, although it will have to be conscious of the fact that such relationships between currencies can breakdown.
- Companies can try to secure letters of credit or credit insurance before agreeing deals in exotic currencies. These techniques can guarantee payment or insure against the risk of non-payment.

The problems associated with exotic currencies surfaced again recently when many of the South East Asian currencies, previously thought of as being the more stable of the emerging currencies, depreciated sharply, fuelled by market fears about further economic changes and injudicious political statements. Several of these currencies had previously been pegged to the US dollar, but this was not enough to save them when the market turned swiftly against them. If this can happen so quickly to South East Asian currencies, it can happen more easily to currencies supported by less stable economies.



### 3.3.6. *Performance Measurement*

The rapid increase in the amount of instruments and techniques on the market to manage foreign exchange risk has brought the issue of performance measurement to the fore. Companies should know which method or combination of methods will manage foreign exchange risk effectively to ensure an efficient allocation of resources controlled by the currency management function and to help to ensure outcomes that are in the interests of the company. A performance measurement system can also act as an early warning system if serious mistakes are being made in currency management and it can act to motivate managers and evaluate their performance.

However, for such an important aspect of currency management, it is surprising to read statements such as this made by Buckley (1992);

“The literature on treasury management is virtually devoid of serious articles on performance measurement.” (P.587).

From a trawl through the literature, it is easy to concur with this statement and given this peculiar lack of attention to a key aspect of currency management, it is perhaps not surprising to find some ignorance regarding it among many companies, as section 4.9 later highlights.

Measuring the performance of a currency management function entails viewing its net cost/revenue against what it could have achieved, using a market benchmark, for example setting actual performance against opportunity gains or losses. A benchmark should be achievable, comprehensible, easy to calculate, easy to monitor and allow decisions in the interests of the company to be made when covering exposures (for example, not giving incentives for employees to overbook).

There are several types of performance benchmarks. Quantitative benchmarks are expressed in financial terms and qualitative benchmarks are expressed in non-financial terms. Quantitative benchmarks can be absolute (assessing performance against a monetary figure, for example target profitability) or relative (assessing performance against a financial basis or yardstick that is non-monetary in nature, for example a budgeted



foreign exchange rate or the forward rate). Absolute benchmarks are suitable for treasuries with complete control of company exposures that can influence the rate obtainable on the exposures, whereas relative benchmarks are more appropriate for treasuries that can only influence the rate achieved. Generally, absolute benchmarks would therefore be relevant for currency management profit or trading centres and relative benchmarks would be relevant for cost centres. Qualitative benchmarks are usually intangible measurements such as market presence, financial expertise or efficiency of operations.

The return on currency management operations against the benchmark should also take account of the size of risk taken. This could be done by comparing performance against a risk-free strategy, for example a fully hedged position (a small profit on a currency exposure may have involved a significant amount of risk and/or management time). If the benchmark is a fully hedged position, the manager will tend towards covering all exposures. If the benchmark is the spot rate at settlement, the manager will tend towards a fully open position, but operating units cannot value costs and revenues until the transaction is completed. Using a budgeted rate will lead more towards a selective hedging strategy, but will consume more resources than the other two measures in personnel and monitoring. Controls are essential to limit the positions at risk and therefore limit potential losses, particularly with profit centres.

There are no genuine common standard benchmarks for measuring currency management performance, making it a rather arbitrary process. Price Waterhouse found that in Australia twelve different benchmarks were being used by major Australian companies in various combinations (Lowenstein 1991). This is a problem for fair evaluation of and effective comparison between companies' hedging performances.

In overseas performance evaluation, the effects of certain MNC tactics that are imposed on subsidiaries, such as leading and lagging and transfer pricing, should be excluded.

There have been views expressed in the literature about the form a performance measurement system should take. Lessard and Lorange (1977), for ex-post evaluation, distinguished between times in which

management had opportunities to adjust to exchange rate fluctuations and times in which it did not. In the latter case, they recommended using the same forward rate as was used for budgeting purposes and in the former case, they recommended using the realised spot rate at the end of the period in question.

Bennett Stewart (1983) recommended measuring domestic currency returns using a “normalised exchange rate”, i.e. one that would have prevailed under PPP. This method would thus include inflation adjustments.

However, as shown later by Lessard and Sharp (1984), these two methods would only work in circumstances when the underlying local currency operating profitability of the company is unaffected by exchange rate movements. Bennett Stewart’s proposal will only really work for companies with a local input/output market, experiencing competition only from other local companies (multi-domestic competition). However, the 1980s gave rise to extensive global competition, with a company’s position in one national market being affected by factors that transcended national boundaries, for example centralised sourcing, and large and significant intra-corporate flows of goods and services. Global competition meant that a company’s costs and revenues were more affected by exchange rate movements. Lessard and Sharp argued;

“It is no longer enough that performance measures correctly convert foreign currency net worth into dollars .... They must also incorporate the effects of movements in real exchange rate changes on the competitiveness of operations.” (P.18-19).

The rationale for this is that movements in real exchange rates will lead to changes in the relative prices of local imported and exported goods, which will impact on operating margins. Thus, all operations subject to international competition must take account of real changes in exchange rates.

A consequence of this argument is that a performance measurement system cannot rely on a single, rigid standard, but must be adjusted to reflect unanticipated exchange rate changes over which management has little control. Managers should only bear responsibility for exchange rate

movements when they can alter policies to respond to them. A performance measurement system should then require a standard level of performance to be set for a number of different assumptions about the corporate environment, including exchange rate movements, and actual performance should be compared against this standard. Two approaches could be taken to achieve this, one is variance analysis (described more fully in section 3.2.3.2) that attempts to explain deviations in terms of significant and uncontrollable factors. The other approach Lessard and Sharp label “contingent budgeting”, with the standard being revised to reflect the impact of unanticipated events after they occur. This will involve designing a series of performance measures to reflect the foreseeable impact of exchange rate movements. It will first require an audit to estimate the probable impacts of exchange rate movements on the profitability of different parts of the business and to decide on who should bear these risks;

“[The audit] provides an opportunity to think through and discuss in advance what will happen to a particular business when a currency appreciates or depreciates. If an understanding of what is likely to happen is shared within the company, two-thirds of the problem of performance measurement is solved.” (P.25-26).

This will generate an expectation of the relationships between exchange rates, operating cash flows and management effort. When exchange rates are known at the end of the year, actual performance can be compared with the contingent standards set from the results of the audit.

Lessard and Sharp want to ensure that performance measures create incentives to maximise the value of the firm within certain defined levels of risk. They are very much in favour of performance measures discouraging speculation in the financial markets because, they argue, operating managers have no special financial expertise that will allow them to outguess reasonably efficient financial markets. However, as will be shown in section 6.5., although there are dangers in speculation, companies can successfully profit on obvious, favourable exchange rate movements when they have an underlying exposure in a particular currency and are moving with market sentiment.

The review of previous studies (section 4.9) demonstrates the use of

some form of performance measurement system in most major companies. Relative benchmarks are more widely used, again implying the risk averse approach of companies to currency risk. **However, there is still concern about the methods used and the lack of performance measurement in smaller companies. There is no fully accepted definition of performance measurement as yet and with such uncertainty companies could be forgiven for not implementing an evaluation system, but without some sort of evaluation system companies cannot determine if they are managing their exposures competently.** It is likely that only large and sophisticated companies would employ a performance measurement system such as Lessard and Sharp's (1984).

### *3.4. Conclusions*

This chapter has demonstrated the many sources and dangers of the various currency exposures and has outlined the need for firms to evaluate and manage such exposures if they prove to be significant. Unfortunately, previous studies indicate that not all firms are so persuaded, especially concerning economic exposure, the most latent, but potentially the most important.

There are a wide range of methods and strategies that companies can employ to effectively deal with currency exposure. However, previous studies in this area suggest that many companies, especially the small- and medium-sized, adopt a naive approach to currency management. In general, companies are not always interested in developing an efficient currency management strategy and therefore do not implement a system of performance measurement, but instead utilise instruments and techniques that they understand and with which they are familiar. The large companies appear to recognise this problem and more are beginning now to implement a systematic approach to performance measurement of their currency management function.

It is important to stress that although a firm may use a wide range of financial instruments and strategies, it is not necessarily behaving in a sophisticated manner. The instruments and strategies should be guided by a company's objectives, attitudes and circumstances. An effective

currency management policy is one that meets the company's requirements within this framework.

Given the volatility of currency exchange rates and large number of techniques at their disposal, companies must maintain a degree of flexibility in exchange risk management;

"What seems perfect sense today may seem inappropriate at a later point in the life of the transaction." (Baldoni 1991. P.15).

Another concern is that companies appear to be using external techniques before considering internal mechanisms, which are usually cheaper and, in some instances, more efficient in managing the volume of currency exposure. The cost of external techniques must be compared with the probability of a currency gain or loss. It is difficult to evaluate the cost of many internal and strategic currency management methods because they involve matters such as organisational changes.

The need to centralise currency management operations and to adopt a risk averse approach to currency risk are now commonly accepted rules of currency management, particularly with the large foreign exchange losses of recent times. However, a firm does need a sense of perspective with both approaches. Rigid centralisation and total risk aversity are unlikely to bring much long-term benefit.

The review of previous studies will now demonstrate how the issues and methods of currency management are perceived and used in practice.



## CHAPTER 4

### REVIEW OF PREVIOUS STUDIES

#### *4.1. Introduction*

The aim of this review is to provide a description and an assessment of previous attempts to survey the field of foreign exchange management. It will also provide a means of assessing the results of the present study. At the end of this chapter, a series of summary tables will briefly explain the research methods and the key findings of each of the surveys.

There were few studies of currency management before the 1970s. However, as explained in section 1.1., exchange rate fluctuations began to seriously affect many companies from this time and research material began to be published to reflect this growing concern.

As will be seen, initially studies appeared in the US and were largely confined to multinational corporations (MNCs) because they faced especially high degrees of currency exposure due to their size and geographical dispersion. It was not until later years that regular studies on MNCs in other countries and on smaller companies appeared. Even more recently, a number of small studies have been completed on Scottish companies' attitudes to currency risk and its management.

The studies are reviewed within general subject areas to provide a logical flow to the chapter, to enable effective comparison between the studies and to facilitate the drawing of general conclusions from the existing evidence.

#### *4.2. The Significance of Currency Management*

The significance to companies of currency risk and its management is repeatedly shown in surveys carried out from the late 1970s onwards. In the early and mid-1970s, surveys such as Duerr and Greene (1973) and Abdel-Malik (1976) found that companies were not as concerned about currency risk relative to other risks of business. However, by the time of Jilling's (1978) survey it was obvious that currency risk had become a



crucial factor for US MNCs. Jilling found that a large number of MNCs had no programme of protection against adverse exchange rate changes in 1971, but seven years later, 88% of these companies disagreed with the statement that foreign exchange risk when ignored would have no serious effects and 69% of the sample believed that they had developed a more sophisticated approach to currency risk over the past five years. In the UK, Rosendale (1973) found that only 31% of UK engineering companies had any policy at senior management level on exchange rate risk prior to 1971, but Broder (1984) found that UK MNCs were beginning to take currency management seriously at least from the late 1970s, with 76% of respondents to his questionnaire indicating that there had been an increase in the resources that their company devoted to currency management over the past five years. In Edelshain's (1995) survey, also of UK MNCs, nearly two-thirds of his sample ranked currency volatility as one of the more difficult problems of international business and 57% stated that they were either "very vulnerable" or "moderately vulnerable" to currency exposure.

It seems to have taken a number of years for smaller companies to recognise the potential dangers of currency exposure, but there is little doubt that they are aware of it now, as studies of UK exporters demonstrate;

"The percentage mentioning exchange rates as a problem has steadily increased since the series began: from 28.3% in July/August 1990 to 42.5% in November/December 1990 and to 44.7% in the present survey [May 1991]. Exchange rates have also stayed firmly at the top of the 'most important problem' list." (Barclays Quarterly Survey. 1991. P.11)."

Continuing this trend, in the Royal Bank of Scotland Quarterly Survey of Exporters (1993), over 80% of exporters said they were affected by exchange rate movements.

**From the above evidence, there can be little doubt that the field of currency management has grown in importance from the early 1970s onwards. Currency risk is now recognised by companies regardless of their size or location.**

#### 4.3. Currency Exposures

One of the main issues to be examined in the studies has been corporate attitudes towards the different currency exposures. **Much of the evidence shows that companies view transaction exposure as the main exposure type; it is the exposure most likely to be hedged and actively managed.** This has been found in studies in the US (Rodriguez 1981, Mathur 1985a, Koury and Chan 1988, Aggarwal and Soenen 1989 and Duangpoly et al 1997), in the UK (Broder 1984, Collier and Davis 1985, Walsh 1986, Belk and Glaum 1990 and Glaum and Belk 1992), in Europe (Soenen and Aggarwal 1989) and in Australia (Batten et al 1993).

From findings by Rodriguez (1981), transaction exposure seems to have displaced translation exposure as the main exposure type from the mid-1970s. Rodriguez found that in 1974, translation exposure was almost exclusively viewed by MNCs as the main exposure type and the basis for hedging exchange rate risk. However, by 1977, transaction exposure was being treated as the main exposure type and only 20% of companies solely used translation exposure for basing their hedging decisions. This was probably the result of MNCs, from the early 1970s, realising the greater danger of daily fluctuating exchange rates in international trade compared to annual fluctuations in the balance sheet caused by exchange rate movements.

Houston and Mueller (1988) found the management of translation exposure to be on the decline across US industry. Of the companies surveyed, 67% were hedging translation exposure under FASB 8 (pre-1981), but this had fallen to 48% under FASB 52. This decline was attributed to many firms no longer having to include all translation gains or losses arising from foreign operations in their income statements under FASB 52, as they had to do under FASB 8. Therefore, it appears, from this survey, that less companies are hedging translation exposure because the balance sheet and the profit and loss account are not as affected by the exposure under a new accounting system. It does not seem to be the case that companies are persuaded that translation exposure is irrelevant because it is a paper exposure.

Houston and Mueller's survey also showed that company size was not a

key variable in determining whether a firm hedged translation exposure, but firms with a large proportion of foreign operations were more likely to hedge translation exposure.

In a survey by Collier et al (1990) of US and UK multinationals, both sets of MNCs showed a greater willingness to close-out translation exposure rather than transaction exposure in low risk situations. The survey team concluded;

"Transaction risk reflects all foreign currency denominated cash flows in a given period and obviously exceeds many times the value of translation exposure, which is merely the exposed foreign currency net worth. Therefore management in low risk situations prefer to close-out translation risk as the costs are minimal, as are the potential rewards from active management." (P.209).

The debate in the academic literature concerning whether translation exposure should be managed (section 3.2.2.2) is also prevalent in the surveys. **The surveys quite clearly demonstrate that a large proportion of companies with overseas subsidiaries do manage translation exposure.** This has been highlighted in, for example, Broder (1984), Mathur (1985a), Houston and Mueller, (1988), Collier et al (1990), Belk and Glaum (1990), Duangpoly et al (1997) and Hakkarainen et al (1997), with the only real dissent being voiced in a survey of Australian firms by Batten et al (1993). Translation exposure management appears to be viewed more seriously among UK companies than their US and European counterparts (Soenen and Aggarwal 1989 and Collier et al 1990).

However, studies of the attitudes of investors to corporate currency management are not as equivocal. The Midland Montagu Exposure Management Team (1991) concluded that most of their respondents believed that translation exposure should be hedged to minimise the effects on reported profits, to aid stable earnings growth and to protect the overall base currency value of the company's assets;

"It is expected that a company will do its utmost to preserve the value of earnings and shareholders' funds in very much the same way as a Sterling exporter is expected to safeguard payments received from overseas for goods and services." (P.38).

However, a survey of institutional shareholders by Touche Ross (Ross 1992a) came up with different results. All the respondents declared that they considered whether shareholders would be affected by volatile exchange rates when investing in the equity of a company with significant overseas assets, but 63% said they would prefer companies not to hedge translation exposure and instead allow the shareholders to make their own currency risk management and hedging decisions. However, the results in this study were inconsistent. For instance, in answering a later question, 77% of respondents said they believed that a company hedging overseas assets with local currency borrowings was prudent; this is tantamount to endorsing a direct form of company management of translation exposure

**Broder (1984) and Glaum and Belk (1992) showed that companies paid greater heed to economic measures of risk rather than accounting measures, but the measurement and management of economic exposure does not appear to be widespread. Broder concluded;**

"This probably reflects the lack of a formal framework for assessing this type of risk and for taking appropriate hedging decisions." (P.499).

Belk and Glaum (1990) found that six of the sixteen companies in their sample that responded to the question on economic exposure made no attempt to forecast and analyse their future cash flows in order to manage this exposure type. The other ten companies based their currency risk management on cash flow forecasts;

"But the degree of sophistication and the time horizons for such forecasts used varied greatly." (P.6).

Similar results were produced for US MNCs by Duangpoly et al (1997). Of their sample of 22 companies, five did not forecast and analyse future cash flows in order to manage economic exposure and seventeen did base currency risk management on cash flow forecasts, but with varying degrees of sophistication and for a variety of time horizons. Of this seventeen, seven used operational policies to manage their longer term exposures, three used financial measures and seven used both operational and financial measures.

Lessard and Nohria (1990), in a small study of US and Japanese MNCs, found that these large companies focused on the more basic financial and contractual exposures and had only a vague idea of operational and strategic exposure impacts. **Lessard (1990) concluded that even though foreign exchange managers in companies emphasised, and seemingly understood, the operational aspects of foreign exchange, currency exposure still tended to be defined in terms of near-term contractual items.** Many managers claimed that they were limited in managing economic exposures because of the difficulty in estimating these exposures, the unfavourable accounting treatment of hedges for the exposures and the lack of hedges that fully offset such exposures. Economic exposures were more commonly managed by financial measures.

In a study of UK MNCs by Walsh (1986), 70% of treasurers interviewed had no understanding of economic exposure and viewed exchange rate risk in terms of transactions without reference to the effects of exchange rate changes on prices, costs and volumes. As opposed to the finding of Lessard (1990), economic exposures tended to be managed by operational, rather than financial, responses.

It may be concluded from the above evidence that companies are most concerned about the effects of transaction exposure, but translation exposure is still considered important by a substantial proportion of companies. The problems of identifying and measuring economic exposure makes its management difficult in practice. Where it is managed, both operational and financial measures are used. **The theoretical literature (see chapter 3) argues that economic exposure is the most significant exposure type to manage, but the above evidence seems to show that companies attach more importance to the management of transaction exposure.**

Producing results seemingly in contrast to many of these findings, Edelshain (1995) approached the issue of the identification of currency exposure in a different way. He argued that previous findings reflected the ease of quantifiability of some exposures over others. In an attempt to resolve this problem, he reduced currency exposure into all its identifiable, distinct components in an attempt to make them all quantifiable. This exercise produced transaction exposure, translation



exposure and ten different forms of economic exposure, which are named and defined in section 3.2.3.1.

Around three-quarters of Edelshain's (1995) sample perceived themselves as being "substantially vulnerable" or "moderately vulnerable" to both transaction exposure and translation exposure, with transaction exposure being the main individual exposure causing vulnerability. However, a majority of companies also felt a degree of vulnerability to each of the economic exposures, especially the supply exposures, demand side margin exposure, elasticity of demand exposure and quasi-contractual exposure. There had been a particular marked increase in recent years in companies believing themselves to be vulnerable to demand side margin exposure. There appeared to be less vulnerability regarding the competitive exposures (as had been indicated by Moffett and Karlson 1994) and the value chain exposures. Edelshain (1995) reported only a minor association between forms of vulnerability and the degree of foreign competition. This could be put down to a lack of awareness of the consequences of real exchange rate changes or an assumption that fiercer competitive pricing is more likely to have been caused by factors other than real exchange rate movements. Walsh (1986) found that competitive exposure was not of great importance to many companies and thought that many companies could be wasting management time on a non-problem. However, just because companies do not have a perception of a problem, does not mean that the problem is not there, as will be shown later in this section through the work of Bradley (1996).

The economic exposures accounted for the majority of exposures to which Edelshain's (1995) sample was vulnerable and just over half of the respondents ranked one or more economic exposures as having a greater impact in terms of vulnerability than transaction exposure, with only 10% ranking transaction exposure as having a greater impact than any of the economic exposures. This Edelshain (1995) took as evidence of the greater perceived impact of economic exposure by firms once the exposure is broken down to its discrete components and is better understood by the firms.

It was a similar story when companies were asked about the degree of



advantage presented by the various exposures, although less saw currency exposure as a source of advantage than as a source of vulnerability. Around 65% saw "substantial advantage" or "moderate advantage" in transaction exposure and translation exposure, but over 60% also saw this degree of advantage in each of the supply exposures and in each of the revenue exposures. Least advantage was seen in the competitive exposures and demand chain exposure. Again, over half the sample ranked one or more of the economic exposures as having a greater positive impact than transaction exposure. Edelshain (1995) concluded;

"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." (P.338-339).

Edelshain's (1995) results should not be seen as too surprising as he was comparing (and asking firms to rank) ten forms of economic exposure against one form each of the transaction and translation exposures, but his findings are of sufficient weight to suggest previous studies may have been somewhat misleading in over-emphasising the importance of transaction exposure in the corporate currency management mentality and neglecting to properly define economic exposure. Edelshain (1995) argued that previous results may be explained by the reluctance among firms to fully comprehend the nature of economic exposure and a preoccupation among companies with short-term results. **He believed that by making the component parts of economic exposure more clear and identifiable, the identification of this exposure type was more obvious to firms.** Edelshain (1995) also makes the point that just because companies have a perception of their currency exposures, this does not mean that they know how to handle them;

"There is a crucial difference between being affected by a phenomenon and managing it." (P.159).

Many of the other studies simply focused on measuring the importance that companies attach to managing currency exposures and thus produced very different results from a study that attempted to analyse

company perception of the impact of currency exposures. **The results from other surveys compared to Edelshain's (1995) are maybe not then contradictory. It is perhaps the case that one can still conclude that transaction exposure is felt by companies to require the greatest management attention but economic exposure is believed to have the greatest impact.**

Edelshain (1995) was still in agreement with some of the other results reviewed in this section. He found a marked fall, in recent years, in the number of firms claiming that translation exposure was a source of vulnerability or advantage, although no reason for this was given. **He also found that firms were underestimating their vulnerability to and the possibility of advantage from currency exposure.** In examining all the exposure sources of his sample companies, he expected that none should have total invulnerability and only 7% should have slight vulnerability. The respective figures were 3% and 37%. The underestimation of advantage was even greater.

Edelshain (1995) also found that the forms of exposure that companies identified were associated with external market factors (including the immediate product market environments in which the company operates and the regulatory environment), although he neither rejected nor confirmed the hypothesis that the external corporate environment determined the forms of exposure experienced. **However, he found no direct link between the forms of exposure experienced and the currency methods used to manage the exposures nor between the forms of exposure experienced and the internal corporate environment for managing such exposures (comprising the structure of the company, the individuals associated with it and their purposes).** Edelshain (1995) thus found little support for the hypothesis aired in Srinivasulu (1983) that the relevance of a particular measure of currency exposure is determined by external factors, such as taxes and regulations, and internal factors, such as the control, planning and evaluation systems of firms.

Like Edelshain (1995), findings from Bradley (1996) also point to companies viewing exchange rate movements as a source of vulnerability rather than opportunity. In her sample, 60% saw Sterling weakness in

terms of increased costs of foreign sourced inputs and 31% saw it in terms of increased debt servicing costs. Only a minority viewed Sterling weakness as an opportunity to increase sales volumes in export markets (35%) or in domestic markets (12%).

In another interesting result, Bradley concluded that many companies were not aware of the indirect (competitive) effects of economic exposure. However, she found statistically significant relationships between most of the competitive characteristics measured in the survey (for example, proportion of competitors based in foreign countries and the extent to which products are differentiated from competitors) and exchange rate sensitivity to sales volumes and profit margins. Her results provide evidence as to corporate vulnerability to competitive economic exposure, but a lack of formal recognition of this. **These results, like Edelshain's (1995), show a greater recognition of certain types of exposure once they are more fully broken down into their component parts.**

Unlike Bradley (1996) and other surveys, Lessard (1990) found a high degree of awareness of competitive exposure, with 42% of sample companies claiming that exchange rate movements significantly impacted upon domestic competitiveness, but, in a seemingly contradictory result, only 23% considered the effects of exchange rate movements on domestic operating profits as important. Combining these results with Bradley's, **there certainly appears to be confusion in companies about the impact of competitive exposure.**

Nevertheless, findings from these last two surveys appear to suggest that competitive economic exposure may have a more significant impact on companies than suggested by findings from Walsh (1986), Moffett and Karlson (1994) and Edelshain (1995).

#### *4.4. Departmental Involvement in Currency Management*

Several studies have considered the types of departments that are and that should be involved in currency management decision-making. However, with the exception of a small number of studies, to date this area of currency management has not been given particular prominence.

In a survey of Canadian firms by Abdel-Malik (1976), the treasurer was in complete control of currency management in 40% of companies and carried out the policies of top management or had his/her policies approved by top management in 60% of companies. However, despite this, Abdel-Malik concluded that, top management was not heavily involved in currency management decision-making in the clear majority of Canadian companies.

Broder (1984) examined the departments involved in corporate policy formation of currency management. Top level management was involved in 88% of companies, the treasurer in 92% and the chief accountant in 31%, with the latter less involved in companies where there was a separate treasury department. The chief economist, the chief purchaser and the marketing director were all poorly represented. **Broder believed that he had identified the proliferation of treasury departments by this time, with 77% of companies indicating that their exposure management function was controlled by the treasury department.** From a study of exposure management objectives, he concluded that there was apparently no understanding gap between top management and operating staff in this field.

Touche Ross (1991) also concluded that treasuries were now prevalent in large companies. Of their sample, 93% had separate treasury divisions. This finding is supported in a survey by Baur (1993) of large Scottish companies, where 77% had centralised treasury departments. **However, the growth of treasuries does not appear to have touched the smaller companies,** for instance, Soenen (1989) found that few companies had separate treasury departments and currency management tended to be part of the financial manager's responsibility. Edelshain (1995) also concluded that finance departments had a greater involvement in currency management in the smaller firms in his sample.

Walsh (1986) concluded that the treasurer had very little involvement in the management of economic exposure. He suggested that this was because this exposure type did not lend itself to be hedged by financial instruments, but speculated that the growing availability of currency options may see the treasury assume greater responsibility for the management of economic exposure. Treasury involvement in operational



decision-making, for example pricing and sourcing decisions, was found to be minimal.

Edelshain (1995) attempted to distinguish between departments that were responsible for currency management, those that were involved in the decision-making and those that were consulted on it. He found the group treasury department to be predominant in terms of overall responsibility (in 43% of firms), followed by the finance department (29%) and the group directors (16%). However, this figure for treasury responsibility was discernibly smaller than Broder's (1984) study completed over ten years earlier. When treasuries did assume responsibility, the firm made a greater use of a range of currency management methods, especially financial instruments. The subsidiary finance department and the subsidiary directors were only responsible for currency management in 11% and 10% of firms respectively. However, subsidiaries were more likely to be involved in currency management decision-making (the group finance department was involved in 28% of companies and the subsidiary directors in 25%). The group finance department (24%), the group directors (22%) and the group chief executive (21%) were also prominently involved, although a treasury was only involved, rather than responsible, in 14% of the companies, suggesting it usually has control when one exists. There were less firms prepared to say that they "consulted" departments in currency management. The only significant percentages recorded were for the chief executives of the group and the subsidiary and the group directors (at 22%, 13% and 14% respectively). These findings suggest a greater diversity in terms of departmental involvement in currency management than previous studies had indicated.

However, generally, other departments, such as planning, purchasing and marketing were again poorly represented in this study, suggesting a lack of a fully integrated currency management approach in many companies, despite the fact that only 10% of companies agreed with the statement, "currency issues are a finance matter and should be left to the finance people". **It could be that companies recognise the need for multi-departmental involvement in currency management, but are doing little about this in practice.** This is an something with which Edelshain (1995) takes issue;

"Currency exposure should be given consideration by all functional



areas and levels of management in the business .... And the strategic direction should be provided by general management if not by the group chief executive." (P.341).

Lessard and Nohria (1990) and Lessard (1990) found similar results. Lessard and Nohria found evidence of an acceptance among companies of the need to form an integrated currency management approach;

"There was a widely shared view that coping with volatile exchange rates required the utilisation of several different knowledge bases and skills that resided in different parts of the corporation." (P.202).

However, this did not really translate into practice:

"In only a minority of firms could senior managers, finance managers and operating managers articulate a view that included both sets of responses [financial and operational] and appropriate co-ordination between them." (P.200).

Lessard (1990), in an in-depth survey of managers in large US multinationals, found that most foreign exchange managers stated that it was "important" to "very important" to inform senior management of exchange rate impacts and to help line managers to maximise profits alongside exchange rate volatility. This would suggest a relatively high degree of inter-departmental co-operation and operational orientation by these types of companies. However, this level of operational orientation was not borne out by further analysis, where it was obvious that even these large companies had difficulties with the organisational complexity of operating responses. Lessard (1990) advised;

"Since the critical responses typically lie in purchasing, manufacturing or sales, treasury experts can advise, but most actions must be taken by business unit managers." (P.26).

However, he found that only 13% of his sample said that their firms had cross-functional task forces to deal with the operating impacts of currency movements and only around 40% said that group or business unit finance staff provided guidance to business units on how to deal with exchange rate volatility.

Cross-functional integration between the group treasury and other

operating functions of the company was fully assessed by Lessard and Zaheer (1996), using results from the same survey as used by Lessard (1990). They tested a number of hypotheses: that a treasury with a functional orientation (providing links to treasury professionals in other companies), a service orientation (advising and assisting the company operating divisions) or operating on longer time horizons, will be more effective in its strategic responses (hypotheses 1, 2, 3); the lower the incentives for inter-functional co-operation, the lower the effectiveness of strategic responses (hypothesis 4); firms that use many cross-functional mechanisms (for example, task forces and integrated databases that brings together knowledge in the company) will be more effective in their strategic responses (hypothesis 5); and firms that plan for flexible and contingent behaviour will have more effective strategic responses to volatile exchange rates (hypothesis 6). Lessard and Zaheer (1996) define strategic responses as follows;

“Choices that require one or more of the following: a) assessment of strategic interactions between competing firms, b) evaluation of partially or totally irreversible commitments, c) assessment of current circumstances and their unfolding dynamics and d) integration of expertise across functions.” (P.514-515).

Examples of such responses are given throughout sections 3.2.3.3 and 3.3.4.

Lessard and Zaheer (1996) explicitly concentrated their study on very large US corporations because;

“Strategic responses to volatile exchange rates are likely to pose greater difficulties in terms of distributive knowledge in large, complex organisations.” (P.521).

The authors concluded that disincentives that prevented the collaboration between the treasury and the operating divisions of the company had a significant negative impact on the effectiveness of strategic responses. They found respondents more likely to reflect on the disincentives to collaborate within their organisation than on the incentives to do so. The length of a treasury's decision-making horizon and the extent of the treasury's functional orientation were both significantly and positively related to the effectiveness of strategic responses, but there was no

similar relationship with the service orientation of the treasury, although the authors did accept that this result could have been due to potential endogeneity, with treasuries' service orientation increasing because of difficulties they had with their strategic responses, which they thus rate lower as a result. They found support for all their hypotheses except for this one and hypothesis 5, which could also be put down to endogeneity. Lessard and Zaheer (1996) thus make a fairly convincing case for the need for inter-divisional and inter-firm co-operation in the management of currency exposure.

A tentative conclusion could be that the large companies are now specialising in currency risk management and, as a result, have been creating specialised treasury functions, but the smaller companies lack the resources to do this and instead incorporate currency management into the finance director's remit. Despite calls for and a seeming recognition by companies of the need for a more integrated approach in the management of currency exposure and some proof that this will lead to a more effective currency management strategy, there is a tendency among even the large corporations to leave currency management decision-making to their treasury and finance divisions. However, more research has to be completed to determine the nature of the departmental involvement in the currency management function in different types of companies and how these departments affect a company's currency management performance. The results contained in chapter 6 will attempt to do this.

#### *4.5. Companies with Subsidiaries*

The special currency management problems of companies with overseas subsidiaries and how they deal with them has been a central subject in many of the surveys. Several US studies have concentrated on the evaluation of foreign subsidiaries' performances by US MNCs and currency awareness at the subsidiary level. Morsicanto (1978), using a combination of questionnaire and interview research, found that 39% of MNCs included translation gains and losses in the performance evaluation of their foreign subsidiary managers. This finding was supported by Shank et al (1979), using a series of case studies. Persen and Lessig (1979) found that 25% of MNCs used actual exchange rates in

foreign subsidiary budget determination and 64% used forecast exchange rates. In addition, 32% of the sample used the same exchange rates (whether actual or forecast) at the end-of-the-budget period as they used during the budget period, i.e. they ignored the effects of exchange rate changes. 26% of US MNCs held their foreign subsidiary managers responsible for exchange rate variances.

A survey by Demirag (1986) of UK MNCs can be compared with the above studies. Its legitimacy is enhanced with a good response rate from a representative sample. Demirag found that 53% of UK companies used forecast exchange rates in determining budgets (as opposed to 64% in Persen and Lessig's study in the US). The use of forecast exchange rates, as opposed to actual rates, creates currency awareness in foreign subsidiary managers, with the anticipation of exchange gains or losses. It also allows a firm to adjust its operations to meet the impact of the expected exchange rate movements. This left Demirag (1986), in comparing the two sets of results, to conclude;

"US MNCs are probably more concerned about and aware of currency effects in internal performance evaluation than UK MNCs are." (P.162).

Nearly 70% of UK MNCs used the same exchange rates at the end-of-budget period as those used during the budget period, whether actual or forecast, compared with 32% in Persen and Lessig's (1979) study. To this Demirag (1986) concluded;

"This once again tends to indicate that UK MNCs are relatively less concerned with the effects of exchange rate changes because the use of the same exchange rates in budgets ignores these effects." (P.162).

Just over 14% of UK MNCs held their foreign subsidiary managers responsible for exchange rate variances, a much smaller figure than that given for US MNCs in all of the three other studies.

Demirag (1986) in his final set of conclusions states;

"Most foreign subsidiaries now operate under global competition where their costs and revenues are affected to a greater extent by movements in real exchange rate changes .... Accordingly, the evaluation of any management evaluation measure, which ignores

the impact of real exchange rate changes on operating results on which managers' performances are based, must be seriously questioned .... Overall, UK MNCs do not appear to be sufficiently concerned with identifying and measuring the operating effects of real exchange rate changes in performance evaluation of foreign subsidiary managers." (P.163).

Since this study was undertaken at a different time from the US studies, using a different set of questions and different samples, the comparative results must be viewed with some caution. **However, the general impression of this review is that US MNCs are more sophisticated in currency management than their UK counterparts.**

Another major issue concerning the behaviour of companies with overseas subsidiaries examined in the surveys has been the extent of centralisation of currency management operations. **All of the surveys that have considered this matter have found very high degrees of centralisation of the currency management function** (for example, Abdel-Malik 1976, Jilling 1978, Mathur, 1985a, Belk and Glaum 1990, Robertson 1991, Baur 1993 and Duangpoly et al 1997). Blin et al (1981) found centralisation to be less evident in the UK than in North America and Soenen and Aggarwal (1989) found centralisation to be slightly higher in Europe than in the UK.

Edelshain (1995) did find some evidence for co-operation between the group and its subsidiaries in managing currency exposures, as the group only managed currency matters on its own in 21% of his sample. He also found evidence of decentralisation in many firms, with over one-quarter of his sample stating that subsidiaries alone were responsible for managing currency exposures. Nevertheless, Edelshain (1995) reported that the majority of subsidiary chief executives, directors and finance departments were not involved in currency matters and there was still found a tendency towards centralisation, with 44% of his sample claiming that currency responsibility had been centralised in the last five years and only 12% claiming that it had been decentralised.

Collier and Davis (1985) found that overseas subsidiaries were less tightly controlled in currency risk management than UK-based subsidiaries. **Collier and Davis also found that there was a greater willingness to actively manage, rather than close-out currency risk, the more**



centralised was the structure of the company and the lower the degree of risk involved. There thus seemed to be a connection between risk management and structure, but they could not find a similar relationship between risk and structure. They concluded that this may be because increased centralisation could be a response to high or low risk. High risk companies could centralise to ensure closer supervision of a close-out policy, while low risk companies could centralise for the efficient management of risk.

In US MNCs, Mathur (1985a) supported the link found by Collier and Davis (1985) between active management of risk and a centralised currency management structure. By means of statistical analysis, he found the presence of a centralised function to be significantly correlated with hedging currency exposures and use of the forward market. Edelshain (1995) also found evidence to corroborate these findings by concluding that the use of currency management methods was more closely associated with group headquarters than with subsidiaries.

Walsh (1986) chose to study a cross-section of subsidiaries, as well as company headquarters, to obtain additional information of currency management at a divisional level. **He found significantly less involvement in the management by companies of transactions arising from overseas subsidiaries as opposed to transactions arising from headquarters.** He highlighted that US studies had found much higher degrees of centralisation and there could therefore be a systematic difference between the practices of UK and US MNCs. However, most other studies, of both UK and US MNCs, did not distinguish, as Walsh had done, between exposures arising in the country of the parent and those arising from the subsidiary. With respect to UK transactions, Walsh's results are similar to the results of Collier and Davis (1985) and results from other studies that did not distinguish between transactions arising in the parent company's country and transactions from subsidiaries. However, for overseas transactions, Walsh did find much less centralised control than that found by Collier and Davis. Walsh put this lack of central control down to political, geographic and informational considerations.

Walsh (1986) also concluded that the management of transaction

exposure was more likely to be centralised than the management of economic exposure because of transaction costs and measurement considerations.

After a survey, by means of in-depth interviews with a stratified random sample of US-controlled MNCs, Stobaugh (1970) proposed a number of theories about the financial organisation of MNCs. His theory is similar to that of Earl's (1985), detailed in section 3.3.4, in tracking the development of a MNC. Stobaugh distinguished between three types of MNC: small, medium and large enterprises, in terms of total foreign sales, foreign sales as a proportion of total sales and the number of countries in which it manufactures.

The small MNC, he concluded, has a small number of staff in the central finance function receiving reports from other divisions, but not interfering in the decisions made by subsidiaries as long as operations are deemed to be satisfactory. At subsidiary finance level, a small number of staff make decisions without guidelines from the parent. This is currency management in a decentralised structure. In a medium MNC, there is a large number of staff in the central finance function making decisions for the entire group, with a small number of staff at subsidiary finance level implementing their decisions. This is clearly a centralised structure. A shock, Stobaugh argues, is also often required to shift the MNC from the small to the medium category, for example large losses in its overseas operations. A large MNC also has a large number of staff in the central finance function, but its purpose is to issue guidelines, co-ordinate activities and monitor results. There are also a large number of staff at subsidiary finance level making decisions based on the guidelines issued. This could be called a partially centralised structure.

**This theory follows fairly closely the last three stages of Earl's (1985) model, with a MNC initially giving its divisions responsibility for currency management due to a lack of resources at headquarters, but it begins centralising operations as it grows in size and attempts to optimise results for the group as a whole. As it continues to grow beyond a certain point, the organisation becomes more complex, making it difficult for group staff to optimise group results. Thus, each subsidiary again starts to make its own financing decisions,**

**with only general guidance from headquarters. Stobaugh's (1970) analysis thus relates size of company to the propensity to centralise operations.**

This matter will again be discussed in chapter 6 and in the final conclusions, after a number of tests on both Stobaugh's and Earl's models. However, Stobaugh partially defined his companies on the basis of size of currency exposures and, as detailed above, Collier and Davis (1985) did not find a relationship between size of risk and currency management structure. Batten et al (1993), in a study of large Australian corporations, found no relationship between the size of a firm's foreign exchange operations and the degree of centralisation. Instead, they related the centralisation decision to firm ownership, with Australian-owned firms more autonomous than foreign-owned companies and private companies more autonomous than public companies. They also dismissed any connection between industrial sector and the degree of centralisation.

Centralisation of currency management operations is a method now heavily used in the US, the UK and Europe to manage currency risk, but the degree of centralisation in a company does seem to depend on whether the exposures arise from the country of the parent or overseas, with overseas exposures less likely to be centralised. US MNCs are more advanced in their currency management operations than their UK counterparts, possibly by creating greater currency awareness in their subsidiaries. There seems to be a distinct link between a centralised currency management structure and an active currency management policy, but the relationship between the volume of foreign currency exposure, the origin of currency exposure and the tendency to centralise operations requires further study.

#### *4.6. Forecasting Exchange Rates*

Several surveys have studied the approach of companies to exchange rate forecasting. One of most in-depth of these surveys was by the Association of Corporate Treasurers (1992a) on large UK firms. In their survey, 81% used forecasts for currency management purposes, with 58% using forecasts produced internally, 75% using forecasts produced

externally and 40% using forecasts produced by both methods. Concerning the scientific forecasting methods, 92% of the sample used forecasts based on economic analysis with commentary and 67% said their forecasts were based on technical analysis. Only 18% admitted to purchasing forecasts from external services and just 13% said they found particular sources provided consistently better forecasting.

In a study of US MNCs, Mathur (1985a) found commercially-prepared exchange rate forecasting to be used by approximately three-quarters of his sample of users of currency forecasts. Scientific methods were used, with 23% of those forecasting using regression and trend analysis, but nearly half the sample admitted that they forecast by subjective evaluation.

However, another survey of US MNCs by Duangpoly et al (1997) found that a minority of these companies used currency forecasts, with most of the other companies supporting the concept of EMH and thus not seeing much point in such forecasting. Edelshain (1995) also found a comparatively lower figure for use of external forecasting services by UK MNCs (34%), with 64% stating that they did not believe that exchange rate movements could be accurately predicted. He also found no significant association between the use of forecasting services and the perceived effectiveness of currency management methods.

Among small companies in Scotland, Robertson (1991) detected;

"A widespread distrust of currency forecasts." (P.78).

Chartism was not found to be popular in a study by Soenen and Aggarwal (1989), who produced a comparative study of British, Dutch and Belgian companies that use currency forecasts and found that the use of historical exchange rates was not a key indicator in exchange rate forecasting in any of the countries (varying from 13% use in the UK to 3% in Belgium). However, this was a study of general companies. Studies of larger companies, such as Hakkarainen et al (1997), have showed a significant use of chartism and fundamental analysis.

In the forecasting of exchange rates, Broder (1984) found that companies tended to make projections less than 12 months and did not forecast

exchange rates routinely. In the US, Jilling (1978), found forecasts to be generally undertaken for between three and eighteen months, although Mathur (1985a) found that the clear majority of MNCs surveyed forecast monthly. In contrast, companies appear more confident about exchange rate forecasting in Finland. In Hakkarainen et al (1997), nearly all sampled companies forecast exchange rates, with half believing they could forecast exchange rate trends always or often between one month and one year and over one-third believing they could do so over one year. However, Finland has only moved to a floating foreign exchange regime comparatively recently and Finnish companies may not be so confident of their forecasting activities after experiencing significant currency volatility.

**Generally, the above evidence suggests that there is some use of currency forecasting, especially in some large companies, but generally companies have a sceptical attitude towards this activity. Exchange rate forecasts are more likely to be used only for short-term purposes and when a currency exposure is imminent or ongoing.** Companies are willing to use a range of facilities to obtain forecasts, suggesting they do not place much trust in any one service or technique. Chartism is not generally popular among smaller companies. External forecasting sources are more popular than internal sources, but this may be only when the forecasts are provided free of charge.

#### *4.7. Currency Management Policy*

A number of studies have examined the general approach to currency exposure management of companies. These studies have considered questions such as, are companies risk-averse or risk-taking? Do companies try to profit from currency movements or is their foreign exchange function more concerned with covering costs? Do companies cover all or none of their exposures or do they prefer some balanced approach based on their assessment of the risk factor in a given situation?

**It would appear from the existing evidence that companies from large multinationals to small local enterprises adopt a risk averse approach to currency management.** Studies by Jilling (1978), Rodriguez (1981), Mathur (1985b), the Bank of America (World of



Banking 1995) and Duangpoly et al (1997) found significant risk aversion among US multinationals engaged in currency management. In the UK, only three of the seventeen companies that Belk and Glaum (1990) interviewed were risk-takers in currency management, with larger companies more likely to be so. Over half of Edelshain's (1995) sample said that their policy was "to hedge all quantifiable trading currency exposures", while 29% described themselves as totally risk averse. These findings are supported by studies of smaller companies, which show them to be highly risk averse. For example, no company in the samples of Koury and Chan (1988) or Robertson (1991) described themselves as "risk-seeking." However, the findings by Belk and Glaum (1990) and Edelshain (1995), at least, must be viewed with a little caution as many respondents who claimed to be totally risk averse also provided information to suggest otherwise.

Edelshain (1995) invoked agency theory to explain these results, arguing that managers' fear that losses on exchange rate movements will endanger their own positions is greater than their desire for rewards of profiting from such movements.

This conservative approach to currency management is reinforced with a review of companies' description of their currency management centre and their hedging programme. In Belk and Glaum's (1990) study of seventeen UK MNCs, nine indicated that their treasuries were "service centres" or "negative cost centres" and that profit-making was not their key objective in managing foreign exchange. Six treasurers responded that their treasuries were not profit centres, but were expected to contribute to profits. Only two of the treasuries were run as profit centres.

Touche Ross (1991) found only 7% of companies stating that their treasury was a profit centre. In their sample, 15% had a corporate programme of 100% cover on all currency exposures, but 85% used selective cover. A similar study was published in *Corporate Finance* (1991) that concluded that most companies conducted currency management conservatively and believed that they had adequate controls to protect themselves against large losses. For instance, of the thirty companies surveyed, only two declared that they took positions on currencies, none confessed to writing naked options (as Allied-Lyons had

done in 1991 when losing £150M speculating in the foreign exchange markets), nine took a view of the market rather than undertake full hedging and only three considered their treasuries to be a profit centre. Both these studies were a response to the Allied-Lyons debacle in the same year, detailed in section 3.3.4, but the surveys found little evidence of risk-taking in UK companies in general. A survey by the ACT (1992b) further supported the thrust of these findings, with 70% of UK companies describing themselves as cost centres and just 19% describing themselves as profit centres.

This pattern is repeated throughout Europe and the US. Euromoney publications conducted a study of 172 treasurers of leading European companies (Pattanaik 1993a). Half described themselves as cost centres, 31.5% as partial profit/cost centres and 18.5% as profit centres. Lessard (1990) found that only a small fraction of foreign exchange managers viewed profit-making from foreign exchange trading as of substantial importance. A survey by the Bank of America (World of Banking 1995) found that less than 10% of US MNCs considered their currency risk management function to be a profit centre. Duangpoly et al (1997) only found one company in their sample of 22 prepared to describe their treasury as a profit centre.

**Abdel-Malik (1976) also found a conservative approach to currency management in the sense that companies only change policy gradually, even in the wake of drastic external changes.** He found that Canadian companies took about six years to significantly change their currency management policy in adjustment to the floating of the Canadian dollar in 1970. Abdel-Malik also found that selective hedging had grown in popularity in Canada since the Canadian dollar floated, with 70% of Canadian companies engaging in selective hedging by the time of his study. Full hedging tended to be used by firms with small exposures or by firms that viewed selective hedging as speculation. However, Abdel-Malik concluded that there was an;

"Absence of well-defined policies approved and operating procedures in the large majority of firms." (P. 48).

In particular, this occurred in small firms, interested in improving their currency management system but believing that the extra costs did not

justify such efforts, or in firms minimally exposed to currency risk and in no need of a sophisticated currency management system.

In a study by Mathur (1985a), 67% of his sample of US multinationals had formal written policies for executing foreign exchange transactions. Firms with a higher degree of reliance on foreign exchange and larger firms placed a greater emphasis on written policy for foreign exchange operations. Firms with written policies were more likely to hedge than firms with informal policies. Mathur (1985a) claimed;

"Firms with a written foreign exchange policy are doing a better job of managing their foreign exchange risks." (P.2).

The position would appear to have improved in the US since Mathur's survey, with 80% of US MNCs in a survey by the Bank of America (World of Banking 1995) replying that they had written policy statements on currency risk and 85% of this sub-sample of companies having reviewed their policies in the last three years. Over three-quarters of US MNCs in a survey by Duangpoly et al (1997) were also found to have written rules on foreign exchange policies. However, this issue has recently been broached again in a study of large Finnish companies by Hakkarainen et al (1997). This study found that senior management or the chief executive officer were involved in the drawing-up of currency management policy in 86% of the sample, perhaps indicating a high priority being given to currency management, but further analysis revealed that only 28% of companies provided detailed instructions, indicating that individuals in the currency management function have considerable autonomy in the day-to-day management of foreign currency matters. These results are similar to those of Abdel-Malik (1976), contained in section 4.4, of top management nominally being heavily involved in currency management, but not in practice.

Some useful international comparisons were obtained in a large survey of firms in the UK, the Netherlands and Belgium by Soenen and Aggarwal (1989). Full hedging was used by 19% of UK companies and 26% of Netherlands companies, but by none of the companies in Belgium, whereas 14% of UK companies and 9% of those in the Netherlands did not engage in hedging, but 37% of Belgium companies pursued a no-hedging policy. Generally, industrial companies were more likely to use a

full hedge.

In another international study by Blin et al (1981), the most frequently indicated objective of currency management was avoidance of major loss, more so in the UK (40%), compared to the US (30%) and Canada (25%). North American companies were more likely to partially hedge, whereas British companies hedged more frequently and more completely. In total, one-third of their sample said that their main objective was, "to avoid major forex losses." Just over one-quarter said that the main objective was to, "reduce net economic exposure", but there was little investigation of economic exposure management in this study. The authors also found that the British companies were more interested in maximising home currency equivalent income than companies from North America and suggested that this could be because of British companies' greater experience of currency devaluation, but it could also reflect a lack of ability to think of currency exposure in anything other than home currency equivalent.

Collier and Davis (1985) found that long-term exposure horizons, irregular currency flows, few matching opportunities and currency volatility were the main factors influencing the hedging decision. Walsh (1986) supported these findings with respect to long-term exposure periods and currency volatility. However, Glaum and Belk (1992) found that the actual timing of currency management policies was more short-term oriented;

"Generally, the exchange risk management of the companies interviewed tended to be short-term orientated. The management focused on the management of transaction or short-term economic exposure, whose time horizon rarely exceeded twelve or at the utmost eighteen months." (P. 82).

**Edelshain (1995) associated the internal corporate environment, including corporate attitudes and strategies towards currency risk and organisational structure, with currency management method usage, but not with the external corporate environment or with the forms of currency exposure experienced.** Neither were perceived forms of vulnerability to or forms of advantage from currency exposure found to translate into particular corporate attitudes or strategies. Edelshain (1995) found that corporations with a policy of hedging all quantifiable exposures made greater use of financial instruments and



long-term asset exposures were hedged by nearly 40% of his sample. He concluded;

"This .... underlines that the significant associations are preponderantly with policies which seek to diminish risk, and reduce vulnerability, rather than generate advantage." (P.250).

Risk-averse behaviour therefore seems prevalent in virtually all types of company, with most acting as cost centres but engaging in risk assessment where possible. Currency risk management, as suggested by Earl (1985) (see section 3.3.4.), also appears to follow an evolutionary path explained by experience and environmental change. However, concern has been expressed about the lack of formal currency management controls. Currency management appears to be influenced by long-term exposures, but its timing is short-term oriented. Another study suggests a strong link between currency management methods used and the internal corporate environment, but the type of exposures faced does not appear to significantly influence this environment.

#### *4.8. Currency Management Instruments and Techniques*

The area perhaps covered most extensively by the surveys has been the instruments and techniques that companies use in their management of currency risk. Given the number of studies on this topic around the world, this area is considered on a country to country basis.

In Canada, Abdel-Malik (1976) concluded that forward cover was the most popular hedging technique, used by around 80% of companies throughout the 1970s. However, since the Canadian dollar floated, other methods have been used more in conjunction with forward cover, particularly, by 1976, domestic currency invoicing (62%), leading and lagging (21%) and local borrowing (19%). No company characteristics were distinguishable on the basis of use of forward cover, except size of exposure (companies with large exposures were more likely to use the forward markets).

In Australia, Batten et al (1993) found forward contracts also to be the most commonly used currency management technique, although the percentage use, at 46%, is surprisingly on the low side relative to other studies of large firms. Currency options were used by 19%, swaps by



13% and futures by 4%. There was a very low use of option hybrids (2%).

Mathur (1985b) surveyed US MNCs. He found that of the internal techniques, netting and leading and lagging were popular, used by around 70% of his sample. Regarding the external techniques, he found local borrowings to be popular, used by nearly 90% of the sample. However, currency swaps were only used by a small minority of companies surveyed, although they were utilised frequently by the few firms employing them. Mathur (1985b) concluded that forward contracts were used by a high proportion of US MNCs, but they were used sparingly. He found a significant negative relationship between having a large percentage of total sales revenue in foreign exchange and the use of forward contracts and believed this was because firms with large volumes of currency exposure would find the gains and losses of overseas activities cancelling out foreign exchange exposures. Export credit guarantees were used by just over one-third of the sample, but generally only for a low volume of transactions.

Aggarwal and Soenen (1989) surveyed 30 of the largest US corporations, primarily to establish corporate use of forward, futures and option contracts. All of the sample companies hedged against foreign exchange exposure using the financial markets, with the forward market mainly used for hedging purposes. Two-fifths of companies had considered using futures contracts as a currency management instrument but had decided against it. Around 40% had used currency options, but only for certain types of transactions (not specified) and only when they could be bought relatively inexpensively. In fact, 60% of the sample cited cost as a disadvantage of options. All companies accessed the banks for forwards and options, believing brokers to be less equipped and more expensive. Most obtained several quotes from a variety of banks.

Lessard (1990) searched for evidence to support a hypothesis that companies were more operationally oriented in currency management than they had been in the past. He found price variation to be commonly used among large US MNCs, but there was a limited use of shift sourcing and capacity loading and only around one-third of his sample were quite flexible in their sourcing, siting and capacity utilisation. He concluded that financial measures were perceived as being more effective than

operational methods by companies.

Jesswein et al (1995) found a very high level of awareness across US MNCs of financial instruments and derivative products used to manage currency risk. Again, forward contracts were the main instrument used (by over 93%), but, in contrast to Mathur's (1985b) finding above, over half of the sample were using currency swaps. Futures were used by just over 20% of companies. The most popular of the currency options products were over-the-counter options (used by 49%) and cylinder options (used by 29%). **It was very clear from these results that the first generation products (such as forwards) were much more popular among these large companies than second generation products (such as basic options, swaps and futures) and the more complex third generation products (for example, participating forwards, forward exchange agreements and cylinder options).** The average percentage use of the first, second and third generation products was 93%, 25% and 14% respectively. Jesswein et al (1995) concluded;

"The popularity of the simpler products has not been overtaken by the sophisticated new instruments." (P.75).

The survey provided little cogent reasoning as to why the third generation products were relatively little used, but it does not appear to be the case of a lack of awareness. Comparing these results with previous studies, even though forwards are still predominantly used, it does indicate a growing use of derivatives by large US firms. However, this conclusion is not wholly confirmed by recent evidence from Duangpoly et al (1997). Of the 22 US MNCs surveyed, nineteen currently used forward contracts, nine currently used currency options, in addition to two which had done so in the past, but only one company was using currency swaps. Of the eleven companies that were using or had used currency options, only four had used advanced techniques such as straddles and spreads. The main reason given for being reluctant to use options was initial cost. Another less important reason was lack of experience. However, this survey was of a much smaller nature than that of Jesswein et al (1995) and does not claim to be representative of all US MNCs.

Other US studies have concentrated on domestically-based companies. Koury and Chan (1988) carried out a survey in 1985. Forward contracts

were the most popular hedging tool, followed by matching. There was very little difference regarding preferred hedging instruments between large, medium-sized and small companies;

"Our analysis indicates that, on the whole, liquidity, flexibility and certainty about cost are the three most important considerations in choosing a hedging contract." (P.50).

**Companies were found to base their choice of hedging instruments on the grounds of familiarity and flexibility, not optimality.** The currencies most likely to be hedged (in decreasing order) were the Japanese yen, the Canadian dollar and the British pound.

Carter and Vickery (1988) undertook a small study of US firms that included an examination of currency management instruments. They found that 85% of the sample relied on dollar invoicing to try to eliminate currency risk. Companies that used foreign exchange contracts preferred the risk-sharing contract agreement (55% of the sample used them), with futures and forwards only being used by between 15%-20%. This survey is somewhat out-of-step with the other studies reviewed here.

A relatively high use of domestic currency invoicing among US companies was also detected by Blin et al (1981), but this could be due to the US dollar's international status, rather than a lack of sophistication among US companies. However, in this comparative study of UK, US and Canadian companies, there was found to be, generally, a low use of pricing strategy, invoicing strategy and asset and liability management to manage currency risk. The authors concluded;

"Actual changes in pricing or inventories are reported to be prompted by considerations transcending exchange risk, such as the competitive structure of product markets." (P.4).

However, it was not ascertained how currency movements affected factors such as the structure of competitive markets and, in turn, influenced pricing and invoicing strategy. The limited use of invoicing strategy is not in keeping with this review. More similar to results from other studies, the authors did find forward contracts to be the most commonly used hedging instrument, followed by money market hedging, which was more commonly used for long-term hedging.

In an early study of UK companies, Rosendale (1973) concluded that forward contracts and exchange variation clauses were the main methods used for hedging currency exposure. Exchange variation clauses can be inserted by importers, usually, into contracts to guard against large exchange rate fluctuations that can cause a significant increase in the price of their contract. There was also extensive use of Sterling invoicing: 35% of companies used it consistently and a further 10% changed from foreign currency invoicing to Sterling invoicing in response to the collapse of fixed exchange rates in 1971. Rosendale (1973) further stated;

"Apart from the thirteen firms which consistently invoice in Sterling, others mentioned a preference for this whenever possible." (P.50).

In a study of UK MNCs, Broder (1984) found forward cover was the most frequently used hedging technique. There was little evidence of widespread use of currency options or futures; they only tended to be used by some of the larger MNCs. However, the latter two instruments were relatively new innovations in the UK in 1984. This favoured use of forward cover and lack of use of currency options by UK MNCs was confirmed in a later study by Walsh (1986). He also found that companies were more likely to hedge US dollar transactions and were least likely to cover EMS-denominated transactions. This, Walsh concluded, was due to volatility as low levels of volatility (associated with the EMS currencies against Sterling) tended to lead to a no-hedge policy, whereas relatively high levels of volatility (associated with the US dollar against Sterling) led to hedging with forward contracts or, to take advantage of favourable exchange rate movements, leading and lagging.

For a better idea of how UK MNCs perceive the new financial engineering products in more recent times, reference must be made to Glaum and Belk (1992), who examined treasurers' attitudes towards financial innovation and the relationship between MNCs and banks in this context. They personally interviewed 17 major UK industrial companies, 5 managers working with financial innovations in banks and Bank of England personnel. In general, they found the attitudes towards the financial innovations to be mixed. The bank managers welcomed these new treasury management instruments, believing them to be economically justifiable. However, the treasurers were very sceptical, viewing them as



the banks' way of selling one-off solutions to the market as a whole and devised by superficial tampering with existing products to enable the banks to diversify. In summary, they were widely considered by treasurers to be mere marketing devices, although they did not seriously criticise the banks for developing them; they accepted product differentiation as a characteristic of profit-seeking organisations, including banks. Fifteen of the companies had used or were using currency options, but only one was doing so extensively. They tended to be only used for small sums of foreign currency. Seven companies had used currency swaps, but largely for decreasing interest costs rather than minimising currency exposures. None of the companies used futures to hedge exchange rate risk. Touche Ross (1991) also concluded that most major UK companies used currency options, but they did not define the extent.

Edelshain (1995) also found that financial instruments were the most extensively used currency management methods, with 78% of his sample using forward contracts, 51% using currency options and 40% using currency swaps. **This clearly shows the increasing use of second generation currency management products since Broder's (1984) study.** Only 15% used futures contracts and 17% used some form of insurance. These financial instruments were also seen as being more effective than other groups of instruments. Operational techniques, such as netting, leading and lagging, price variation and currency invoicing, were much less widely used, although there was significant use of matching (61%) and local currency denominated debt (60%), which were termed "strategic methods". Edelshain (1995) believed he had identified a sharp drop in the use of operational methods from levels found in surveys from the 1970s, but the evidence from this review is not that conclusive. On average, his sample used ten currency management methods, with companies employing any of the most widely used currency management methods, more likely to use a majority of the other widely used methods. However, Edelshain (1995) later qualified this finding by adding that the number of currency management methods whose use was significantly associated with other methods considered highly effective, was less than 10% of all possible associations. This provides some evidence of less method interchangeability and complementarity than previously thought. Usage was also positively associated with the perceived effectiveness of



the methods.

Edelshain (1995) concluded that currency management method usage was weakly associated with the external corporate environment, except for financial instruments (which were not associated), and strongly associated with the internal corporate environment, except for operational techniques. Interestingly, a result from factor analysis and multiple regression analysis showed the factor representing the use of financial instruments was significantly and negatively associated with the factor representing experience in currency management, suggesting that experience and learning in this field reduces management's desire to use financial instruments. **Currency management method usage was not associated with forms of currency exposure and Edelshain argued that the instruments and techniques were largely not being used where they would be expected to have an impact. Thus, there is prima facie evidence that large British companies are not making effective use of many of the methods available. However, when asked to list the methods used and the methods considered highly effective, companies could have been responding based on the combination of exposures they incur, masking any associations.** More work undoubtedly has to be done to examine the interaction between the types of methods used and the combinations of exposures incurred. Methods considered highly effective in currency management were only strongly associated with aspects of the companies' internal organisation. It thus appears from this study that the main driving force behind the companies' choice of instruments and techniques is their own internal environment, although Edelshain (1995) admitted that the determining factors concerning the use of currency management methods were still largely unexplained.

**There does seem to be a difference in hedging policy between the UK MNCs and smaller UK companies.** In a long run of DTI surveys, it was found that around three-quarters of British exports were invoiced in Sterling (Williamson 1990). The Barclays Quarterly Survey of Exporters (1991) concluded that in order to minimise exchange rate risk, 69% of their sample invoiced in Sterling, by far the most popular technique. Nothing much seemed to have changed in UK companies' attitudes to hedging since Rosendale's study in 1973, reviewed earlier. Only 26% of

companies used external techniques, with forward contracts the most common method, and 17% of companies took no steps at all. Company size was not a significant factor in determining whether a company invoiced in Sterling, but it did determine whether a company took out a forward contract, with larger companies far more likely to do so.

The Barclays survey was superseded by the Royal Bank of Scotland Quarterly Survey of Exporters (1993.) This survey also found Sterling invoicing (66%) to be the main technique used to protect cash flows from currency risk, but exporters seemed to be under pressure to invoice in customers' currencies when dealing in the US (36% of the sample invoiced in local currency), Germany (22%) and France (18%). When firms invoice in a foreign currency, in the vast majority of cases, it is in the local currency. In Eastern Europe, Latin America and Asia, however, there is a desire to buy and sell in US dollars. Among external hedging techniques, currency accounts were more popular than forward contracts (39% to 24%). The survey team concluded that between one-third and one-half of all small exporters protect themselves against exchange rate fluctuations to secure business. **However, it was estimated that between one-half and two-thirds of smaller exporters are very unsophisticated in this area, being aware of currency risk, but seeking to eliminate it simply by Sterling invoicing.** They may thus be missing opportunities to serve their customers better or to gain a competitive advantage in their overseas markets.

A particular focus in this survey was directed towards Scottish companies. They were slightly less likely to invoice in Sterling (63%), but much more likely to use a forward contract (40%).

Studies of European companies have broadly produced similar results to studies in other parts of the world. In a study by Soenen (1989) of Belgian corporations, the main hedging techniques were, in decreasing order, forward contracts, currency diversification, leading and lagging, use of the international money market and pricing policies. The other techniques, including financial futures and currency options, generally had low degrees of use. Large companies and manufacturing companies were heavier users of all the hedging techniques, except currency options. Soenen and Aggarwal (1989) also found the forward contract to

be the main hedging technique in all the European countries that they surveyed.

Hakkarainen et al (1997) found large Finnish companies using the following methods continuously or often: forward contracts (83%), matching (67%), currency deposits (58%), foreign currency loans (46%), currency swaps (46%), exchange rate clauses (46%), export credit (35%) and currency options (33%). Transfer pricing, leading and lagging and futures contracts were not commonly used.

The difference in policy of the very large companies is again demonstrated in Euromoney's study of leading European companies (Pattanaik 1993b), where nearly 80% of their respondents declared that they were using derivative products.

In Scotland, the Scottish Council for Development and Industry's Business Development Committee (1991) conducted a study into export finance in Scottish companies that included an examination of currency risk management. They surveyed 30 active exporters, all employing less than 200 people and representing a cross-section of Scottish manufacturing industry. Eighteen companies invoiced in a currency other than Sterling, most doing so on request. Nine companies used forward contracts, seven used foreign currency accounts and three used currency options. The larger companies were found to be more sophisticated in planning for exchange rate fluctuations. These and other results allowed the survey team to conclude;

"A superficial reading of the results would indicate a high level of awareness of the main facilities, but a low usage .... A negative reading of the results could be that companies have a very conservative approach to the planning of their export finance and are not open to new methods (underlined by the low level of interest in finding out about mechanisms unknown to them.)" (P.12).

When compared to the UK surveys in this section, Sterling invoicing does seem to be less popular as a currency management technique in Scotland than in the rest of the UK, even though there is still a conservative approach to currency management in Scotland. This is further emphasised in another small Scottish study of thirteen companies by

Robertson (1991). Seven companies invoiced exports in applicable currencies, three companies invoiced in Sterling or US dollars and only three invoiced purely in Sterling.

Concerning other internal action strategies, Robertson found that five companies netted occasionally, five had matched in the past, two companies used leading and lagging occasionally and five companies considered manipulating pricing policy. **By contrast, external action strategies were more popular and were often the first port of call.** Eight of the ten companies questioned about external hedging techniques used forward contracts, six of them covering 100%. Six companies used currency accounts. Four companies used foreign currency borrowing, although in all cases on a short-term basis. None of the other external services were used by any of the companies.

Even though all the results accumulated from the various studies may not be entirely consistent, **it does seem that small companies have a very conservative approach to currency management, using the most basic techniques, especially domestic currency invoicing. If they do use a foreign exchange contract, the forward contract is most preferred.** In the UK, Scottish companies also tend to follow this rule, but some evidence does indicate that they are less willing to invoice in Sterling and are more likely to hedge by using external techniques. **Larger companies are more willing to use a range of hedging instruments and are much more likely to actively use the newer financial engineering products, such as currency options and swaps, although they view them cautiously.** The use of these derivative products has been slowly growing since the mid-1980s. Larger companies have less of a conservative approach than smaller companies, but still prefer to use instruments with which they are familiar. Futures are not widely used except among smaller companies in the US.

#### *4.9. Performance Measurement*

Abdel-Malik (1976) found that only 10% of firms had a systematic approach to assessing hedging policies. The rest of the companies in his sample did not attempt to assess hedging performance or only assessed it intermittently. The common method of assessment was



estimating the gains and losses of a particular policy.

However, after this study, performance measurement ceased to be an area of concern in the literature until the deficiencies of corporate performance measurement were highlighted by the Business International Money Report (1989) (Quinn 1991). In this survey, 16% of the sample of US MNCs made no effort to measure performance. Only 35% measured performance against profit and loss and, of these, just over one-third analysed results against a no-hedge policy, 17% against a full hedge policy and only 8% of those that measured performance against profit and loss compared their actions against a no-hedge and a full-hedge policy. **There was thus a limited use of benchmarks and US MNCs were clearly not measuring performance properly against a range of alternatives.** In a survey by the Bank of America (World of Banking 1995), 90% of US MNCs were reviewing their positions on a monthly basis and 30% reviewed their positions daily, but half did not have a risk management performance benchmark. If this was the behaviour of US MNCs, some of the most sophisticated operators in the field, what of other companies?

Touche Ross (1991) thought the problem was as prevalent in large UK companies. They uncovered weaknesses in internal controls, with only half of their sample having a proper segregation of duties. They were also concerned about performance measurement, with only 29% of companies having a performance measurement system tested against an independent yardstick. The latter area was regarded as;

"An unsophisticated and underdeveloped area in most companies."  
(P.3).

These findings were broadly supported in Corporate Finance (1991);

"Although most of the respondents said that the performance of their operations was measured, less than half gave more than vague answers as to how this was actually achieved." (P.4).

However, the position seems to have improved since these studies. The ACT (1992b) surveyed delegates at their conference on performance measurement and 61% of respondents engaged in some form of performance measurement. In most cases, the development of a



performance measurement system was prompted by the treasurer. Treasury performance was reported to the finance director in 57% of the sample and to the board in 43%. In this study, 90% of respondents used market benchmarks and 40% used qualitative standards when measuring performance. The major problem in assessing performance was agreeing benchmarks in the absence of a common standard. Of those that did not measure performance, 46% considered it unnecessary, 38% said a system was being set up or considered and 16% replied that they did not have the resources to do so. Admittedly, since these findings were derived from a conference for those with an obvious interest in the subject, there will be an element of bias in these results.

Longden (1992) carried out a number of case studies on performance measurement systems in UK MNCs and concluded that the majority of companies used some form of performance measurement system, but basic measures were largely employed. Companies with a risk averse policy tended not to have formal methods of measuring performance.

Price Waterhouse surveyed major UK companies' performance measurement systems during 1992 (Knight and Flower 1993). It was found that 76% of companies undertook a form of performance measurement of their treasury activities, with relative rather than absolute benchmarks the more commonly used standard. This again demonstrates the risk averse/cost certainty standpoint of most British companies. Spot, forward and budget-related rates were the main benchmarks used, but the survey found the application of benchmarks to be a simple and arbitrary process.

**It would appear that in a relatively short space of time, UK companies have realised the inadequacies of their performance measurement systems and have taken some action to correct this. The studies indicate that a growing number of companies now measure their hedging performance, with a range of methods used. However, the selection of these methods does seem to be an arbitrary process.** Given the importance of this topic to any serious attempt to manage currency risk, it is surprising to find it relatively poorly covered in the past.

A recent study of Finnish companies by Hakkarainen et al (1997) again highlighted corporate deficiency in this area. Less than half of their sample companies appeared to have a performance measurement system and the choice of methods was again wide and arbitrary, with few companies appearing to have a genuine system and the majority of those claiming to measure performance merely monitoring their returns from currency risk management. The authors concluded;

“There seems to be room for improvement in the performance measures of risk management.” (P.38).

This is something of an understatement, but it is the most favourable general conclusion that this review can draw.

#### *4.10 The Companies' View of the Banks and the Advisory Organisations.*

Some of the surveys have considered the relationships between the companies and the key external agencies in currency management, the banks, where many of the currency management instruments are obtained, and the advisory organisations, where advice on currency management can be sought and given. **The results of these surveys show that the banks are heavily used, although criticised by many companies, whereas the advisory organisations are not used by many companies and are not highly regarded.**

The concentrated use of the banks and low use of the advisory organisations was demonstrated by Soenen (1989) and the Barclays Quarterly Survey of Exporters (1991), where the banks were found to be the main bodies used for advice on currency management, which may be viewed as their secondary role in currency management after selling currency management instruments. The evidence therefore suggests that the advisory organisations are not fulfilling their primary role.

Edelshain (1995) also found a fairly high use of banks in supplying advice on currency matters. In his sample, 45% of UK MNCs said they used clearing banks for this purpose and 25% said they used merchant banks, but he found little association between currency exposure influences on companies and the use and behaviour of specialists and advisers. Furthermore, around 40% of the sample stated that the banks and other

experts had done little to help them to deal with the longer term impact of currency volatility. Edelshain (1995) concluded;

“There is little evidence that those outside the corporation play an important part in influencing how currency exposure is managed.” (P.254).

However, his results could be put down to disaffection with outside bodies rather than a rejection of their advice. The fact that around half his sample employed the banks for advice on currency matters does not indicate such a rejection.

Criticism of the banks also emerged in Glaum and Belk (1992). In their survey, only one of seventeen treasurers had a very high opinion of the banks, five treasurers seemed at least partially satisfied, seven did not commit themselves and five were very critical of banking performance. The main criticism was the aggressive marketing of products by the banks without taking the individual needs of the companies into account.

Baur (1993) provided evidence that suggested that SMEs in Scotland were using the Scottish banks for currency management purposes, but the larger Scottish companies were using London-based institutions because of their greater expertise. **Baur also found that there was a strong bank loyalty factor in Scotland, with half of his sample of leading Scottish companies using a single bank for currency management purposes.** This finding is supported by Robertson (1991), where five of the nine companies personally interviewed used one bank, three used more than one bank and one did not deal with any bank. **More serious general criticisms of the banks emerged in Robertson’s study, for example, lack of expertise and lack of market intelligence, but no companies seemed to consider taking their business elsewhere.** Robertson (1991) provided critical general conclusions about the performances of the Scottish banks and the advisory organisations in this area. Regarding the banks;

“Generally, banks seem responsive to the needs of companies in foreign exchange. However, the advice is ultimately self-serving, heavily-biased, with the end result of companies being encouraged to use often costly bank services. Advice on how internal management can reduce net exposure is not included and the

issue of economic exposure not really addressed.” (P.100).

Regarding the advisory organisations;

“In a review of the advice available from business organisations and institutions, provision was found to be disappointing. [They] offer no constructive advice on foreign exchange management. ECGD services are inappropriate for smaller companies.” (P.109).

The banks appear to be the companies’ first port-of-call when it comes to currency management, with the advisory organisations only playing a minimal role. Serious criticism of the banks and the advisory organisations have emerged, but there are few signs of the companies changing the nature of their banking relationships in this area.

#### *4.11. Currency Management by Size and Type of Company*

It appears to be the case from the studies already reviewed that the currency management policies of the multinationals and other large companies are much more sophisticated than those of the smaller companies. **For example, large companies are usually more likely to use a range of financial instruments, to recognise all currency exposures, to have a specialised treasury division and to use several banks.** Other studies have confirmed these findings and have generated other currency management distinctions between different groups of companies, but a number of studies have disputed the correlation between size of company currency management strategy and therefore also require consideration.

Evidence that size of company can be a key variable in determining the level of sophistication of a company’s currency management function appears in Jilling (1978) and the Barclays Quarterly Survey of Exporters (1991). Large companies are more likely to take risks (Belk and Glaum 1990) and to use a number of banks for currency management purposes (Soenen 1989 and Soenen and Aggarwal 1989).

However, Koury and Chan (1988) found little difference between use of hedging instruments and the size of companies. Houston and Mueller (1988) found that when it came to hedging translation exposure, size of

company was not a key determinant, the most important factor being proportion of foreign operations. Abdel-Malik (1976), using statistical analysis, found no distinguishable currency management practices on the basis of ownership (Canadian or foreign), industrial sector, type of international operations or size of company. The only key variable in determining the sophistication of a firm's currency management strategy was size of currency exposure.

Edelshain (1995) claimed that he did not find size of company to be a significant variable in currency management. Only 14% of the companies he surveyed stated that they had to attain a critical size before satisfactorily being able to deal with currency issues. The extent of foreign involvement would appear to be a more significant factor, as 56% stated that the more international their business had become, the more experienced they had become in dealing with currency issues. However, in this sample, company size was positively correlated with incurring transaction exposure, the use of a centralised treasury, the use of formal committees to manage currency issues, the use of outside experts and the use of a range of currency management methods, including forward contracts, currency swaps, leading and lagging and local currency denominated debt. Currency swaps were the only instrument considered significantly more effective by large companies compared with small companies. Finance departments were more prevalent in small companies. Whereas company size may not have been one of the most significant determinants at work in this survey, it clearly did have some impact on currency management decision-making.

Nachtman and Sharma (1997) examined the returns to common stock on the NYSE and Amex and the changes in the value of the US dollar relative to a basket of foreign currencies. They found size of company to be positively correlated with the proportion of foreign sales. They also found that returns to smaller companies, on average, were negatively affected by a dollar depreciation, whereas the returns to larger companies were positively affected. This implies that large firms are net exporters and small firms are net importers. Medium-sized companies were not found to be as affected by exchange rate movements. Industrial composition does not appear to have caused these results, in fact, the results indicate that currency exposure is different for different sizes of



company within the same industry. Nachtman and Sharma (1997) concluded that since larger companies had greater foreign sales to total sales ratios than smaller companies, the two groups of companies should have different currency exposures.

Using crosstabulation analysis, Soenen (1989) found a positive correlation between size of company and the volume of currency exposed. In general, large companies and manufacturing companies were found to be the most sophisticated groups of companies in managing foreign exchange. For instance, these were the companies that tended to use quantitative models in calculating currency exposure and hedging currency risk. They were also more likely to hedge currency risk and to forecast exchange rates.

Batten et al (1993) found larger companies to be more likely to use currency management products, computer technology and short-term and foreign funding. Form of ownership, industrial composition and the extent of international involvement did not appear to impact on the use of currency management products.

Hakkarainen et al (1997) found that large firms (on the basis of net sales) made greater use of currency management products than small firms, but they also found statistically significant relationships between the extent of foreign operations and hedging.

However, disputing the impact of company size in currency management, a study of US MNCs by Jesswein et al (1995) found that whereas the rankings of product use was similar across industries, greater use was made of currency management products in the finance sector (an average adoption rate of 39%), with the next highest rate experienced by the manufacturing sector (24%). This result appears intuitive because one would expect the finance sector to have a greater knowledge of many of the most commonly used (and financial) currency management instruments. This survey team concluded, by use of multiple regression analysis, that industrial representation and the degree of international involvement explained the use of currency management products significantly more than company size. When combined, the industrial effect and international involvement effect explained 23% of the variance

in the variable measuring use of currency risk management products. These two effects were also shown to be independent. The only exceptions where company size did have a significant effect on the use of currency management products were in the cases of forward contracts, currency swaps and break forwards. The first two of these were positively associated with company size and the last, surprisingly, negatively associated.

On two other surveys that have considered these matters, the Barclays Quarterly Survey of Exporters (1991) found exchange rates to be considered less of a problem by firms in the consultancy sector compared to the manufacturing sector. In this study, 50% of companies in the broad manufacturing sector said that exchange rates constituted a serious problem. Robertson (1991) concluded that there was less of an effort to forego exchange rate risk in importing than in exporting.

**The majority of surveys therefore seem agreed that size of company is a key determinant of a company's currency management policy, but the literature is not unanimous. Much of the evidence, unlike in many other areas of currency management, is opposing and inconclusive. Some evidence suggests that industrial representation and the degree of international involvement are more significant determining factors. Many of the conflicting results may be caused by the use of different measures for the same phenomenon. For instance, to take just two examples, Jesswein et al (1995) measured firm size on the log of total corporate assets and the degree of international involvement on the proportion of foreign income. Nachtman and Sharma (1997) measured firm size on the basis of market value and the degree of international involvement on the proportion of foreign sales. It could also be the case that different sample compositions are the cause of the conflicting results.**

#### *4.12. Conclusions*

The studies reviewed in this chapter outline the development of the field of foreign exchange risk management. There is little doubt that the field has progressed from the 1970s and is now seen as an important treasury and financial function in many firms. However, a general characteristic of

the research is that the larger firms have been shown a disproportionate interest compared to small and medium-sized companies. Recent research suggests that this long-term trend may at last be being reversed.

There appear to be a number of main conclusions that can be drawn from the various research studies that will have to be borne in mind throughout the remaining chapters and will be compared against the results of the current research;

1. The field of currency risk management has considerably increased in importance in recent times, with a growing number of firms identifying exchange rates as a problem, but many of the smaller companies still seem to be ignoring currency risk.
2. Currency risk is viewed more seriously by MNCs and they are, as a result, more sophisticated in managing it. However, there is debate about exactly how much influence company size has on determining a company's approach to currency management. Some studies suggest that the degree of international involvement and/or industrial representation are more significant determining factors.
3. Many small and medium-sized businesses manage currency risk crudely and believe domestic currency invoicing eliminates currency risk. This is particularly evident in the UK.
4. There has been an increase in the degree of centralisation used by MNCs to control currency risk. There appears to be a relationship between risk management and corporate structure, but the relationships between risk and structure and company size and structure are less clear.
5. There is greater local currency awareness in US MNCs than in UK MNCs.
6. British companies' performance in the field of foreign exchange management compares well with that of their European counterparts.

7. There is risk aversity and little speculation in most firms regarding currency risk. Generally, currency management policy is conservative and the development of the policy appears to be of an evolutionary nature.
8. The forecasting of exchange rates tends to be limited to short- and medium-term time spans. Larger companies make more of an effort to forecast, but, generally, there is some distrust of forecasting.
9. Transaction and economic exposures are being increasingly identified as the vital areas to manage, although translation exposure is still far from being considered irrelevant. Transaction exposure is still regarded as the primary exposure to manage, but it is now generally believed that economic exposure has the greatest impact. Despite this, much ignorance still surrounds the measurement and management of economic exposure.
10. Large companies tend to place the currency management function in the hands of a treasury division or senior management. Smaller companies are more likely to incorporate it into their finance function. Other departments do not appear to have a significant degree of involvement in the management of currency risk despite the need for an integrated corporate approach.
11. The forward contract is the most commonly used hedging product, but currency accounts are becoming increasingly popular. The new hedging products are mainly used by the larger companies. The derivatives market is growing, but many companies are still unsure about the cost and tradability of these products. There appears to be less use of internal techniques. The determining factors behind the choice of currency management methods by companies is largely unexplained, although the basis for choice would appear to be familiarity and flexibility, rather than optimality.
12. There is concern about how companies measure their

performance in this area, but more of the larger companies, especially those with treasury divisions, are now attempting to measure currency management performance. Relative benchmarks are the preferred way of doing so, but there is a lack of a common standard.

**13. The banks are usually companies' main source of advice on currency matters, but they and the advisory organisations are receiving criticism from the companies about their approach to corporate currency risk.**

Despite general agreement on some of the important areas of currency management, many of the studies reviewed above have problems with their basic research methodology, especially the Scottish studies. For example, as will be seen in the summary tables that follow, their sample sizes are too small and unrepresentative, their response rate is not very high and they use unreliable techniques such as telephone interviewing. **The bulk of the surveys pay little or no attention to statistical analysis.** There is a need for more in-depth research of large and representative samples of companies to properly test some of these results. This research aims to achieve this, as the methodology will demonstrate in the next chapter.



**Table 4.1. - Summary Table of Previous Studies of Currency Management in US MNCs.**

Survey	Country(s) Involved	Period Analysed	No. in Sample	Type of Sample	Research Method Used	Main Results
Stobaugh (1970)	US	1969	39	US MNCs	Personal interviews with representative sample	<ul style="list-style-type: none"> <li>•Small MNCs are decentralised, medium MNCs are centralised and large MNCs are only partially centralised.</li> <li>•Currency instability not viewed as one of the serious problems of operating overseas.</li> </ul>
Duerr & Greene (1973)	US	1973	166	MNCs	Mailed questionnaire	<ul style="list-style-type: none"> <li>•The increasing importance of and sophistication in currency risk management from the early 1970s.</li> <li>•Most exchange rate forecasts are medium-term.</li> <li>•Most MNCs have a risk averse approach to currency management.</li> <li>•The largest companies are more advanced in currency management.</li> </ul>
Jilling (1978)	US	1977-78	411 (26% response)	MNCs	Mailed questionnaire	
Morsicanto (1978)	US	1978	182 (39% response)	MNCs	Mailed questionnaire & personal interviews	<ul style="list-style-type: none"> <li>•Around one-third of US MNCs evaluate subsidiaries' currency management performance.</li> </ul>
Persen & Lessig (1979)	US	1979	125	MNCs	Mailed questionnaire and personal interviews	<ul style="list-style-type: none"> <li>•Around one-quarter of US MNCs evaluate subsidiaries' currency management performance.</li> </ul>
Shank, Dillard & Murdock (1979)	US	1979	25	MNCs	Case studies	<ul style="list-style-type: none"> <li>•Around one-third of US MNCs evaluate subsidiaries' currency management performance.</li> </ul>

Survey	Country(s) Involved	Period Analysed	No. in Sample	Type of Sample	Research Method Used	Main Results
Blin, Greenbaum & Jacobs (1981)	UK, US & Canada	1979	41 (66% response)	Major companies	Mailed questionnaire based on personal interviews	<ul style="list-style-type: none"> <li>•Centralisation more evident in North America than in the UK.</li> <li>•Avoidance of major loss is the main objective in currency management.</li> <li>•North American companies are less risk averse than British companies.</li> <li>•North American companies are less interested than British companies in maximising home currency equivalent income.</li> <li>•Little use of pricing strategy, invoicing strategy or asset and liability management in the management of currency risk.</li> <li>•Domestic currency invoicing relatively common in US companies.</li> <li>•Forward contracts are the main hedging instrument.</li> </ul>
Rodriguez (1981)	US	1967-74 & 1974-77	70	MNCs	Personal interviews & quantitative data analysis	<ul style="list-style-type: none"> <li>•Transaction exposure has been regarded as the most important exposure type to manage since the mid-1970s.</li> <li>•Most MNCs have a risk averse approach to currency management.</li> </ul>

Survey	Country(s) Involved	Period Analysed	No. in Sample	Type of Sample	Research Method Used	Main Results
Mathur (1985a)	US	1985	300 (18% response)	MNCs	Mailed questionnaire & statistical analysis	<ul style="list-style-type: none"> <li>•Most MNCs prioritise management of both transaction and translation exposures.</li> <li>•High level of centralisation of the currency management function.</li> <li>•A clear majority of MNCs forecast exchange rates, most doing so short-term and subjectively.</li> <li>•Companies with written policies manage currency risk better.</li> </ul>
Mathur (1985b)	US	1985	300 (18% response)	MNCs	Mailed questionnaire & statistical analysis	<ul style="list-style-type: none"> <li>•There is little speculation in currency management.</li> <li>•Forward contracts are the main hedging instrument.</li> </ul>
Aggarwal & Soenen (1989)	US	1989	30	MNCs	Personal interviews	<ul style="list-style-type: none"> <li>•Transaction exposure is regarded as the most important exposure type to manage.</li> <li>•Most MNCs use several banks in currency management.</li> <li>•Forward contracts and currency options are the most favoured hedging instruments, with little use of futures.</li> </ul>
Business International Money Report (1989)	US	1989	Not known	MNCs	Mailed questionnaire	<ul style="list-style-type: none"> <li>•Little effort made to properly measure currency management performance in US MNCs.</li> </ul>

Survey	Country(s) Involved	Period Analysed	No. Sample	Type of Sample	Research Method Used	Main Results
Collier, Davis, Coates & Longden (1990)	UK & US	1990	23	MNCs	Personal interviews	<ul style="list-style-type: none"> <li>•Transaction exposure is the most important exposure type to manage.</li> <li>•US MNCs are less likely to manage translation exposure than UK MNCs.</li> </ul>
Lessard (1990)	US	1987-90	207 (72% response)	Senior managers in large US MNCs	Personal interviews & mailed questionnaire	<ul style="list-style-type: none"> <li>•Most foreign exchange managers see the importance of inter-departmental consultation and the need for an operational orientation in currency management, but they have difficulty in responding to this.</li> <li>•Economic exposures more commonly managed by financial measures.</li> <li>•Little importance attached to profit making in foreign exchange trading.</li> <li>•Currency management seen more in terms of near-term contractual items.</li> <li>•Some company awareness of the effects of currency movements on domestic competitiveness, but the results are not clear-cut.</li> </ul>
Lessard & Nohria (1990)	US	1986-88	10	US and Japanese MNCs	Personal interviews	<ul style="list-style-type: none"> <li>•MNCs focus on basic financial and contractual exposures.</li> <li>•Companies seem to believe in an integrated currency management approach, but are not practising it.</li> </ul>

Survey	Country(s) Involved	Period Analysed	No. in Sample	Type of Sample	Research Method Used	Main Results
Bank of America (1995)	US	1995	Over 200	MNCs	Mailed questionnaire	<ul style="list-style-type: none"> <li>Nearly all US MNCs review their currency positions at least monthly, but half do not have a risk management performance benchmark.</li> </ul>
Jesswein, Kwok & Folks Jnr. (1995)	US	1995	602 (28% response)	MNCs	Mailed questionnaire	<ul style="list-style-type: none"> <li>There is a high level of awareness among companies of the array of financial products.</li> <li>Forward contracts are the main hedging technique and there is also a high use of currency swaps.</li> <li>Companies still prefer the older, simpler products.</li> <li>Greater use is made of currency management products in the finance and manufacturing sectors.</li> <li>International involvement and industrial representation explain the use of currency management products significantly more than company size.</li> </ul>
Lessard & Zaheer (1996)	US	1987-90	207 (72% response)	Senior managers in large US MNCs	Personal interviews & mailed questionnaire	<ul style="list-style-type: none"> <li>Treasuries that co-operate inter-division and inter-firm are more effective in their strategic responses.</li> </ul>



Survey	Country(s) Involved	Period Analysed	No. in Sample	Type of Sample	Research Method Used	Main Results
Duangpolly, Bakay & Belk (1997)	US	Not known	22	Industrial MNCs	Personal interviews	<ul style="list-style-type: none"> <li>•Transaction exposure is the most important exposure type to manage.</li> <li>•A clear majority of companies closely monitor translation exposure and will take action under certain circumstances.</li> <li>•Economic exposure management is considered important, but is practised with varying degrees of sophistication.</li> <li>•High degree of centralisation in currency management.</li> <li>•Exchange rate forecasting only used by a minority of companies.</li> <li>•Clear majority of companies have written foreign exchange policies.</li> <li>•Nearly all company treasuries are service or negative cost centres.</li> <li>•Most companies are totally or fairly risk averse.</li> <li>•Forward contracts are the main hedging instrument.</li> <li>•There is a moderate use of currency options, but a low use of advanced option techniques and currency swaps.</li> </ul>

**Table 4.2. - Summary Table of Previous Studies of Currency Management in US Companies and Other US Studies.**

Survey	Country(s) Involved	Period Analysed	No. in Sample	Type of Sample	Research Method Used	Main Results
Koury & Chan (1988)	US	1985	500 (15% response)	Selected companies	Mailed questionnaire	<ul style="list-style-type: none"> <li>•Transaction exposure is regarded as the most important exposure type to manage.</li> <li>•None of their sample is risk-seeking.</li> <li>•Forwards contracts and matching are the most popular currency management tools in all types of companies.</li> <li>•Familiarity and flexibility are the most important considerations in selecting currency management methods.</li> </ul>
Carter & Vickery (1988)	US	1988	21 responses	Selected companies	Mailed questionnaire	<ul style="list-style-type: none"> <li>•Most US companies use dollar invoicing to combat currency exposure.</li> <li>•The risk-sharing contract is the most favoured of the foreign exchange contracts.</li> </ul>
Houston & Mueller (1988)	US	pre-1981 & 1988	119 (40% response)	Companies with foreign operations	Mailed questionnaire & statistical analysis	<ul style="list-style-type: none"> <li>•A large but declining share of US companies manage translation exposure, with the decline the result of the new accounting standard.</li> <li>•The proportion of foreign operations is related to the decision to hedge translation exposure, but size of company is not.</li> </ul>

Survey	Country(s) Involved	Period Analysed	No. in Sample	Type of Sample	Research Method Used	Main Results
Nachtman & Sharma (1997)	US	1973-90	N/A	N/A	Analysis of returns to common stock	<ul style="list-style-type: none"> <li>•Size of company is positively correlated to the proportion of foreign sales.</li> <li>•Large companies tend to be net exporters, small companies tend to be net importers and medium-sized companies do not tend to be as affected by exchange rate changes.</li> </ul>

Table 4.3. - Summary Table of Previous Studies of Currency Management in UK MNCs.

Survey	Country(s) Involved	Period Analysed	No. in Sample	Type of Sample	Research Method Used	Main Results
Blin, Greenbaum & Jacobs (1981)	UK, US & Canada	1979	41 (66% response)	Major companies	Mailed questionnaire based on personal interviews	<ul style="list-style-type: none"><li>•Centralisation less evident in the UK than in North America.</li><li>•Avoidance of major loss is the main objective in currency management.</li><li>•British companies are more risk averse than North American companies.</li><li>•British companies are more interested than North American companies in maximising home currency equivalent income.</li><li>•Little use of pricing strategy, invoicing strategy or asset and liability management in the management of currency risk.</li><li>•Forward contracts are the main hedging instrument.</li></ul>

Survey	Country(s) Involved	Period Analysed	No. in Sample	Type of Sample	Research Method Used	Main Results
Broder (1984)	UK	1983-84	102 (47% response)	MNCs	Mailed questionnaire	<ul style="list-style-type: none"> <li>•Currency management treated as significant among large UK companies from the late 1970s.</li> <li>•MNCs are more interested in economic rather than accounting targets in currency risk management.</li> <li>•Transaction exposure is the most important exposure type to manage, but translation exposure is actively managed in many companies.</li> <li>•No gap in understanding between management and operating staff in currency management.</li> <li>•Top management and the treasury largely in charge of currency management.</li> <li>•Exchange rate forecasts are largely short- to medium-term.</li> </ul>
Collier & Davis (1985)	UK	1983	114 (76% response)	MNCs	Mailed questionnaire and personal interviews	<ul style="list-style-type: none"> <li>•MNCs are more willing to manage currency exposures the more centralised their structure and the lower the degree of risk.</li> <li>•No link between risk and structure.</li> <li>•The hedging decision is mainly influenced by long-term exposure periods, irregular currency flows, matching opportunities and currency volatility.</li> </ul>



Survey	Country(s) Involved	Period Analysed	No. in Sample	Type of Sample	Research Method Used	Main Results
Demirag (1986)	UK	1982	256 (75% response)	MNCs	Mailed questionnaire & personal interviews	<ul style="list-style-type: none"> <li>•UK MNCs are less likely to evaluate subsidiaries' currency management performance than US MNCs.</li> </ul>
Walsh (1986)	UK & Ireland	1983-85	20 UK MNCs and 11 Irish subsidiaries	MNCs and subsidiaries	Personal interviews and archival data	<ul style="list-style-type: none"> <li>•Transaction exposure is regarded as the most important exposure type to manage.</li> <li>•No understanding of economic exposure in the majority of UK MNCs.</li> <li>•Economic exposure managed more by operational, rather than financial, responses.</li> <li>•Competitive exposure is not seen as a serious problem.</li> <li>•Little treasury involvement in the management of economic exposure.</li> <li>•The hedging decision is mainly influenced by long-term exposure periods and currency volatility.</li> <li>•High use of forward contracts and little use of currency options.</li> <li>•Companies are more likely to hedge volatile currencies.</li> </ul>

Survey	Country(s) Involved	Period Analysed	No. of Sample	Type of Sample	Research Method Used	Main Results
Belk & Glaum (1990)	UK	1988	17	MNCs	Personal interviews	<ul style="list-style-type: none"> <li>• Transaction exposure is regarded as the most important exposure type to manage, but translation exposure is also commonly managed.</li> <li>• Economic exposure is not commonly managed.</li> <li>• Most MNCs have centralised currency management functions.</li> <li>• Most MNCs are risk-averse in currency management.</li> <li>• Most MNCs are cost centres.</li> <li>• Large companies are more likely to take risks in currency management.</li> </ul>
Collier, Davis, Coates & Longden (1990)	UK & US	1990	23	MNCs	Personal interviews	<ul style="list-style-type: none"> <li>• Transaction exposure is the most important exposure type to manage.</li> <li>• UK MNCs are more likely to manage translation exposure than US MNCs.</li> </ul>
Touche Ross (1991)	UK	1991	50 (82% response)	Leading public companies	Mailed questionnaire	<ul style="list-style-type: none"> <li>• Concern about the way UK companies measure currency management performance.</li> <li>• Most large companies use currency options.</li> <li>• Most large companies have treasuries.</li> <li>• Most large companies are risk-averse in currency management.</li> <li>• Most large companies engage in risk assessment.</li> </ul>

Survey	Country(s) Involved	Period Analysed	No. in Sample	Type of Sample	Research Method Used	Main Results
Longden (1992)	UK	1989	23	MNCs	Case studies	<ul style="list-style-type: none"> <li>•Most UK MNCs employ a performance measurement system, largely using basic methods.</li> <li>•Risk averse companies are less likely to formally measure currency management performance.</li> <li>•Most UK MNCs measure currency management performance, with relative benchmarks preferred.</li> </ul>
Price Waterhouse (1992)	UK	1992	Not known	Major corporations	Not known	<ul style="list-style-type: none"> <li>•High degrees of vulnerability to all three basic exposure types.</li> <li>•The greater perceived impact is from the economic exposures.</li> <li>•Companies are underestimating the impact of currency exposures.</li> <li>•Forms of currency exposure are somewhat associated with external factors, but not with internal factors or currency management methods used.</li> <li>•Most MNCs feel vulnerable to currency exposure and view it as a difficult problem.</li> <li>•The treasury department is predominant in currency management, but others departments are also involved.</li> <li>•There is a lack of a fully integrated approach to currency management in many companies.</li> </ul>
Edelshain (1995)	UK	1990-92	600 (20% response) & 15 interviews	MNCs	Mailed questionnaire based on personal interviews	

Survey	Country(s) Involved	Period Analysed	No. in Sample	Type of Sample	Research Method Used	Main Results
Edelshain (1995)	UK	1990-92	600 (20% response) & 15 interviews	MNCs	Mailed questionnaire based on personal interviews	<ul style="list-style-type: none"> <li>•Fairly high degree of centralisation and a growing tendency towards it.</li> <li>•Only one-third of MNCs use external forecasting services.</li> <li>•Nearly two-thirds of MNCs do not believe that exchange rates can be predicted accurately.</li> <li>•Most companies are risk-averse in currency management.</li> <li>•The internal corporate environment is associated with use of currency management methods, but not with forms of currency exposure experienced or with external market factors.</li> <li>•Financial instruments are the most commonly used currency management methods.</li> <li>•Method usage is weakly associated with external factors and not associated with forms of currency exposure.</li> <li>•A fairly high use of the banks for seeking advice on currency management, but little evidence that their advice influences company behaviour.</li> <li>•Size of company is not a significant variable in determining currency management approach, but it does have a limited impact</li> </ul>

Table 4.4. - Summary Table of Previous Studies of Currency Management in UK Companies and Other UK Studies.

Survey	Country(s) Involved	Period Analysed	No. Sample	Type of Sample	Research Method Used	Main Results
Rosendale (1973)	UK	1972	29	Electrical & mechanical engineering firms	Personal interviews based on a questionnaire	<ul style="list-style-type: none"><li>• Few UK companies had any currency exposure policies pre-1971.</li><li>• The main currency exposure management methods are forward contracts, exchange variation clauses and Sterling invoicing.</li></ul>
Soenen & Aggarwal (1989)	UK, Netherlands & Belgium	1989	750 (31% response)	Companies	Mailed questionnaire	<ul style="list-style-type: none"><li>• UK companies are more likely to manage translation exposures than Dutch or Belgian companies.</li><li>• Transaction exposure is regarded as the most important exposure type to manage.</li><li>• Less centralisation of the currency management function in the UK than in the Netherlands and Belgium.</li><li>• Chartism is not a popular forecasting technique.</li><li>• Forward contracts are the main hedging instrument.</li><li>• Large companies have more banking relationships.</li></ul>



Survey	Country(s) Involved	Period Analysed	No. Sample	Type of Sample	Research Method Used	Main Results
Barclays Quarterly Survey (1991)	UK	1991	2336 (39% response)	Exporters	Mailed questionnaire	<ul style="list-style-type: none"> <li>•Currency risk viewed as a significant problem among smaller companies in recent times.</li> <li>•Sterling invoicing is the most common technique for minimising currency exposure.</li> <li>•Forward contracts are the main hedging instrument.</li> <li>•There is a low use of external organisations for advice on currency management.</li> <li>•Large companies are more likely to hedge.</li> <li>•Currency risk is viewed more seriously by manufacturing companies.</li> </ul>
Corporate Finance (1991)	UK	1991	30	Companies	Personal interviews	<ul style="list-style-type: none"> <li>•Most companies are risk-averse in currency management.</li> <li>•Concern about the way UK companies measure currency management performance.</li> </ul>
Midland Montagu (1991)	UK	1991	Not known	Analysts, bankers & investors	Mailed questionnaire	<ul style="list-style-type: none"> <li>•Investors believe that translation exposure should be managed.</li> </ul>
Assoc. of Corporate Treasurers (1992a)	UK	1992	53	Leading companies	Mailed questionnaire	<ul style="list-style-type: none"> <li>•Most companies forecast exchange rates.</li> <li>•Most companies use unpaid external services for forecasting.</li> <li>•Fundamental analysis and chartism are complimentary forecasting techniques.</li> <li>•Companies have little confidence in consistent forecasting by external services.</li> </ul>

Survey	Country(s) Involved	Period Analysed	No. in Sample	Type of Sample	Research Method Used	Main Results
Assoc. Corporate Treasurers (1992b)	UK	1992	79 (42% response)	Companies	Questionnaire	<ul style="list-style-type: none"> <li>•Most companies are cost centres.</li> <li>•Most UK companies engage in performance measurement.</li> <li>•The vast majority of these companies use market benchmarks.</li> </ul>
Glaum & Belk (1992)	UK	1992	22+	Major industrial companies, bank managers & of Bank England personnel	Personal interviews	<ul style="list-style-type: none"> <li>•Currency risk management is focused on transaction and economic exposures.</li> <li>•Currency risk management is predominantly short-term oriented.</li> <li>•Generally, banks think highly of the new hedging instruments, but companies are sceptical about them.</li> <li>•There is some use of currency options among companies, but little use of currency swaps or futures.</li> <li>•Companies are critical of banking performance in assisting them in currency management.</li> </ul>
Touche Ross (1992)	UK	1992	32% of UK equity market	Institutional investors	Mailed questionnaire	<ul style="list-style-type: none"> <li>•Investors do not believe that translation exposure should be managed.</li> </ul>

Survey	Country(s) Involved	Period Analysed	No. in Sample	Type of Sample	Research Method Used	Main Results
Royal Bank of Scotland Quarterly Survey (1993)	UK	1993	1063 (30% response)	Small exporters	Mailed questionnaire	<ul style="list-style-type: none"> <li>•Vast majority of small exporters are affected by exchange rate movements.</li> <li>•Sterling invoicing is the main method used to combat currency exposure, with forward contracts and currency accounts the main external methods used.</li> <li>•Around 40% of small exporters are managing currency risk satisfactorily, but around 60% are using unsophisticated methods.</li> <li>•Scottish companies have a greater tendency to hedge currency exposure and less of a tendency to invoice in Sterling than UK companies as a whole.</li> </ul>
Bradley (1996)	UK	1996	579 (51% response)	Exchange listed industrial & commercial companies	Mailed questionnaire	<ul style="list-style-type: none"> <li>•Seeming lack of awareness of indirect economic exposures, but significant relationships found between competitive characteristics and exchange rate sensitivity to sales volumes and profit margins.</li> <li>•Exchange rate movements seen more in terms of vulnerability rather than opportunity.</li> </ul>

Table 4.5. - Summary Table of Previous Studies of Currency Management in Scottish Companies.

Survey	Country(s) Involved	Period Analysed	No. in Sample	Type of Sample	Research Method Used	Main Results
Robertson (1991)	Scotland	1991	13	Companies, banks & advisory bodies	Personal telephone interviews	<ul style="list-style-type: none"><li>•High degree of centralisation in currency management.</li><li>•Companies distrust exchange rate forecasts.</li><li>•Companies are risk-averse in currency management.</li><li>•More companies use external currency management instruments than internal techniques, especially forward contracts and currency accounts.</li><li>•Companies are critical of banking performance in assisting them in currency management.</li><li>•External currency management advice and services found to be disappointing.</li><li>•Exporters make more of an effort to combat currency risk compared to importers.</li></ul>
Scottish Council for Development & Industry (1991)	Scotland	1990	30	Small companies	Telephone interviews	<ul style="list-style-type: none"><li>•Sterling invoicing, forward contracts and currency accounts are the most common methods of covering currency exposures.</li><li>•There is a low use of most currency management facilities, with companies preferring to use traditional methods and strategies.</li></ul>

Survey	Country(s) Involved	Period Analysed	No. in Sample	Type of Sample	Research Method Used	Main Results
Baur (1993)	Scotland	1993	133	Sample of top 300 Scottish companies	Personal interviews	<ul style="list-style-type: none"> <li>•High number of treasury divisions in large Scottish companies.</li> <li>•High degree of centralisation in currency management.</li> <li>•Half of leading Scottish companies deal with a single bank in currency management.</li> <li>•Smaller Scottish companies prefer dealing with Scottish banks, but larger Scottish companies prefer dealing with London banks.</li> </ul>



Table 4.6. - Summary Table of Previous Studies of Currency Management in European Companies.

Survey	Country(s) Involved	Period Analysed	No. in Sample	Type of Sample	Research Method Used	Main Results
Soenen (1989)	Belgium	1984	1887 (22% response)	Major industrial companies	Mailed questionnaire	<ul style="list-style-type: none"><li>• Few companies have a separate treasury department.</li><li>• Correlation between size of company and volume of foreign exchange exposed.</li><li>• The most sophisticated operators in treasury management are large companies and manufacturing companies.</li><li>• Forward contracts and currency diversification are the main currency management methods.</li><li>• There is a low use of derivative instruments.</li><li>• The banks are the main source of currency management advice.</li></ul>

Survey	Country(s) Involved	Period Analysed	No. in Sample	Type of Sample	Research Method Used	Main Results
Soenen & Aggarwal (1989)	UK, Netherlands & Belgium	1989	750 (31% response)	Companies	Mailed questionnaire	<ul style="list-style-type: none"> <li>•Dutch and Belgian companies are less likely to manage translation exposures than British companies.</li> <li>•Transaction exposure is regarded as the most important exposure type to manage.</li> <li>•More centralisation of the currency management function in the Netherlands &amp; Belgium than in the UK.</li> <li>•Chartism is not a popular forecasting technique.</li> <li>•Companies in the Netherlands and industrial companies are more likely to fully hedge, with Belgian companies less likely to hedge.</li> <li>•Forward contracts are the main hedging instrument.</li> <li>•Large companies have more banking relationships.</li> </ul>
Euromoney (1993)	Europe	1993	172	Leading companies	Mailed questionnaire	<ul style="list-style-type: none"> <li>•Most large European companies are cost centres.</li> <li>•There is a high use of derivative hedging instruments.</li> </ul>

Survey	Country(s) Involved	Period Analysed	No. in Sample	Type of Sample	Research Method Used	Main Results
Hakkarainen, Kasanen & Puttonen (1997)	Finland	1994	100 (84% response)	Large Finnish companies	Mailed questionnaire	<ul style="list-style-type: none"> <li>•Around half of companies hedge translation exposure.</li> <li>•Significant use of exchange rate forecasting, including chartism and fundamental analysis.</li> <li>•Much confidence in currency forecasting, including long-term currency forecasting.</li> <li>•Involvement of top management in the design of currency management policy in the vast majority of firms, but a lack of detailed instructions in policy creation.</li> <li>•High use made of a range of internal and external methods, with forward contracts the most common hedging instrument.</li> <li>•Lack of use of performance measurement, with methods chosen being fairly unsophisticated.</li> <li>•Large companies and companies with a high degree of foreign operations make greater use of hedging products.</li> </ul>

Table 4.7. - Summary Table of Previous Studies of Currency Management in the Rest of the World.

Survey	Country(s) Involved	Period Analysed	No. in Sample	Type of Sample	Research Method Used	Main Results
Abdel-Malik (1976)	Canada	1970-76	65 (90% response)	Selected international trading companies	Personal interviews	<ul style="list-style-type: none"><li>•Most Canadian companies do not see currency risk as a serious problem.</li><li>•Firms with greater foreign exchange dependency are more advanced in their currency management approach.</li><li>•The treasurer is largely in control of currency management policy in Canadian firms.</li><li>•High degree of centralisation in Canadian firms.</li><li>•Size of company is not a key determinant in determining currency management approach.</li><li>•Currency management policy only changes to events gradually over a period of time.</li><li>•Selective hedging is the most popular currency management policy.</li><li>•Currency management policy is not well defined in Canadian companies.</li><li>•Hedging is normally conducted through the forward market.</li><li>•Domestic currency invoicing is a popular tool in currency management.</li><li>•Little use of performance measurement in the vast majority of Canadian companies.</li></ul>

Survey	Country(s) Involved	Period Analysed	No. in Sample	Type of Sample	Research Method Used	Main Results
Blin, Greenbaum & Jacobs (1981)	UK, US & Canada	1979	41 (66% response)	Major companies	Mailed questionnaire based on personal interviews	<ul style="list-style-type: none"> <li>•Centralisation more evident in North America than in the UK.</li> <li>•Avoidance of major loss is the main objective in currency management.</li> <li>•North American companies are less risk averse than British companies.</li> <li>•North American companies are less interested than British companies in maximising home currency equivalent income.</li> <li>•Little use of pricing strategy, invoicing strategy or asset and liability management in the management of currency risk.</li> <li>•Forward contracts are the main hedging instrument.</li> </ul>
Batten, Mellor & Wan (1993)	Australia	1992	500 (14% response)	Large Australian companies	Mailed questionnaire	<ul style="list-style-type: none"> <li>•No relationship between size of foreign exchange operations or industrial sector and structure.</li> <li>•Structure related to ownership.</li> <li>•Forward contracts are the main hedging instrument.</li> <li>•Large companies are more likely to use currency management products.</li> <li>•Ownership, industrial composition and degree of international involvement do not impact on the use of currency management products.</li> </ul>



## CHAPTER 5

### RESEARCH METHODOLOGY

#### *5.1. Introduction*

As with any research of this type, there are a number of different research methods that can be used to produce the required results. Time was taken in the early stages of the research to become fully aware of the myriad of different research methods as a prerequisite to developing a core research methodology.

After this search, four methods were selected as being applicable to research of this kind, which had to ascertain how currency management was being managed in practice by Scottish companies, as they all involve direct contact with the companies. The methods were:

- a mailed questionnaire of a cross-section of Scottish companies;
- a telephone questionnaire of a cross-section of such companies or a series of telephone interviews;
- a series of personal interviews;
- a series of case studies.

The merits of each of these approaches will be discussed in this chapter, together with possible combinations that could have been chosen. A combination method was finally chosen and the latter part of this chapter will explain in detail how this method was employed.

#### *5.2. Research Methods*

##### *5.2.1. Mailed Questionnaire*

A mailed questionnaire has a number of advantages in research of this kind; it will provide an insight into company behaviour and, at the same time:

- minimise resource costs;
- provide relatively greater anonymity for the respondents;
- allow respondents relatively more time to consider answers and consult with colleagues, thus increasing reporting accuracy, and to answer questions at a convenient time;
- allow respondents to see the context of a series of questions;
- allow for a large number of companies to be surveyed in a relatively short period of time even if they are widely distributed geographically.

However, this approach also suffers from serious disadvantages, for example providing no opportunity to probe responses, having to keep questions simple as clarification is not always possible and having to keep the questionnaire relatively short to facilitate response. It is also the case that the individual responding may lack knowledge and experience in this area and the researcher therefore obtains uncorroborated and subjective statements, particularly when management opinions are requested. **The most serious disadvantage of this method is that it usually records a low response rate**, largely because it is so easy for recipients not to respond. Even completed questionnaires can leave a lot to be desired, with unanswered questions and less than meaningful or illegible responses commonplace.

For a mailed questionnaire to be successful, a number of tactics have to be employed:

- the questions have to be kept specific;
- one has to avoid assuming too much in the wording of questions;
- closed form questions should be more commonly used as they are more likely to be answered;
- alternative responses should be given to prevent respondents simply

agreeing with a proposition;

- the questions should be clear and unambiguous.

### *5.2.2. Personal Interviews*

By personally interviewing respondents, more reliable and consistent responses are usually given compared with responses from mailed questionnaires. This is because there is more opportunity to probe respondents and to seek clarification of answers. It should also lead to the collection of considerably more data. Other major advantages over mailed questionnaires are that the response rates are usually much higher and they allow for greater rapport and confidence building between interviewer and respondent.

However, interviews are not a perfect method for data collection either as there is always the risk of interviewer bias, particularly if the questions are poorly constructed, and the responses of interviewees can be subjective and may not truly reflect the attitudes and policies of the company. In addition, much time and resources are needed to arrange and conduct personal interviews, especially if they involve the covering of a large geographic area, and thus the number of companies that can be sampled for a single, time-limited research project are typically minimal.

### *5.2.3. Telephone Questionnaire/Interviews*

Instead of sending questionnaires by post, respondents could be questioned by telephone. Alternatively, instead of personally interviewing companies, the companies could be interviewed by telephone. Fowler (1993) states:

“Telephone strategies are now more prevalent than personal interviews in most survey organisations.” (P.144)

This approach has lower costs than personal interviews, the interviewer still has opportunities to probe and clarify responses, the data collection period is shorter and there is usually a better response rate than postal questionnaires. It is also an excellent method for following-up non-response as calls can be made repeatedly at relatively little cost.

The disadvantages of this method are that the non-response rate is typically higher than in personal interviews, it is not very appropriate for sensitive questioning and there are questionnaire and measurement constraints (for example, limits in providing response alternatives, limits in consultation and limited interviewer observations). Compared to personal interviews, telephone interviews tend to last for less time and, therefore, less information is gathered.

#### *5.2.4. Case Studies*

Basically, the case study method involves the interviewing and observing of respondents and the analysis of document and archival data. Case study research seeks converging lines of evidence to define the facts of a case by asking the same questions of the different sources of evidence. The case study method is therefore more robust than the other methods when they are used in isolation.

The case study method has various strengths. Documentation and archival records are stable and exact and can be viewed repeatedly and unobtrusively. They can also be wide in coverage. The advantages of interviewing have been highlighted above, but case study research can deal with many of the inherent weaknesses of interviewing as interviewing is only one part of case study research that requires converging lines of evidence before a fact can be established.

There are also weaknesses with this method. The weaknesses of interviewing have already been detailed. For documentation and archival records, retrievability can be low, access may be denied, there will be bias in selection if all the data cannot be collected and there is the reporting bias of the researcher. This type of research consumes even more time and resources than personally interviewing, thus the number of companies that can be adequately researched is even smaller.

#### *5.2.5. Combinations of Methods*

As can be seen from the above discussion, all of the available methods have strengths and weaknesses. Dillman (1978) observes:

"The question of which method is best cannot be answered in abstract terms. Although each method has certain strengths and weaknesses, they do not apply equally, or sometimes at all, to every survey situation." (P.39).

**The intention was to develop a research methodology that could harness the strengths of a method and mitigate its weaknesses, thus some combination, or triangulation, of the methods would be needed.** As Bickman and Rog (1998) argue;

"[Triangulation] compensate[s] for the fallibility of any single method or measure. The validity of both qualitative and quantitative applied research is bolstered by triangulation in data collection." (P.xvii).

In the context of currency management, a traditional problem has been the reliance on ex post, as opposed to ex ante, rationalisations due to barriers to direct observations. The danger of relying on ex post rationalisations is that respondents may not clearly remember events or they may lack knowledge of events. Corroboration of data is therefore important in countering this problem, although it may not be a complete solution, and this was another reason why more than one research method had to be used.

**Each of the methods could have supported each other, but the final choice had to rest on what was needed for this research project to operate most effectively.**

### *5.3. Research Method Chosen*

After much discussion within the Business School, it was decided to rule out two of the methods: telephone questioning/interviewing and case studies. With the former, **it was felt that the mailed questionnaire was more beneficial because it allowed more consideration of the questions by respondents and the opportunity for more consultation in answering**, particularly as the subject matter was technical and it was very unlikely that one person would have all the answers in all of the companies. **Personal interviewing was also preferred to telephone interviewing because it was thought that more quality information**

could be gathered with face-to-face interviews with respondents as it is not subject to the same questionnaire and measurement constraints identified above. With the case study method, it was felt that as it was a method that required much time and resources, this would mean that other methods could not be employed. **It could also only concentrate on a small number of Scottish companies when the intention from the outset of the research was to carry-out a general and extensive study of currency management in Scotland. This would require many companies to be involved.**

A study of the literature helped to crystallise this decision by highlighting the major problem of researching into smaller firms: they usually have less time to help. **A mailed questionnaire was thought to be the most appropriate main method as, compared to the other methods, it would allow data to be obtained on a significant cross-section of Scottish companies and would also be less time-consuming and intrusive for respondents.** It is accepted that this method usually involves a lower response rate than the other methods considered, but non-respondent characteristics could still be identified from other sources, for example company size, industrial sector, location and performance, that would enable these forms of non-response bias to be detected, if they existed, and the results to be qualified accordingly.

Early in the research, experience on another related project, under the direction of the Economics Department at the University of Strathclyde, clearly demonstrated how difficult and time-consuming it was to enlist co-operation and arrange and conduct personal interviews across the country single-handedly. **However, it was also felt that a number of personal interviews with a small representative sample of the firms used in the questionnaire-based study would be needed to overcome some of the mailed questionnaire's shortcomings and to obtain corroborative data.** The questionnaire would also have to be initially piloted to test its suitability.

**Another essential aspect of the research was to investigate the other major players in the foreign exchange management field: the banks and the advisory organisations.** This was achieved through correspondence and personal interviews as there was only a small



number of such organisations in Scotland and they could all be personally contacted. As this has been an ongoing process from the early months of the research, it will be examined first in a breakdown of the key research methods employed.

#### *5.3.1. Correspondence and Interviews with Banks and Advisory Organisations*

Contact was sought with the banks and the advisory organisations as there was a need to obtain a clear picture of the supply-side of the currency management products market and of the quality of help and information that companies receive on foreign exchange matters. It would therefore be possible to see, through the mailed questionnaire and company interview results, if this matches with what the companies demand and require.

The fourteen major banks that operate in Scotland were all contacted by letter and asked to forward information about the techniques and packages that they make available to Scottish-based companies on foreign exchange risk. They were also asked if they would consider being interviewed at a date convenient to them on the subject of corporate currency management. Twelve of the banks responded and seven agreed to be interviewed. Of the other five, all except one provided some documentation outlining their approach in assisting companies in managing their foreign exchange risk. The findings from this part of the study are detailed in section 6.9.2.

The eight main advisory bodies in Scotland were also contacted and asked for information. Seven responded, but most did so minimally, indicating that they did not regard corporate currency management as a pressing concern. As shown in section 6.9.3, their response was found to be disappointing. Due to their limited involvement in corporate currency management, it was decided that little would be gained by interviewing these advisory bodies.

#### *5.3.2. The Mailed Questionnaire to Companies*

Much time and attention was spent on preparing and designing the questionnaire, again with reference to relevant books and journals and

also using advice given by researchers in similar fields. The questionnaire was constructed tightly around the aims listed in the opening chapter and designed using the "Windows 3.1" word processing package. It was also sent to a number of academic institutions and banking treasury divisions for general comment.

The structure of the questionnaire attempted to take respondents sequentially through the currency management process (identification, management and evaluation) by, first of all, inquiring about the nature of their company's international transactions; secondly, asking about the forms of currency exposure arising from these transactions; thirdly, questioning them on their broad policy for managing these exposures; fourthly, asking them to name the techniques used in this management process; and, finally, querying their evaluation of their currency management performance.

A common problem with mailed questionnaires is the low response rate, thus a number of strategies were adopted to boost the number of replies. Use of the word processing package enabled the production of a presentable document and the accompanying covering letter was typed on paper with high quality university letterheads. The covering letter explained the rationale for the study. It further stated that all replies would be treated in the strictest confidence. Finally, it mentioned that the study was endorsed by the Association of Corporate Treasurers (ACT), which gave it added legitimacy. Stamped-addressed envelopes, to return the questionnaires, were included in the first mailing, giving treasurers/finance directors a greater opportunity to respond.

"The use of follow-ups with mail questionnaires is by far the most effective method of increasing the response rate." (Nachimas and Nachimas 1981. P.184).

Paying attention to the above advice, it was decided that, after two weeks, a reminder letter would be sent to those that had not replied and, after a further two weeks, a second reminder letter and an additional copy of the questionnaire would be sent to non-respondents. A daytime telephone contact number was also provided so that any company with queries or points of clarification regarding the questionnaire could be dealt with promptly. As an incentive, companies were offered a summary of the

research results if they participated in the survey.

**A pilot study appeared to be a sensible step to indicate any problem questions and to use more open-ended questions to derive closed-response items for the main questionnaire survey.**

A sample of 30, obtained from the Export Directory of Scotland and Business Guide (1991), was used and was representative of all Scottish companies. Each industry group was given proportional representation according to its share of total Scottish employment and each region was given proportional representation according to its share of total Scottish GDP. The Scottish Economic Bulletin (1991) was used to obtain the necessary figures.

Distribution of the pilot study occurred just before Christmas 1991 and all the techniques for maximising response, outlined above, were used. The follow-ups were completed by the middle of the following January and these techniques coupled with all the previous preparation proved very successful, with a response rate of 27 from the 30.

Many of the replies stated that the questionnaire was not relevant because the companies concerned did not trade internationally or invoiced all their foreign dealings in Sterling. The concept of economic exposure was therefore identified as an issue that was not being well recognised and useful information was gathered about the knowledge and sophistication of Scottish companies' approach to currency management at this early stage, even when the questionnaire was not fully completed.

The pilot study demonstrated that the questionnaire was reasonably well understood, but some changes were necessary. The wording was altered in several questions that were causing slight confusion and closed-response items were derived from pilot study responses for the questions on exposure measurement and exposure sources. However, some open-ended questions remained when it became obvious that the range of possible answers was more extensive than was reasonable to provide or if it was not possible to anticipate all reasonable answers. A question was added inquiring if companies relied on exporting or importing to provide another important variable for the statistical analysis and a sixth section

was added to the questionnaire on companies' access to the foreign exchange market as part of an evaluation of the supply side of the corporate currency management market. The pilot study had indicated some disquiet about banking performance in this area. A copy of the questionnaire, the covering letter and the various follow-up letters are provided in the Appendix.

For the main part of the study, it was decided that a survey of 400 Scottish-based companies would be sufficient and several sources were tapped to obtain a listing of companies, including the University of Strathclyde, Grampian Regional Council and the financial databases within the Robert Gordon University Business School. It was felt that after discussions within the Business School and with the University of Strathclyde's Economics Department, no sampling techniques would be required to ensure the sample was representative, since this was such a large proportion of internationally exposed Scottish companies and a good response rate was thought likely. As the results section will later demonstrate, this strategy was justified as the sample proved to be broadly representative of Scottish companies on the basis of size, location and industrial sector.

It was the finance or treasury divisions of these companies that were contacted. Greater reliability could have been achieved by surveying more than one manager or company division, but Broder (1984) tried this and received very few replies from managers outside the finance function. Walsh (1986) and Lessard (1990) were more successful with this method in surveying managers in MNCs, but with much effort. In this study, it was felt that there was little point in surveying various managers within the same company because most of the sample were small in size and expertise within companies would be limited. It was also felt that many of the companies could have become antagonised at having to provide numerous responses to the same questionnaire. Instead, it was hoped that personally interviewing a representative sample of the original companies used would, to some extent, reduce the inherent problems of the main approach chosen.

Much cross-referencing had to be done to ensure that the companies involved in the study were indigenously Scottish and faced at least one

form of currency exposure. This was a laborious task that took much longer than expected to complete due to a desire to ensure that no serious errors were made in this pivotal part of the research. The pilot study's success was acknowledged by using the same techniques for response maximisation.

The main study was distributed in July 1992 and achieved a very satisfactory response rate of 57% usable replies. Of the total sample of 400 companies, 33% responded with full replies, but 24% believed that they were not exposed to currency risk and hence the questionnaire was not relevant. As explained earlier, this also provided useful information to be analysed. Respondents were directly contacted if their responses were not clear to improve the quality of the data.

Crosstabulation analysis (see section 5.7 below) proved that there were no significant differences between respondents and non-respondents on the basis of company size, location, industrial sector or company performance and thus there was no non-respondent bias as far as could be checked.

A full statistical analysis of the results was completed using the SPSS for Windows computer software package (see section 5.7). A comprehensive breakdown of all the results is given in chapter 6.

### *5.3.3. The Company Interviews*

Companies were selected for interviewing on the basis of a stratified random sample of those that fully replied in order that these companies would be representative of the original sample on the basis of size, location and industrial sector. The necessary figures for finding a representative sample were again provided by the Scottish Economic Bulletin (1991). Twenty companies were selected for interviewing, just over 15% of full reply respondents, and the interviews began in the autumn of 1992. In addition, 13 relevant interview transcripts from the University of Strathclyde research project, highlighted earlier, were also used as background information and as a further source of corroboration.

The purpose of the interviews was to enable the follow-up of responses to



the original questionnaire, to eliminate any misunderstandings arising from questionnaire responses and to collect supplementary information. **In summary, the interviews were arranged to help overcome the disadvantages of the questionnaire, as a source of corroboration for the questionnaire findings and to provide another outlet for obtaining information.** Where possible, the interview was held with the person in the company who completed the original questionnaire and was nearly always held with someone in the finance function, although occasionally another senior manager or someone from another department was also present. The format of the interviews was structured roughly around the format of the questionnaire and varied according to the type of responses that the companies initially provided, but it also contained as many open-ended questions as possible in order to maximise the amount of information obtained. Contemporaneous notes were taken at the interviews and transcribed as soon as possible afterwards. The interviews were not recorded as it was felt that this could limit response, as found in a similar study by Walsh (1986). Each interviewee was also informed at the beginning of the interview that their responses would be treated in confidence.

A transcript of a typical interview is presented in the Appendix. Details of the information acquired from the interviews are given throughout chapter 6.

#### *5.4. Statistical Analysis*

The data obtained from the questionnaire responses were twice inputted onto a statistical database, with any discrepancies, between the first and second phases of inputting, highlighted. All variables were then crosstabulated against each other to show any remaining dubious values and correct them if necessary. This form of quality assurance is necessary in any data inputting operation of this size.

SPSS for Windows was used to analyse statistically the questionnaire responses. Frequency tables were initially used to summarise questionnaire response items. **Four types of analyses, crosstabulation analysis, factor analysis, multiple linear regression and logistic regression, were chosen to study the relationships between the**



**variables derived from the questionnaire results. All of these techniques are suitable for either ascertaining relationships between variables or distinguishing between groups of variables.**

Crosstabulation analysis provides frequencies and percentage figures between variables and chi-square significance values and Spearman correlation values were used to demonstrate if there were significant relationships between variables.

The chi-square statistic gives a measure of the difference between observed and expected values in a matrix containing two sets of variables. If this statistic is large enough, it will reject the null hypothesis that the two variables are independent of each other. If the statistic is accompanied by a significance level of 95% or 99%, the variables can usually be assumed to be independent and we can be sure that the result is not due to sampling error. However, on the negative side, the chi-square statistic provides little information on the strength of association, the expected values for each variable must be at least five and large samples may produce large chi-square values even if the residuals (the difference between the observed and expected frequencies) are small compared to the expected frequencies.

Since the data collected in this study was mostly of a nominal or ordinal nature, a chi-square-based measure, the phi-coefficient, was used in evaluating results from crosstabulation analysis. The phi-coefficient modifies the chi-square by dividing it by the sample size and taking the square root of the result.

Correlation coefficients were used to measure the strength of linear associations between variables and therefore compliment the phi-coefficient. Spearman correlations were preferred to Pearson correlations because the Pearson correlation is only suitable for data that has at least an interval level of measurement, which was not suitable for all the variables included in the analysis. Spearman correlations were more appropriate for the variables contained in the database, which were largely ordinal and the data of which did not satisfy normal distribution assumptions. Spearman correlations rank variable values and examine their relationships with other variables. A non-zero value indicates a

relationship, but it is usually assumed to be insignificant if it is below the 0.2 level, with the higher the Spearman correlation, the stronger the relationship. Spearman correlations are also accompanied with significance values to demonstrate if the results are statistically significant and are not due to sampling error. Throughout the results, the phi-coefficient and the Spearman correlation proved to be consistent with each other, thus only the phi-coefficient figures are produced in the statistical tables in chapter 6.

However, statistical correlations do not identify a categorical relationship between variables and even operating under a 99% significance level, in a matrix of 10,000 correlations there may be 100 correlations that arise through pure chance and cannot easily be identified. It is also difficult to know the direction of the causation and only linear associations are measured, when the variables may be related in other ways.

Crosstabulation analysis is a useful technique for examining relationships between individual variables, but it cannot deal with several variables simultaneously and there was also a need to examine if there were relationships that underpinned the crosstabulation results. Therefore, more advanced statistical techniques also had to be used.

Factor analysis was deemed to be a relevant statistical technique to use to see if there were not directly observable factors present that could represent relationships between sets of interrelated variables based upon a set of observable variables. This form of analysis tries to account for the correlation between a set of variables by a smaller set of random variables. Factor analysis also provided a correlation matrix that ascertained relationships between the variables and tested the appropriateness of any factor model.

Principal Components Analysis was the particular form of factor analysis chosen. Under this type of analysis, linear combinations of the observed variables are formed that account for the maximum possible proportion of total variance in the variables. The first principal component accounts for the largest amount of variance, the second principal component accounts for the second largest amount of variance, etc. All the components are uncorrelated with each other. To ease analysis, all variables and factors

are standardised with a mean of zero and a standard deviation of one, thus the number of variables within a matrix will equal the matrix's total variance. Factor loadings are coefficients that explain the variance in terms of the factors. The Eigenvalue represents the total variance explained by each factor and the variance of each variable is accounted for by the factor loadings squared.

The factor matrix was rotated by the varimax method to make the factors more interpretable because variables are more highly correlated with single factors under this form of rotation. Rotation changes the point of reference of the factors and creates factors with non-zero loadings for only some of the variables. Varimax rotation achieves this by maximising the variance of the loadings squared in each column of the matrix. The variance approaches zero where the loadings in a column are approximately equal and it approaches a maximum when one loading approximates unity and the others approach zero. This minimises the number of variables with high loadings in each column of the matrix and could enable a simple factor structure to form, but this is not guaranteed as a variable could have a high loading on two or more factors.

Other rotational methods could have been used. Quartimax rotation maximises the variance of the loadings squared in each row of the matrix and equimax rotation minimises the number of high loadings in the rows and columns of the matrix. Kim and Mueller (1979) argue that all rotational methods enact the same function and there is no one perfect or ideal solution, but the different solutions are mathematically equivalent as they explain the same amount of variance in the variables and the matrix.

The factor loadings were taken as being high if there were greater than 0.6 and moderate if they were greater than 0.3 (explaining 9% of the variance of a variable). When using this technique, one does have to be careful of bloated specifics, that is factors generated by variables in a matrix that are paraphrases of each other. Factors therefore should be carefully examined and tested to identify if they correlate or discriminate among external criteria, to prove that they are not simply bloated specifics.

Factor analysis can ascertain the significant variables within the data,

therefore it is useful as a technique to reduce the number of variables to be analysed and make the data more manageable. This was pertinent in this form of analysis as there were over 9,000 possible correlations contained in the database. In order to effectively reduce the data, it is important to attempt to represent the data with as few factors as possible. A good test to see if a simple structure is achieved is to plot the factor loadings as co-ordinates: if a simple structure is formed, clusters of variables should occur near the ends of the axes (high loadings on a single factor) and at their intersection. With a simple structure, there should only be a few variables at most with high loadings on more than one factor.

Factor analysis can therefore be a very useful tool for summarising and simplifying relationships between groups of variables. It was later used to retest a number of hypotheses listed in section 6.1. Factor analysis attached a set of components to groups of variables and the factor scores for these components were saved as new variables. Multiple linear regression was used to test for linear relationships between these components. This method divides the total observed variability in the dependent variable into that attributable to the regression model (derived from relationships with the independent variables) and that which is not (called the residual). From this is derived the regression sum of squares and the residual sum of squares, with the mean square for each entry being the sum of squares divided by the degrees of freedom. The ratio of the mean square regression to the mean square residual is distributed as the F statistic and this tests how well any model fits the data. If the probability associated with the F statistic is sufficiently small, the null hypothesis that there is no linear relationship between the dependent variable and the independent variables can be rejected. The square root of the F value is the t statistic and this can also be used to test for the existence of a linear relationship. Multiple linear regression is a commonly used technique for predictive modelling, but in this context it was purely used to test for relationships between components derived from factor analysis.

Logistic regression is also commonly used in statistical research for predictive modelling, but it can also be used, as in this study, to summarise data and quantify relationships between variables acting



together. Most particularly, logistic regression can distinguish between mutually exclusive groups by a set of variables and it is therefore possible by using this technique to ascertain the characteristics of different groups of firms in managing their currency exposures and to predict how a firm under certain conditions may behave. In an effort to explain why and how logistic regression was used, it is important first of all to set out the key terms and concepts involved with this technique.

The parameters of the logistic regression model are estimated using the maximum likelihood method, with the coefficients that make the result most likely being selected. In order to apply this method, it is necessary to construct a likelihood function that expresses the probability of the observed data as a function of unknown parameters. The maximum likelihood estimators of these parameters are chosen to be those values that maximise this function. The logistic regression model is non-linear and iterative algorithms are used for parameter estimation.

The model can be written in terms of odds (the probability of an event occurring/the probability of an event not occurring). The coefficients can be taken as the change in the log odds associated with a one unit change in the independent variable. The  $\text{Exp}(B)$  statistic provides the factor increase in the odds associated with a one unit change in the independent variable.

The percentage of group cases correctly classified by the model is an indicator of the predictive qualities of the model. However, when the classification rate is not the ultimate objective of the analysis (as in this case), the classification rate should only be used to supplement more rigorous assessments of fit. Such a rigorous assessment is the likelihood, which is the probability of the observed results given the parameter estimates. The likelihood is a small number less than one and it is customary to use -2 times the log of the likelihood. The model requires a high model chi-square value (the difference between -2 times the log likelihood with only a constant and -2 times the log likelihood for the actual model) to demonstrate that it produces a high likelihood of the observed results. The model chi-square tests the null hypothesis that the coefficients for all the variables contained in the model, except the constant, are zero and is comparable to the overall F test in regression.

The improvement chi-square is the change in  $-2$  times the log likelihood in the successive steps of model building and is comparable to the F-change test in regression. The goodness of fit statistic can be used to compare the observed and predicted values.

The significance levels for the variables in the equation test the null hypothesis that the coefficients are not different than zero. A low significance level (less than 0.05) is required if the hypothesis is to be refuted and the variable can be included in the model. Another similar test is the Wald statistic, the ratio of the coefficient to the standard error squared. However, too large a coefficient can produce too large a standard error, and thus a low Wald statistic and a high significance level, leading the analyst to fail to reject the null hypothesis when it should be rejected. To avoid this, when a large coefficient is present, the model should be built with and without the relevant variable and the hypothesis should be based on the change in the log likelihood, as recommended by Hauck and Donner (1977) and Jennings (1986).

As logistic regression also deals with a number of variables, problems of multicollinearity could result, thus a limitation of logistic regression is that to gain an effective function as few variables as possible need to be used.

The R statistic in the model provides the partial correlation between the dependent and each of the independent variables in the equation. A positive R value indicates that as the variable increases in value, so does the likelihood of the prediction occurring, a negative R value indicates the reverse to be true. The R statistic provides an estimate of each variable's contribution to the model, with high R statistic values indicating that the variable is making a significant partial contribution to the model.

Diagnostics can also be used to test how well the model fits. For example, the deviance is the square root of  $-2$  times the log of predicted probabilities and cannot be too large if the model is to be treated as a good fit. The studentised residual calculates the change in the deviance if a case is excluded and therefore it can identify unusual cases. The leverage values examine the relative influence of each observation on the model's fit and can therefore also identify outliers. A simple histogram of the estimated probabilities can also be used as a check that the two



groups under study tend to cluster at the respective ends of the plot.

Since a model better fits a sample from which it is derived than it will fit another sample from the same population, in correctly applying this technique the sample should be split and one part used to estimate the coefficients and the other part used to test how well the model works.

There are two basic methods of variable selection in logistic regression: the forward stepwise method, with none of the variables initially in the model and a variable selected at each step, and the backward stepwise method, where all of the variables are included in the model at the outset and then assessed for removal, one at a time, at each step. Both methods should give similar results, therefore in this study the forward stepwise selection method was chosen to save time in selecting the relevant variables from a database containing around 100 such variables. The model under this method starts with a constant and, at each step, variables are examined for entry and one is chosen based on the smallest significance level for the score statistic (which is based on a derivative of the log likelihood). Variables can also be removed from the model until a previous model is considered or no more variables meet entry or removal criteria. The likelihood ratio, which examines the change in the log likelihood when a variable is deleted, was chosen to remove variables from the model. The conditional statistic does a similar task, but it is less intensive as it does not require the model to be re-estimated without each of the variables at every stage. The Wald statistic can also be used to perform this function, but it does have undesirable properties, as referred to earlier.

In spite of all the checks and means of assessing goodness of fit, a problem with this type of technique (found in regression and discriminant analysis) is that none of the algorithms result in the “best” definitive model in any statistical sense. Several models should be examined and one chosen on the basis of interpretability, low number of variables and ease of variable acquisition. The basis for causality, after all, lies in theory rather than regression analysis. As with crosstabulation analysis, regression analysis can disprove a theory that there is a relationship between two variables, but it cannot prove such a theory, only support it, because a high degree of correlation between two variables may have no

causal link whatsoever.

Other techniques can undertake a similar type of analysis, but these were rejected for a number of reasons. For instance, multiple regression analysis requires normal distribution of the dependent variable for all combinations of the independent variables, discriminant analysis requires the independent variables used to be from a normal population and cluster analysis is better suited to finding differences between a large number of groups and grouping cases when group membership is unknown. In this study, most of variables were dichotomous and did not meet the assumptions of normal distribution and group membership needed to be known when conducting the analysis.

**Factor analysis was initially used to identify groups of related variables and to reduce the data to highlight the most significant variables in the database or the factors that underpinned their main relationships. Crosstabulation analysis confirmed or denied these relationships and, if confirmed, gave some idea of their strength. Factor analysis was then used again, along with multiple linear regression, to retest the major hypotheses. Logistic regression was used when variables could be classified into mutually exclusive groups and when it was felt necessary to attach characteristics (independent variables) to the group (dependent) variables. Companies were also categorised by size, region, industrial sector, currency volume exposed and corporate performance to enable comparison of currency management performance by these various groups using statistical analysis.**

### *5.5. Conclusions*

The research methodology used was carefully formulated and implemented and proved to be successful as all the necessary information was obtained. Any research of this kind will experience problems in design, implementation and analysis and these are highlighted above. **There is no unique, ideal formula to adopt in this type of research and a number of different approaches were considered. The series of methods selected were chosen on the basis of practicability and their capacity to provide the research with an integrated approach.**

However, it is accepted that the questionnaire and interview approach may not always successfully translate attitudes and statements into actual behaviour.

A particular problem concerned the excess time spent on the mailed questionnaire. The difficulties arose with the careful preparation that was required to construct the questionnaire and the shortage of information that was found to exist when trying to complete a list of suitable companies to survey. The questionnaire also had to be tried and tested very thoroughly to later enable a smooth distribution and collection of the main part of the study. However, the response rate demonstrates that it was worth this effort.

Participating companies were given a summary of results from the research as a way of encouraging initial response, to thank them for their assistance and to attempt to provoke further discussion and validate findings. However, further responses from the participating companies were very minimal.

The statistical packages and techniques used provided the required results. Validation of the results obtained is demonstrated by the fact that they were corroborated by a number of different methods and by their consistency with the results from similar recent studies.

No significant problems were experienced with other areas of the research thanks to the co-operation of the organisations involved.

## CHAPTER 6

### RESULTS AND DISCUSSION

#### *6.1. Introduction*

The objective of this chapter is to provide a comprehensive analysis of the results obtained from a survey of Scottish companies' approach to currency exposure management. In order to enable effective comparison with past research, the structure of this chapter will be similar to that of the review of previous studies (chapter 4) and direct comparisons will be made with previous research results where appropriate. **The analysis of the sample companies' currency risk management position is undertaken by means of the following framework that follows the sequential steps companies should take;**

- **Identification and classification of currency exposure.**
- **Quantification of currency exposure.**
- **Management of currency exposure.**
- **Performance evaluation of the currency management system.**

Within this structure, seven key hypotheses will be tested, based partly on the work of other researchers, to try to find evidence to refute or support some of the evidence presented in the discussions and debates aired throughout chapters 3 and 4. **The seven hypotheses are:**

- 1. Use of currency management methods is dependent on the currency exposures incurred.**
- 2. Currency exposures incurred are related to the internal corporate environment.**
- 3. Use of currency management methods is related to the internal corporate environment.**

4. Currency exposures incurred are dependent on company size.
5. Currency management methods used are dependent on company size.
6. The internal corporate environment is dependent on company size.
7. Currency management performance is related to corporate performance.

A limited number of hypotheses were chosen to keep the thesis focused and to keep it to manageable proportions. The reasoning behind the choice of these particular seven hypotheses was so that most of the key issues in currency management, identified in chapters 3 and 4, could be fully discussed in an effort to provide an extensive study of corporate currency management in Scotland, the main task of the research. Thus, very specific hypotheses regarding, for example, the precise causes and effects of economic exposures, the effectiveness of financial instruments compared to strategic methods and the effectiveness of different performance measurement systems, were not devised, although these issues are still covered generally in this chapter.

The first three hypotheses borrow heavily from Edelshain (1995). It seemed pertinent to directly test some of the conclusions of Edelshain as his is probably the most similar piece of research to this and to ascertain if the behaviour of UK MNCs, which he sampled, differs markedly from the behaviour of general Scottish companies. Hypotheses 4-6 were devised as it seemed critical to fully evaluate the influence of company size on corporate currency management given that it is one of the most obvious points of contention in the literature. Hypothesis 7 was devised to see if corporate currency management is important enough in Scottish companies to actually affect the performance of these companies. As this is a test that has not been conducted before, as far as is known, this extends the original contribution of the research.

All of the data to test the hypotheses could be acquired from the research methodology (see chapter 5) or obtained from other sources.



**The testing of these seven hypotheses is the main objective of this chapter. To maintain a logical flow and coherence, however, they are not tested en masse, but within the general framework of the chapter that is described above.** Results from tests on the first three of these hypotheses are contained at the end of section 6.5 on the management of currency exposures. The next three hypotheses are tested in section 6.7.1 on currency management by size of company. These six hypotheses were tested using crosstabulation analysis in a manner described in section 5.7. The results are reported in a series of matrices examining the relationships between sets of variables. Where the phi-coefficient value between two variables is statistically significant, we can reject the null hypothesis that the two variables are independent. By examining the statistically significant relationships within the matrices, conclusions can be drawn regarding the hypotheses. These hypotheses are further tested using factor analysis and multiple regression analysis in section 6.10 in a manner outlined in section 5.7. The last hypothesis is tested in section 6.11 using logistic regression analysis. The reason for and method of using this type of analysis is also provided in section 5.7.

In addition, the analysis will be extended to consider the relative importance of each of the following factors to corporate currency management: degree of internationalisation, industrial sector, location and propensity to export and import. Furthermore, the currency management approach of companies with subsidiaries will be examined, as will companies' attitudes to the provision of currency management products and advice received from the banks and the advisory organisations. In this latter section, a full assessment will also be undertaken of the provision of currency management products and the appropriateness of the advice provided by both the banks and the advisory organisations, using information gained by correspondence and personal interviews with these establishments. The final section of this chapter will consider the 24% of sample companies that believed the questionnaire was not relevant to their business operations.

However, first of all, a factor analysis, using all the variables generated from the questionnaire study was produced to highlight the key variables and reduce the working dataset. As explained in section 5.7., with over 90 variables, there are over 9,000 possible correlations and factor analysis is a

powerful tool for reducing datasets to their key, and sometimes hidden, components. The technique is also a useful one for early identification of relationships between variables. The rationale for using factor analysis, together with its fundamental principles, is provided in section 5.7.

6.2. Initial Results from Factor Analysis

All of the variables generated from the questionnaire were entered into Principal Component Analysis, but some were later removed when it was obvious that they were producing bloated specifics as they were paraphrases of each other. After varimax rotation, a number of models were considered, with the selected model being the one that explained as much of the variance with as few factors as possible, the one that was the most readily interpretable and the one containing no obvious bloated specifics. This model accounted for over 51% of the variance among the variables using 12 factors. Given that nearly 100 variables were entered in the analysis and, therefore, nearly 100 factors were present, this is a reasonably satisfactory result. A Scree plot was used to select the number of factors to be chosen, with 12 being the point where the gradient of the slope changed when the factors were plotted. A summary table of the total variance explained by the factors is provided below:

Table 6.1. Total Variance Explained in Factor Analysis Model

Component	Total Eigenvalue	% of Total Variance	Cumulative %
Factor 1	13.011	13.553	13.553
Factor 2	6.183	6.440	19.993
Factor 3	4.483	4.670	24.663
Factor 4	3.653	3.806	28.469
Factor 5	3.124	3.254	31.723
Factor 6	3.064	3.192	34.915
Factor 7	2.921	3.043	37.958
Factor 8	2.875	2.995	40.953
Factor 9	2.708	2.821	43.775
Factor 10	2.484	2.588	46.362
Factor 11	2.433	2.534	48.896
Factor 12	2.331	2.428	51.325

The first column (the Eigenvalue) gives the total variance explained by each factor. The second column contains the percentage of the total variance attributable to each factor and the third column gives the percentage of variance attributable to the factor and those factors preceding it in the table. For example, Factor 4 has a variance of 3.653 that is 3.806% of the total variance of 96 (the number of variables considered) and the total variance attributable to the first four factors is 28.469%.

The 12 factors were named after considering the variables that were highly or moderately correlated with each factor. The variables were taken as being correlated at least moderately with a factor if its factor loading was at least 0.3 (explaining 9% of the variable's variance), and correlated highly if its factor loading was 0.6 or more, in line with the recommendations of Kline (1994). With some of the factors, as will be seen, it was difficult to assign a name as they were significantly correlated with too few variables and/or the nature the factors was unclear from the variables with which they were correlated. The rotated component matrix is presented below:

Table 6.2. Rotated Component Matrix Produced by Factor Analysis

Component

Variable	1	2	3	4	5	6	7	8	9	10	11	12
Use of asset & liability management	.133	.486	.068	.019	.047	.086	.130	.327	.292	-.088	.011	-.049
In banking & similar services industry	-.126	-.101	-.028	-.123	-.082	-.048	.551	-.036	.030	-.087	.055	-.035
Use of broker	.205	-.123	-.106	-.091	-.046	.019	.007	.021	.381	.049	-.143	.043
Use of currency accounts	.463	.283	.009	.136	.038	.032	.353	-.254	-.026	.157	.140	.092
Centralising currency management	.114	.395	-.073	.086	.028	-.119	.120	.074	.022	-.073	.628	-.083
Use of chartism in forecasting	.120	.495	-.111	.055	-.105	.001	.084	.092	.142	.050	-.135	-.021
Use of currency overdrafts	.332	.212	.115	.116	.022	.199	.490	-.128	-.136	.135	.053	.090
Measuring exposures by Sterling conversion	-.084	-.091	.053	.690	-.024	.063	.099	.015	-.263	-.183	-.150	-.240
In the construction industry	.058	-.069	.065	.033	.514	-.351	.138	.315	-.066	-.085	-.173	-.042
Use of departmental consultation	.368	-.131	.118	.296	.190	.109	-.033	-.048	-.217	-.064	-.053	-.054
Cost centre	.158	.144	-.054	.328	-.404	.060	.234	.037	.154	.127	-.367	.099
Policy of covering all exposures	.151	-.060	.223	.025	-.043	.306	-.177	-.251	-.108	.111	-.143	-.012
Policy of covering no exposures	-.595	-.039	-.002	.151	-.135	.059	.000	.057	-.259	-.005	.019	.258
Decentralising currency management	-.139	.138	.162	-.002	.471	.238	.044	-.053	.223	.061	.010	-.074
In the distribution, hotel & catering industry	.076	.064	.004	.004	-.171	-.008	-.099	.147	-.144	-.131	.070	.756
Use of discounting	.270	.052	-.197	.103	.141	-.062	.269	.084	-.326	.050	-.023	-.028
Hedging the Deutsche mark	.370	.289	.183	-.107	.126	.277	-.013	.167	-.125	.299	-.260	.045
Hedging the US Dollar	.681	.275	.047	.138	.047	.085	.027	-.013	.094	-.202	-.038	-.107
Incurring economic exposure	.258	.405	-.127	.214	.227	-.063	-.063	-.052	.329	.056	-.073	.054
Hedging EMS currencies	.407	.205	.277	-.080	.101	.238	-.050	.159	-.199	.275	-.176	.062
In the energy & water industry	.134	.072	-.130	-.066	.110	-.146	.073	-.151	.530	-.125	.097	-.004

Variable	1	2	3	4	5	6	7	8	9	10	11	12
Use of external techniques	.667	.035	.031	.307	-.035	.036	.223	.007	.000	.112	.024	.011
Use of the eurocurrency market	.073	.607	.149	-.003	-.123	.053	-.030	.003	-.002	.170	.034	.088
Hedging exotic currencies	.142	.287	-.022	.000	.158	-.009	-.012	-.021	-.027	.168	-.148	.245
Exporter	.091	.059	.047	-.006	.032	.525	.194	.125	-.130	.142	-.016	-.405
Use of factoring	.199	.002	-.121	-.027	.375	.016	-.061	.301	-.278	.211	-.132	-.138
Use of fundamental analysis in forecasting	.126	.282	.070	-.066	-.011	.118	-.095	.180	.486	-.070	-.118	-.084
Use of forward contracts	.788	.134	.059	.064	-.088	.061	-.124	.051	-.042	.070	-.060	.073
Foreign currency assets & liabilities exposure source	.086	.380	.167	.038	.349	.132	.436	-.103	.185	.127	.106	.164
Firm contract exposure source	.227	.080	-.033	.648	.092	.088	-.162	-.107	-.197	.133	-.002	-.064
From Fife region	-.018	-.150	.102	-.042	-.032	.149	-.189	.189	-.116	.008	.150	.077
Finance department in charge of currency management	-.046	-.215	.376	.208	.228	-.376	-.093	.066	.018	.385	-.029	.041
Forecasts exchange rates	.414	.043	.098	.256	.037	.137	.143	.274	.385	.000	.032	-.153
Use of the forward market	.792	.156	.035	.031	-.087	.066	-.095	.044	.083	.091	-.057	.057
Profit margin over 5%	.079	.362	.233	-.165	.050	-.102	-.184	-.073	.317	.260	-.093	-.269
Use of government exchange risk guarantees	.213	-.094	-.086	-.003	.221	-.246	.219	.452	-.232	-.021	-.158	.001
From Grampian region	.111	-.210	.130	-.005	-.143	-.057	.045	-.121	.038	.198	.348	-.046
Gave advisory organisations a high rating	-.121	-.023	.070	.329	-.057	-.014	.067	.369	.077	-.101	.084	-.107
Gave banks a high rating	.184	.058	.050	.259	-.037	-.061	.162	.279	.057	.015	.260	.078
From the Highlands & Islands region	.050	-.135	-.054	-.014	.003	.013	-.144	-.056	.192	-.039	.000	.013
Use of invoicing in a foreign currency	.143	.165	-.077	.296	.012	.198	.074	-.125	-.074	.521	.129	-.150
Importer	.173	.005	-.077	.032	-.067	.435	.007	.450	.057	-.143	-.091	.219
Use of invoicing in own currency	-.027	-.050	-.064	.067	-.020	-.050	.035	.037	.003	.647	-.088	-.199



Variable	1	2	3	4	5	6	7	8	9	10	11	12
Use of internal techniques	.220	.038	-.063	.301	-.010	.077	.311	.044	.044	.502	-.034	-.046
Use of leading & lagging	.106	.437	.000	-.079	.047	.036	.019	.563	-.045	.089	-.082	-.117
Large percentage of turnover is in foreign currency	.314	.081	-.297	.076	.137	.401	.049	-.011	.191	-.173	-.207	.244
From Lothian region	.032	.240	-.011	.337	.075	-.150	-.149	-.098	.081	-.291	-.124	-.198
Large in terms of turnover	.167	.786	.034	-.111	.164	-.110	.059	.022	-.093	-.153	.048	.025
Measuring exposures in the maintained currency	.316	.110	-.072	-.254	.163	-.018	-.058	-.027	.307	.265	.292	.374
In the manufacturing industry	-.038	.013	.021	.041	-.014	.190	-.323	-.150	-.085	.233	-.119	-.618
Uses market-based information in forecasting	.393	.126	-.029	.118	-.118	.102	-.012	.389	.307	.146	.216	.035
Use of matching	.376	.320	.166	-.065	.005	.163	.285	-.036	-.066	.183	.282	.181
Medium percentage of turnover is in foreign currency	-.165	-.169	.243	.102	-.108	.387	-.042	.021	-.129	.220	.293	-.315
Profit margin of 0-5%	-.172	-.180	-.009	.156	-.018	.121	.062	-.071	-.011	-.048	-.194	.493
Medium in terms of turnover	-.006	-.048	.802	.004	.026	.098	.181	-.072	-.063	-.007	-.089	.032
Negative profit margin	.104	-.202	-.250	.009	-.035	-.021	.137	.161	-.341	-.236	.320	-.249
Use of netting	.216	.439	-.047	.063	.008	.114	.406	-.065	-.314	.037	-.046	.095
Hedging non-EMS currencies	.748	.155	.016	.082	.004	.018	-.092	-.064	.107	-.162	-.013	-.025
Not measuring exposures	-.271	-.007	.013	-.666	-.168	-.066	-.068	.013	-.007	-.067	-.147	-.121
Non-standard name for currency management centre	.017	.111	.102	-.010	.531	-.071	-.118	.166	-.052	-.034	.086	-.066
Non-standard type of currency management policy	-.047	.085	-.065	.045	.679	.111	.007	-.076	.110	-.057	.105	-.057
Use of currency options	.374	.310	.027	-.178	.020	-.004	.165	.210	.039	.029	.112	-.126
Use of the over-the-counter market	-.323	.293	-.080	.236	.113	-.014	-.022	.361	-.147	.181	-.023	-.011
Overseas competition exposure source	-.101	-.027	.124	.167	.588	-.133	.047	-.118	.078	-.167	-.089	.058
Potential contract exposure source	.355	.026	-.025	-.014	.380	.128	-.014	.120	-.167	.231	.175	-.009

Variable	1	2	3	4	5	6	7	8	9	10	11	12
Profit centre	-.066	-.170	-.141	.100	.073	.048	-.081	.003	-.045	-.012	.534	.080
Uses published information in forecasting	.188	.040	.122	.132	.000	-.178	.508	.244	-.093	.126	-.212	-.070
Use of price variation	-.022	.054	-.054	.035	.069	.041	-.102	.527	-.040	.010	.033	.126
From Central region	-.018	.051	-.155	-.151	-.071	-.171	.045	-.031	.210	.155	-.324	-.147
Use of risk assessment	.533	.106	-.143	.196	-.081	-.253	.144	.235	.255	.044	.096	-.003
Uses several banks	.299	.492	.142	-.135	.129	.203	.316	.185	.073	.023	.011	-.020
Uses a single house bank	-.025	-.321	-.167	.633	-.086	-.063	-.291	-.070	.007	.109	.038	.141
Small percentage of turnover is in foreign currency	-.112	.020	.025	-.165	.001	-.815	.028	-.065	-.040	-.048	-.066	.082
Use of the spot market	.624	.133	.174	.185	-.122	.018	.187	-.071	.054	.104	.036	.163
Use of short-term borrowing	.194	.376	.218	-.059	-.053	.138	.419	.218	-.001	.085	.112	.084
From Strathclyde region	-.130	.095	.030	-.168	.070	.024	.312	.295	-.058	.048	-.009	.120
Small in terms of turnover	-.098	-.446	-.727	.065	-.125	-.018	-.196	.050	.114	.102	.049	-.044
Has subsidiaries	.007	.436	.044	.074	.339	.054	.133	.029	.168	-.023	.554	-.122
Use of swaps	.036	.546	.007	.122	-.221	-.069	-.027	.180	.165	-.075	-.038	-.050
From Tayside region	.095	.015	-.121	-.023	.047	.235	-.153	-.246	-.249	-.084	-.167	.175
Tendering for contract exposure source	.213	-.024	.066	.011	.501	-.093	.057	.140	.137	.236	.030	.104
Top management in charge of currency management	.111	.151	-.376	.136	-.046	.418	.115	-.050	.132	-.315	-.100	.183
Incurring transaction exposure	.310	.105	.051	.377	.112	-.099	-.042	.039	-.004	.162	.262	-.013
Provision of currency management training	.357	.431	.000	.015	.227	-.025	.200	-.108	-.059	.149	-.037	.090
Treasury in charge of currency management	.317	.558	.107	-.026	-.185	-.096	.107	-.087	-.095	-.037	.327	-.088
Incurring translation exposure	.196	.362	.212	.112	.290	.130	.358	-.125	.340	.129	.093	-.040
Use of advisory organisations	.133	-.149	-.054	.476	.080	.123	.163	.297	.026	.228	.042	.068

Variable	1	2	3	4	5	6	7	8	9	10	11	12
Use of the banks	.217	-.017	-.006	.653	-.056	.112	.008	.195	.070	.131	.151	.256
Measures currency management performance	.568	.209	.091	.098	.161	.230	.144	.152	-.022	-.009	.169	.026
Currency management is significant	.403	.231	-.112	.224	-.017	.417	.042	-.031	.129	.058	.081	.195
Large in terms of total assets	.134	.822	.020	-.116	.126	.054	-.124	-.012	-.049	.054	.113	-.012
Large in terms of no. of employees	.130	.721	.175	-.071	.288	-.029	.091	.000	-.105	-.238	-.054	-.036
Medium in terms of total assets	.118	-.040	.796	-.011	.085	.011	.155	-.026	.104	-.223	-.138	-.153
Medium in terms of no. of employees	.034	-.195	.735	.046	-.070	-.108	-.169	.048	.008	.200	.183	.069
Small in terms of total assets	-.183	-.417	-.743	.074	-.148	-.041	-.074	.031	-.068	.175	.064	.147
Small in terms of no. of employees	-.118	-.307	-.784	.006	-.130	.117	.092	-.043	.063	-.021	-.129	-.039

This is a reasonably simple structure as, although there are variables that correlate moderately (0.3 or more) with more than one factor, there are few that correlate highly with more than one factor (0.6 or more) and few that correlate even moderately with more than two factors. Given that 12 factors were selected, this is a satisfactory structure that should facilitate further analysis.

Factor 1 appears to represent a sophisticated and active currency management strategy, with significant correlations between this factor and a range of currency management instruments and techniques, the hedging of major currencies, measuring exposure in the maintained currency, employing a selective hedging policy, provision of currency management training and measuring currency management performance. This possibly represents the third stage of Earl's (1985) model and the second stage of Stobaugh's (1970) (see sections 3.3.4 and 4.5). Factor 2 is clearly also related to an active currency management approach, but would appear to be more specifically related to large companies, given the relationships with company size, centralising currency management activities and using the eurocurrency market. There is a clear emphasis on using flexible currency management instruments and techniques, such as asset and liability management, leading and lagging and currency options, and there is a strong recognition of economic exposure. The currency management approach of these companies appears to be even more sophisticated, providing early evidence of the importance of company size in determining currency management strategy. This is probably closer to the types of companies that Earl and Stobaugh were investigating, but note that having a large volume of currency exposure does not correlate significantly with this factor. Stobaugh (1970) had argued that it was the size of exposure that partly determined a firm's move from a basic to a more sophisticated strategy, but this finding from factor analysis is early evidence against this hypothesis.

Factor 3 only has a limited number of relationships. It appears to refer to medium-sized companies and indicates that these companies are not very distinguishable on the basis of their currency management practices. There is a positive correlation with having a finance department in charge of the currency management function and a negative correlation with having top management in charge.

Factor 4 relates to a very basic exposure management strategy, similar to stage 2 of Earl's (1985) model and the first stage of Stobaugh's (1970) model. Only transaction exposure and a firm contract exposure source, of all the exposure types and sources, are correlated with this factor. The emphasis is on converting exposures to Sterling for measurement purposes, adopting a risk minimisation approach, using only a single house bank for currency management purposes and making much use of the banks and the advisory organisations. Again, size of exposure does not appear to be relevant as a determining feature.

Factor 5 is the first of the factors that are difficult to attach a label, but possibly refers to the incurrence and management of contingent exposures. As will be later shown in section 6.10, these appear to be companies that are quite different from the norm. There is a significant negative correlation with being a cost centre and significant positive correlations with decentralising currency management activities, using factoring and preferring non-standard terms when naming their currency management centres and policy. These are companies that clearly operate abroad and incur contingent and strategic exposures. However, the exact nature of this factor is something of a mystery as yet.

Factor 6 would appear to relate to risk averse and significantly exposed international traders, a noticeable correlation is with the foreign exchange function in the control of top management.

Factor 7 is not particularly clear-cut either. It appears to have something to do with the banking sector in Scotland (mainly Strathclyde-based) and use of banking instruments and published currency forecasts, perhaps indicating the greater propensity of using these methods among these companies with relatively easier access to them. However, there were no significant relationships between this factor and use of the spot and forward markets, as may have been expected if it did represent companies in this sector.

Factor 8 is correlated with a series of flexible and/or not particularly conventional currency management methods and markets, such as asset and liability management, factoring, government exchange risk guarantees, leading and lagging, price variation and the over-the-counter market. Note



that this is the second time that companies in the construction industry have correlated significantly with a factor indicating non-standard currency management practices (the first time with Factor 5).

The nature of Factor 9 is difficult to evaluate, but Factor 10 clearly refers to a reliance on invoicing techniques. The positive correlation between this factor and having a finance department in charge of the foreign exchange function and the negative relationship with having top management in charge is of interest, but further tests will be needed to determine any differences in currency management strategy between company departments.

Factor 11 seems to refer to those MNCs that deliberately try to profit from currency movements through a central function, but the only corporate performance measure that it is moderately correlated with the factor is a negative profit margin, perhaps indicating the dangers of this strategy.

Factor 12 appears to represent the domestic-based services sector. There are significant positive correlations with measuring exposures in the maintained currency and having a positive profit margin, but there appears to be little to distinguish this sector in currency management terms.

Factor analysis has provided an abundance of initial information, helping to identify possible relationships between variables and highlighting significant components present in the dataset at an early stage. **In particular, it does seem to indicate the importance of company size in determining the sophistication of corporate currency management strategy and some evidence has been found to support stages of both Earl's (1985) and Stobaugh's (1970) models.** However, although it has given an indication of where to direct further analysis, the findings from factor analysis are not enough in themselves and deeper analysis will have to be undertaken to attempt to identify more precisely the nature of currency management in Scottish companies.

### *6.3. Identification and Classification of Currency Exposures*

The first stage in developing a currency management strategy is to identify

the precise nature of the exposures incurred. This can be achieved by identifying the currencies creating the exposures and ascertaining their source(s). From this information, it is possible for companies to classify their exposures according to the standard framework.

### *6.3.1. Identification of Currency Exposures*

Table 6.3 (column 2) details the results of the frequency analysis concerning the foreign currencies in which Scottish companies' exports, imports, capital remittances and transfers are denominated, thus providing a general illustration of the significance of individual currencies to the foreign exchange risk faced by the sample companies;

**Table 6.3. Currencies to which Scottish Companies are Exposed and the Hedging of these Currencies.**

Currency	Percentage of Sample Exposed	Percentage of Those Exposed Hedging
US Dollar	77.9%	61.8%
Deutsche mark	61.8%	40.7%
French franc	43.5%	43.9%
Dutch Guilder	29.8%	30.8%
Italian lira	29.0%	31.6%
Belgian franc	20.6%	37.0%
Canadian Dollar	19.1%	52.0%
Spanish Peseta	18.3%	25.0%
Irish Punt	17.6%	26.1%
Norwegian Krona	16.8%	45.5%
Japanese Yen	15.3%	65.0%
Other Currencies	15.3%	40.0%
Swedish Krona	15.3%	50.0%
Australian Dollar	13.7%	55.6%
Danish krona	13.7%	22.2%
Swiss Franc	13.7%	27.8%
Greek Drachma	8.4%	0.0%
New Zealand Dollar	8.4%	25.0%
Portuguese Escudo	8.4%	27.3%
ECU	2.3%	33.3%

Not surprisingly, given its central role in world trade, the US dollar was the main currency to which the companies were exposed, but the dominance of EU currencies in Scottish companies' trading is also clearly identified, with such currencies occupying the next five positions. Of the EU currencies, the Deutsche mark and the French franc are the most significant, but the weaker European currencies, notably the drachma and the escudo, are not commonly used in trading. This may suggest a reluctance by Scottish companies to incur exposure in currencies with a greater potential for

devaluation, at the time, within the EMS. European Non-EU currencies and Commonwealth currencies are used less than EU and North American currencies. These results are consistent with the fact that the bulk of Scottish trade is with the EU and North America (Scottish Business Insider 1992).

Having identified the general nature of the currency exposures, it is important to identify the currencies that companies would actively hedge. At the time of this study, Sterling was still part of the ERM and, consequently, it was believed that this would have a direct bearing on the hedging decision regarding particular currencies. **The results in the third column of Table 6.3 indicate that ERM membership appears to have made a difference to Scottish companies' hedging policy, with the currencies principally hedged being those outside the system.** This obviously reflects the fact that these currencies exhibited greater volatility against Sterling. It is clear from Table 6.3 that, generally, the main currencies hedged are non-European, followed by European, non-EMS currencies and finally EMS currencies. Some of the European, non-EMS currencies, for example the Swedish krona, tended to move in line with the EMS currencies, at the time of the survey, as a result of their individual government's monetary strategy, which explains why they are not as volatile against Sterling and therefore less likely to be hedged than many of the non-European currencies. **These results are similar to those of Walsh (1986), who found that his sample companies were more likely to hedge the US dollar, rather than EMS currencies, due to the dollar's greater volatility.**

Another key factor possibly affecting the hedging decision is the size of the currency exposure. Responses from the personal interviews suggested that, on average, companies are inclined to leave their positions open when the exposures are deemed by the company to be insignificant to their overall operations, but exposures that could directly affect the performance of the company are more likely to be hedged.

Interviews carried out after Sterling left the ERM pointed to a change in company hedging policy in respect of the ERM currencies. Nearly all of the companies stated that they were to modify their hedging strategy regarding ERM currencies. One small company stated;

"With us no longer in the ERM, we keep a closer eye on our

European exposures. We could just let them jog along, with little need to hedge, when we were in the ERM. Post-ERM was like jumping off the edge of a cliff. Our membership of the ERM and its aftermath was an education process: it gave us a greater awareness of currency management."

Furthermore, all interviewees questioned after Britain left the ERM indicated that the management of ERM currencies would be similar to the management of other currencies. These responses illustrate the impact that such external factors can have on corporate strategies.

The "other" currencies referred to in Table 6.3 are predominantly exotic currencies. Only 5.3% of companies in the overall sample hedged these currencies, which seems to show a reluctance to become involved in trading with the Third World and Eastern Europe. One company stated in an interview;

"We try to avoid dealing with countries that have unstable currencies."

It may also be the case that Scottish companies may simply be invoicing in a strong currency when involved with these countries or, as another company pointed out, some exotic currencies, especially those in south-east Asia, are pegged to the US dollar and can be hedged through the US dollar, as highlighted in section 3.3.5.

The lack of exposure to the ECU indicates that the hedging technique of ECU invoicing, highlighted in section 3.3.1.6, is not yet utilised significantly by Scottish companies.

A full analysis of how currencies and groups of currencies are managed is presented in section 6.5.7.

The identification process also involves companies deciphering the sources of their currency exposures;

**Table 6.4. Sources of Currency Exposures.**

Source of Currency Exposures	Percentage of Sample
Firm Contracts	74.8%
Foreign Currency Assets and Liabilities	22.9%
Potential Contracts	19.8%
Tendering for Contracts	11.5%
Other Sources	3.1%
Overseas Competition	0.8%

Table 6.4 suggests that it is the obvious exposures that companies predominantly recognise.

Potential contracts are contracts that the firm may gain in the future, but they are unconfirmed, whereas tendering is the process whereby a series of firms bid for a contract. Tendering is a particular form of a potential contract and in over 40% of cases in this sample, it is responsible for the potential contract exposure. At first glance, the figure for overseas competition could demonstrate the continuing failure of companies to appreciate this exposure source, but in the interviews 60% of the companies did realise the link between foreign competition and economic exposure when asked directly. Two companies stated that overseas competition was not an exposure source because their large market share reduced the effects of competition. Another company said that product diversification had negated the effects of any competition. However, one company stated that it was worried about overseas competition, but thought it could do little about it;

"Eastern European competition is a concern to us because of their low labour costs. It is very difficult to combat this: you just have to accept that you'll have to cut your margins."

Such statements suggest that although there is an increasing awareness of the problems associated with economic exposure, there remains a degree of ignorance concerning the methods available to manage this form of currency exposure. Walsh (1986) and Edelshain (1995) also found overseas competition to be regarded as a lesser form of currency exposure by companies. Edelshain (1995) speculated that this may have been because of a lack of comprehension that this exposure form can be intensified by changes in real exchange rates or that keener foreign competition is put down to other factors by companies. The results from the personal



interviews suggest a lack of concern by companies about this exposure source or a lack of ability to manage it. Bradley (1996) had found competitive characteristics to be significantly related to exchange rate sensitivity of sales volumes and profit margins, but she divided competitive exposure into some of its discrete components before concluding this and her list of competitive characteristics was not exhaustive. She also concluded that companies were often not aware of indirect competitive exposures despite the fact that they were incurring them.

6.3.2. *Classification of Currency Exposures*

The first objective when classifying company currency exposures is to identify the precise nature of the currency exposures. It was felt to be too ambitious to divide economic exposures into its discrete components, as Edelshain (1995) had done, given the level of sophistication and knowledge of most of the sample companies. The classification system used, therefore, to some extent, reflects the quantifiability, rather than the perceived impact, of exposure forms. The results are detailed in Table 6.5;

**Table 6.5.     Currency Exposures Incurred.**

Type of Currency Exposure Incurred	Percentage of Sample
Transaction Exposure	84.0%
Translation Exposure	34.4%
Economic Exposure	29.8%
Other Exposure(s)	1.5%

**This study supports the findings of most of the surveys reviewed in section 4.3 that concluded that transaction exposure is the main exposure form identified by companies. Economic exposure appears to be the least significant of the three, but it does seem to be recognised by a substantial minority of companies. One company described economic exposure as;**

"One of the risks of running a business that has to be accepted, much like the weather."

This company claims that because of the difficulties in measuring and therefore managing economic exposure, it only tries to manage economic exposure when the company believes that it represents a substantial downside risk. The difficulties associated with managing economic exposure were also mentioned by three other companies during the interviews.

Further evidence from the personal interviews suggests that companies view transaction exposure as the most important to hedge because of its direct effect on cash flow. However, **companies are also concerned about the management of translation exposure because of its impact on the balance sheet and hence on a company's creditworthiness.**

The few companies that claimed to incur "other" exposures did not elaborate further on what these exposures were.

Unlike the results from Edelshain's (1995) study, not all of the exposure types were significantly related to each other. Transaction exposure and translation exposure were significantly related, as were economic exposure and translation exposure, but there was no significant relationship between transaction exposure and economic exposure, despite the obvious overlaps between these two exposure types that were discussed in section 3.2.4. The reason for this last result is not immediately apparent, but perhaps represents a basic difference between some of the sophisticated companies in the sample, that recognise all three main exposure types, and the more general companies.

Statistically significant relationships were identified between hedging the major currencies, such as the US dollar, the Japanese yen, the Deutsche mark and the French franc, and incurring economic exposure. This is an expected result as, given the central role of these currencies in world trade, they would be expected to have an effect on an exposure arising from international competition and strategy.

Further analysis revealed the expected statistically significant relationships between a) incurring transaction exposure and having firm contracts as an exposure source and b) incurring translation exposure and having overseas assets and liabilities as an exposure source. **However, there is a significant difference between the percentage of respondents incurring translation exposure and the percentage having overseas assets and liabilities as an exposure source (Tables 6.4 and 6.5).** It is difficult to see how else companies could incur translation exposure. After an examination of the individual questionnaires, no reason for this discrepancy was found, therefore **the difference must largely be put down to a failure by some companies to understand or properly read the relevant questions or, more seriously, to a lack of comprehension of the concept of**

**translation exposure.** Perhaps surprisingly, there were no significant relationships between economic exposure and two obvious exposure sources, tendering and potential contracts; the main related exposure source to economic exposure was foreign currency assets and liabilities. Coupled with the earlier figures on overseas competition in Table 6.4 and the personal interviews on economic exposure management, detailed earlier in this section, **it would seem that there is substantial ignorance concerning the precise nature of economic exposure, even amongst the companies that recognise it.** This finding is in broad agreement with Belk and Glaum (1990).

6.4. Quantification of Currency Exposure

Companies were asked to quantify their currency exposure in terms of percentage of total turnover (which could be taken as a measure of the degree of internationalisation of a firm) and its significance to corporate operations. The results provide an estimate of the significance of currency management in Scotland. The results are detailed in Tables 6.6 and 6.7 and indicate that although the majority of companies appear to have a low volume of currency exposure in terms of turnover, there are a significant number of companies for which currency management is an important consideration.

**Table 6.6. Volume of Currency Exposure.**

Percentage of Foreign Exchange in Total Turnover (Sterling Terms)	Percentage of Sample
0-5%	34.4%
5-10%	18.3%
10-15%	6.1%
15-20%	10.7%
20-25%	2.3%
Over 25%	26.0%
Don't Know/Didn't Answer	2.3%

**Table 6.7. The Significance of Currency Management.**

<b>The Significance of Currency Management in Overall Corporate Strategy</b>	<b>Percentage of Sample</b>
Highly Significant	29.8%
Moderately Significant	16.8%
Not Very Significant	31.3%
Not At All Significant	20.6%
Don't Know/Didn't Answer	1.5%

Further analysis indicates that only 18% of companies with exposures amounting to 0-5% of turnover perceived currency management to be a significant part of their operations (answering with either of the first two responses in Table 6.7), whereas 85% of companies with large exposures, amounting to over 25% of turnover, regarded currency management as a significant part of their business. There is an obvious relationship then between volume of currency exposure and the significance attached to currency management.

Another essential part of the quantification process is the measurement of the different exposure forms. Having identified the relative significance of the various exposures, the frequency with which each is measured in practice can be analysed. The responses are summarised in Table 6.8;

**Table 6.8. The Measuring of Currency Exposures.**

<b>The Frequency of Measuring Exposure Positions</b>	<b>Those Incurring Transaction Exposure (84.0%)</b>	<b>Those Incurring Translation Exposure (34.4%)</b>	<b>Those Incurring Economic Exposure (29.8%)</b>
Daily	11.0%	4.7%	10.4%
Weekly	7.3%	4.7%	2.3%
Monthly	31.8%	39.8%	17.8%
Quarterly	11.8%	15.4%	10.4%
Annually	2.7%	11.0%	25.5%
Other	15.5%	2.3%	20.5%
Never	20.0%	21.5%	12.8%

Perhaps surprisingly, given the suggested measurement problems in section 3.2.3.2, economic exposure appears to be measured, albeit less frequently, by more companies that recognise it than the other two exposure types. These results suggest a much higher recognition and measurement of economic exposure than indicated in some previous studies, such as Broder (1984). There appears to have been an increase in the awareness of economic exposure among companies during the 1980s. Typically, transaction and translation exposures are measured at least once a month.

The substantial majority of Scottish companies attempt to measure their exposures, with 65% preferring to convert them to Sterling before evaluating the extent of their position. Those companies not undertaking formal measurement (13%) claim that either their exposures are relatively insignificant or they are locked into a forward contract, which removes the need for constant evaluation. One of the interviewed companies argued that conversion to Sterling is important because a common currency is required in order to analyse the relative performance of all its subsidiaries. Whilst this could create currency management awareness in subsidiaries, it should be recognised that an adverse exchange rate movement will detrimentally affect a subsidiary's performance on Sterling conversion, regardless of how the subsidiary has performed. Furthermore, in many of these companies currency management is entirely out of the control of the subsidiary companies (see section 6.8). This company also stated that it tried to partially circumvent this problem by using a quarterly average rate for conversion purposes, which would tend to smooth out major exchange rate fluctuations. However, the questionnaire results indicate that there is no fixed rule for conversion purposes; companies use a range of methods from the forward rate to some predicted future exchange rate. When there is only a small volume of exposure to convert, the spot rate is chosen by many of the companies as it would take a substantial exchange rate movement to cause concern. In responding to a question on the establishment of a conversion exchange rate, 44% of the sample stated that they converted by use of the spot rate and, of these, over 70% were exposed by less than 10% of turnover.

Many of the companies have to convert because senior management require



an estimate of the Sterling values of all foreign currency operations. A finance director of one of Scotland's largest companies explained that he would prefer to measure exposures in the maintained currency, but the strategy of his company prevented this because senior management are used to evaluating positions in Sterling, not in foreign currency. However, a large minority of companies (22%) prefer to measure in the maintained currency because the exposure is actually managed in this currency, especially, for example, when matching payables and receivables in a foreign currency or when using foreign currency accounts. **Conversion to Sterling only gives a company an indication of the exposure's effect on cash flow; it does not provide information on either the size of or change in the actual exposure position. It is thus disappointing to find so many Scottish companies using this conversion method. No company chose to measure exposures by converting to a third currency.**

Even though the results found that 87% of companies incurring economic exposure measured it, results from statistical analysis showed that there were correlations between treating currency management as significant and measuring transaction and translation exposures, but there was no such relationship with measuring economic exposure. This result shows that the measurement of economic exposure is perhaps not considered an essential aspect of currency management by many of the more sophisticated operators in the field. However, there is a significant relationship between measuring exposures in the maintained currency and measuring economic exposure. This result demonstrates that it is companies that are most interested in assessing the strategic and competitive effects of currency exposures that measure these exposures in the maintained currency.

A detailed analysis of how currency exposures are managed after quantification is presented in section 6.5.8.

### *6.5. The Management of Currency Exposures*

After identifying and quantifying currency exposures, the next logical step for a company is to decide whether to actively manage the exposures and, if so, to decide on an appropriate strategy. If an active management approach is chosen, a number of key operational choices will have to be made, such as;

1. What will be the general currency management policy of the company?
2. Which company department(s) should be in charge of currency management operations?
3. Which currency management instruments and techniques should be used?
4. Which foreign exchange markets should be utilised?
5. Should an attempt be made at exchange rate forecasting and, if so, from where should these forecasts be obtained?
6. Should staff be provided with currency management training?

All of these issues will be examined in order to evaluate the general currency management approach of Scottish companies. The currency management practices of companies exposed to or hedging certain currencies, incurring different exposure forms and quantifying their exposures by various methods will also all be examined to find if any of these variables impact significantly upon the implementation of currency management policy.

#### *6.5.1. Currency Management Policy*

To gain an insight into the general currency management policy of Scottish companies, it will be necessary to ascertain Scottish companies' description of their currency management function and their attitude to managing currency risk.

**The majority (52%) of Scottish companies' currency management operations are regarded as cost centres, with the onus of currency management on minimising costs rather than making profits. Only 15% saw their currency management function as a profit centre. These results indicate a desire to avoid, rather than to pursue, risk and are in accordance with most other studies, such as Blin et al (1981), Belk and Glaum (1990), ACT (1992b), Bank of America (1995) and Edelshain (1995).**

Companies that preferred to use another term, different from the two main terms (15%), were uncomfortable in classifying their centre under a single term or acted both as cost and profit centres depending on circumstances. Only one company regarded their currency management operation as a service centre. The relatively high percentage of respondents (19%) unable to classify this part of their operations possibly reflects the fact that a large proportion of the sample companies are small to medium-sized enterprises and do not think of their currency management function in any such terms.

Companies that believe their currency management function to be cost centres have a cautious view of currency management, although they are not completely risk-averse. Their approach can be adequately summarised with reference to one company's statement on why it chose to call itself a cost centre;

"Our treasury management is not really about making a profit. Our key goal is cost minimisation. We do make profits on currencies occasionally, but we regard them as a bonus .... Currency management is not a main strategy for us, especially now we are in recession; there are simply too many other things to worry about."

The next stage in ascertaining the favoured currency management approach in Scotland involves an evaluation of the nature of the currency risk management policy of the sample company. **The results show that nearly half of the sample (49%) take a considered approach to currency management, not simply using a blanket policy, but engaging in some form of risk assessment and covering exposures or leaving them uncovered depending on circumstances, especially on their anticipation of exchange rate movements.** Even though many companies are risk averse, generally they do seem willing to take advantage of obvious favourable exchange rate movements by selectively hedging, a result also found by Touche Ross (1991). Over one-fifth of Scottish companies do not cover their currency exposures and less than 15% of companies in this sample are so risk averse that they will cover all their exposures.

However, there was little to suggest, in comparison with the review of this area of currency management in section 4.7, that **Scottish companies are any more risk averse than their counterparts in other economies.** There is thus no significant evidence to support Dow's (1992) speculation that companies in peripheral economies, such as Scotland's,

adopt a more defensive financial approach, at least not in terms of currency management.

Responses taken from personal interviews demonstrated that it was principally companies with minimal currency exposures that were more likely to leave exposure positions open, as they would gain or lose little on currency movements and the expense of hedging may not be cost effective.

Other interviewed companies that do not cover exposures follow this policy because they buy and sell in Sterling and do not see a need to use currency management instruments or they have unpredictable foreign currency flows that would make accurate hedging very difficult to implement. These are not satisfactory currency management practices. Companies can still face economic exposure even if they always invoice in Sterling and many currency management instruments and techniques are now flexible enough to deal with unpredictable foreign currency payments and receipts. These companies could be incurring substantial losses on currency movements and are not recognising it.

**Responses taken from personal interviews also demonstrated that companies that engage in risk assessment still err on the side of risk aversion and will only try to profit from obvious favourable movements.**

For instance, one company admitted to establishing a position to profit substantially from Sterling's devaluation in November 1992. The vast majority of companies do not see currency management as an end in itself. A Tayside company said;

"Dealing in foreign exchange is like buying and selling shares, you shouldn't be afraid to make a profit if things go your way and we aren't. We do then take a risk, but this is the risk of dealing rather than overt speculation and we'll not overdo it."

Companies that cover all of their exposures often do so because they predominantly have one-way currency flows and therefore they can lose heavily if they anticipate wrongly when selectively hedging currencies. For example, if they leave exposures open and currencies move unfavourably, there is no offsetting loss from opposite currency flows. These companies find it best and easiest not to take any risks.

In just over half of the interviewed companies, there was found to be a

traditional currency management policy that some have maintained for at least a decade. However, the turmoil that had just occurred in the ERM was forcing many companies to reconsider their currency management policy: just under half of the companies interviewed after Sterling left the ERM said that this event made a difference to their currency management policy. One company that labelled their currency exposure situation as minimal found their interim profits cut by one-third, just a few months after the UK left the ERM, because its import costs rose dramatically. **The finding that companies are slow to change their currency management system, even in the wake of significant external changes, is supportive of the results in Abdel-Malik (1976) and Earl (1985) on the evolutionary nature of currency management policy.** However, there was no support for another of Abdel-Malik's findings that minimally exposed companies are more likely to cover all exposures.

Results from statistical analysis showed that there was a significant correlation between the nature of a currency management centre and currency management policy, showing that there is some consistency in company policy in this area.

The policy of covering all currency exposures had a surprisingly strong relationship with the hedging of EMS currencies, especially the French franc. The fluctuations between Sterling and EMS currencies at the time of the survey were minimal, but this result could indicate that many companies were unsure of the ERM's stability before Britain was forced to leave the ERM on "Black Wednesday." However, from the personal interviews, it seems more likely that many companies were covering all European exposures before the UK entered the ERM and merely continued this policy after it joined. Furthermore, as indicated earlier, the interviews demonstrated that over half of the companies operate a traditional currency management policy and, if they have to change, they do so slowly.

Those companies that claimed to cover no exposures did use some currency management instruments, especially Sterling invoicing (52%), invoicing in a foreign currency (33%), currency accounts (26%) and currency overdrafts (22%.) They also use the over-the-counter market more than those companies that employ the two other main policies (44%). **Companies claiming to cover no exposures are therefore not entirely inactive in**



currency management, as also highlighted by Belk and Glaum (1990) and Edelshain (1995), but these companies do take currency management less seriously than those that follow other policies, for example none provide currency management training. Other possible relationships suggested from the personal interviews, and highlighted earlier in this section, that companies that cover no exposures tend to be minimally exposed or invoice in Sterling, were not proven by the use of statistical analysis.

All companies following a policy different from the main three policies had overseas assets, indicating that some companies with significant currency management concerns are uncomfortable explaining their policy in simple terms.

6.5.2. *Departmental Involvement in Currency Management*

Having decided upon the general currency management policy to follow, companies must take steps to implement this policy. The first decision required is to determine which department should be responsible for the currency management function. As indicated in the review of previous studies (section 4.4), this is an area that has not been subject to much prior attention.

The companies were asked to name the department principally responsible for currency management in their organisation. They replied as follows;

**Table 6.9. Department Responsible for Currency Management.**

Department Primarily Responsible for Currency Management	Percentage of Sample
Finance Department	45.0%
Top Level Management	30.5%
Treasury Department	9.9%
Marketing Department	3.1%
Other Department	1.5%
Planning Department	0.8%
Purchasing Department	0.8%
Don't Know/Didn't Answer	8.4%

Table 6.9 illustrates that the largest proportion of Scottish companies

incorporate currency management into their finance function. The importance of currency management in Scotland is demonstrated with the high percentage of companies entrusting the currency function to the top layer of management, but the low percentage of treasury divisions suggests that very few companies are so concerned about currency management as to create such a specialist department. Other departments are poorly represented in this survey.

In order to ascertain how departments interact in currency management, companies were also asked to name the other departments that were directly involved in the conduct of currency management. In over half of the companies with finance, top management or a treasury in charge, only one department had direct involvement in currency management. However, there was consultation in many other companies; in all, 39% of companies had a consultative framework for currency management decision-making. Where a finance department was in charge, purchasing (19%) and sales (12%) were especially involved. When top level management took charge, there was still a role for the finance department (38%.) The corresponding figure when the roles are reversed and the finance department was in charge is only 3%, indicating that when top management becomes involved in currency management decision-making, it usually takes command. Top level management rarely plays a secondary role and does not seem to get involved at all when a treasury is in charge. The finance department, however, does have some direct involvement when a treasury function is present (in 31% of companies with treasuries). The other interesting result from this analysis is the high percentage involvement of the purchasing department. The initial result, where only 0.8% of companies have this department in charge, is a little misleading, as the purchasing department is involved in currency management in over 15% of companies in total. The full results for direct department involvement in currency management are given in Table 6.10;

**Table 6.10. Departments Involved in Currency Management.**

Department Involved in Currency Management	Percentage of Sample
Finance Department	60.3%
Top Level Management	32.1%
Purchasing Department	15.3%
Treasury Department	11.5%
Marketing Department	9.2%
Other Department	6.9%
Sales Department	6.9%
Planning Department	1.5%
Don't Know/Didn't Answer	8.4%

**Table 6.10 confirms that outside of the finance, purchasing and treasury departments and top management, the role of other departments in currency management is minimal. This does not indicate that Scottish companies are managing currency exposures in an inter-functional and strategic manner, as advocated by authors such as Srinivasulu (1981) and Lessard and Zaheer (1996) (see sections 3.3.4 and 4.4) and perhaps provides some evidence for Ashcroft's (1996) assertion that Scottish companies generally suffer from a lack of internal consultation and external collaboration. Broder (1984) had found a much higher figure for top level management involvement (88%) and a "proliferation" of treasury departments in the UK, but his study was of multinationals. Baur (1993) found that centralised treasury departments make decisions on the placing of currency business in over half of Scottish companies, but his study was of the top 300 Scottish companies. There is no evidence in this study of a proliferation of treasury divisions among general Scottish companies.**

Responses given in personal interviews suggested that in companies with a greater degree of internationalisation, there was more of a more considered approach to currency management. These companies may leave one person or department in charge of small amounts of foreign currency, but more significant amounts will be managed after the gathering of opinions in the company, with top management probably having the final say, unless there is a specialist treasury department. This is a recognition that currency

management is not simply a financial matter. As the finance director of a leading Scottish engineering firm argued;

"In practice you have to extend the management of foreign exchange beyond the finance department. There are lots of facets involved in the contracts and you need to blend disciplines."

However, no significant statistical relationship was found between having a large percentage of turnover in foreign currency and adopting a consultative currency management approach.

#### *6.5.3. The Instruments and Techniques of Currency Management*

Having decided upon the general currency management policy and assigning a department to be responsible for the implementation of this policy, the company will have to select a currency management strategy from a wide range of instruments and techniques that can mitigate the effects of foreign exchange exposure or be used to take advantage from it (all defined in chapter 3). As explained in section 3.3, the relevant question in the mailed questionnaire was constructed to focus on those methods likely to be in common use among the sample companies. The results demonstrate that these indeed are the instruments and techniques largely used by Scottish companies given that very few companies mentioned alternative methods.

Companies can use internal or external management techniques to help in the managing of their currency exposures. There is no consensus about how the techniques of currency management should be classified, therefore this analysis merely distinguishes between internal methods and external methods and where relationships are found between the methods or between the methods and other variables, the analysis will attempt to address the features that the methods have in common.

The frequency results for use of the internal techniques were as follows;

**Table 6.11. Use of Internal Currency Management Techniques.**

Internal Technique	Percentage of Sample
Any Internal Technique	77.9%
Invoicing in Own Currency	49.6%
Invoicing in Foreign Currency	41.2%
Matching	27.5%
Netting	13.0%
Assets and Liability Management	6.9%
Price Variation	5.3%
Leading and Lagging	3.1%
Other Internal Technique(s)	0.0%

**Table 6.11 shows that some form of currency invoicing is easily the most popular form of internal technique, with domestic currency invoicing most preferred.** A high degree of use of domestic currency invoicing was also found by Rosendale (1973), Abdel-Malik (1976), Carter and Vickery (1988), the Barclays Quarterly Survey of Exporters (1991) and the Royal Bank of Scotland Quarterly Survey of Exporters (1993). Matching and netting are reasonably popular, but the other techniques are favoured only by a few in the sample. As explained in chapter 3, the remaining techniques are really only available to firms with a flexible currency management approach and/or with some degree of market power. **Nearly all interviewed companies that invoiced in Sterling explained that they did so in order to eliminate currency risk. This, of course, is a fallacy, as the company invoicing in Sterling would simply be transferring the risk abroad, would still be economically exposed and may put other aspects of its business at risk.** At least one company was aware of the dangers of Sterling invoicing;

"For our Canadian customers there is a longer period involved in delivering their goods [invoiced in Sterling]. Currency movements can then easily turn against them, which in turn may affect future orders from them."

However, this concern is not enough to persuade many Scottish companies to change their currency management practices. One company was particularly stubborn in defence of its policy;



"When you buy British goods, you should expect to pay in British currency."

Six of thirteen interviewed companies that were asked directly about their invoicing policy said they would invoice in another currency if a major customer was insistent, but the usual practice of Scottish companies is to invoice in Sterling when they can. When their choice of other techniques proves to be erroneous, companies are inclined to seek assurance in Sterling invoicing. **In Scotland, Sterling invoicing is the basic technique of currency management.**

Companies were also questioned on their use of external techniques;

**Table 6.12. Use of External Currency Management Techniques.**

External Technique	Currency	Management	Percentage of Sample
Any External Technique			73.3%
Forward Contracts			52.7%
Currency Accounts			45.8%
Currency Overdrafts			30.5%
Short-term Borrowing			19.1%
Currency Options			9.9%
Discounting	Foreign	Currency	9.2%
Denominated Bills			
Currency Swaps			4.6%
Factoring Foreign Currency Denominated			
Receivables			3.1%
Government Exchange Risk Guarantees			3.1%
Other External Technique(s)			0.8%
Financial Futures			0.0%

In common with nearly all other studies (section 4.8), Table 6.12 demonstrates the forward contract to be the most widely used external hedging technique. There are also high percentage uses of currency accounts and overdrafts and nearly one-fifth of the sample engage in short-term borrowing. There is certainly a greater use of external techniques among smaller companies than suggested by the Barclays Quarterly Survey of Exporters (1991). The remaining techniques are used

minimally, including the new financial engineering/derivatives products. Currency options are the most popular instrument in this latter group, whereas no company uses financial futures. As explained in the review of previous studies (section 4.8), financial futures only appear to be used by companies in the US, where there is a relatively accessible futures market. In the UK, the standardisation of the futures markets and the high minimum contracts required, in practice, make futures contracts only applicable to large financial organisations. The use of discounting and factoring is minimal and very few companies use government exchange risk guarantees. At the time of the questionnaire, much of the government's share of the credit insurance market was being sold off, creating the uncertainty that perhaps caused this result.

The results from Tables 6.11 and 6.12 demonstrate that internal techniques are more popular than external techniques, but the difference is slight. **There is nothing in the results to indicate that companies are adopting the prudent currency management practice of using, generally, more cost-effective internal techniques before purchasing external instruments and services.**

In using currency management techniques, Scottish companies tend to adopt a traditional approach, mainly operating their currency management function by established rules of thumb. Some companies have stuck by the same currency management methods and the same rules for using them for twenty years. This result is consistent with the general currency management policy of Scottish companies highlighted in section 6.5.1. The following response was typical in a personal interview;

"We usually deal spot on the few occasions we're involved in the foreign exchange market and if placing an order for the equivalent of £30,000, we will buy currency forward."

The perceived advantages and disadvantages of the various management techniques were highlighted in the personal interviews. Forward contracts can be a problem rather than a solution when delivery dates are not specific. In this instance, companies do not want to be locked into a rate and prefer to use more flexible techniques, such as currency accounts and overdrafts. Companies do not seem to be aware of the more flexible forms of the forward contract, outlined in section 3.3.2.5. **The derivatives products**

were roundly criticised for being too costly. One company stated;

"Like most Scottish companies, we don't like to put cash on the table, so options aren't attractive."

Aggarwal and Soenen (1989) and Duangpoly et al (1997) also noted that companies believed the initial cost outlay to be a disadvantage of currency options.

ECGD insurance was labelled by one company as "a shambles." There is concern that there is really no UK government scheme to help exporters on a par with some of the schemes in continental Europe, where softer loans and preferential interest rate treatment can be obtained from governments.

**During the interviews, several importers bemoaned the fact that many of the methods were only applicable to exporters.** Later results (in section 6.7.3) will show a lack of relationships between importing and use of many currency management methods.

An admirable resume of its own hedging strategy was given by one leading Scottish firm, outlining the advantages and disadvantages of various techniques;

"Netting and matching decrease costs; leading and lagging provide opportunities; invoicing in a foreign currency ensures stable prices; asset and liability management helps liquidity; short-term borrowing is an alternative to the forward contract, if receivables are due and interest rates are low we'll use it. We don't use other methods, like factoring and discounting, because they are expensive."

#### *6.5.4. Access to Foreign Exchange and Currency Management Techniques*

To gain access to many of the above techniques, companies will need to use the foreign exchange markets and will usually have to deal through banks and/or brokers. In this respect, companies have the choice of using a single bank, which is used for other aspects of company business and with which a close relationship is nurtured, or using several banks, allowing a range of currency quotes to be obtained.

Table 6.13 provides the results concerning the foreign exchange markets the

sample used;

**Table 6.13. Use of the Foreign Exchange Markets.**

Foreign Exchange Market	Percentage of Sample
Spot Market	58.0%
Forward Market	52.7%
Over-the-Counter Market	26.7%
Eurocurrency Market	3.8%

As highlighted by various contemporaneous studies of the foreign exchange market (see Bank of England 1992 and Pattanaik 1993b), most companies prefer to deal at spot (immediate settlement), but the forward market (offering guaranteed rate of exchange for a future settlement) is almost as popular as companies seek protection against exchange rate fluctuations. Over-the-counter markets, providing privately purchased tailor-made products from the banks, are used by a significant minority of the sample, but the eurocurrency market is only utilised by a small percentage of sample companies as there are large minimum currency values for participating in this market.

Responses from personal interviews suggested that companies are satisfied with the foreign currency markets in which they operate, particularly the spot and forward markets because of their liquidity and ease of use. Exceptions when the markets do not work well were highlighted: when non-major currencies are involved and when seeking forward rates over six months, as rates in these instances can be prohibitive. The main reason interviewed companies gave for not using the options market was its volatility rather than its cost.

Companies also were asked to provide their favoured access point(s) to the foreign exchange market;

**Table 6.14. Favoured Points of Access to Foreign Exchange Markets.**

Point of Access	Percentage of Sample
A Single House Bank	61.8%
Several Transaction Banks	22.9%
Brokers	3.8%
Other Point(s) of Access	0.8%

**It is obvious from Table 6.14 that most Scottish companies use the same bank for foreign currency purposes as they do for other banking services.** Baur (1993) found that even in large Scottish companies this was the case. Nearly one-quarter of the sample use several banks to obtain a range of quotes and thus obtain a more competitive rate or a better service on certain currencies. The use of brokers is minimal as they usually operate interbank.

For many companies the key requirement is to obtain a competitive rate. The most obvious way would appear to be by obtaining a range of quotes from various banks, but some companies believe that they can persuade their house bank to offer a better rate if initial prices are unfavourable. Therefore, it should not be assumed that just because a company uses a single house bank that it is not interested in a competitive currency rate. However, it is true that many of the small companies with only small volumes of currency exposure are not particularly interested if their rate is competitive or not. One said;

"We just phone the bank and get a rate. We have no means of knowing whether we're getting a good rate, but small volumes are involved, so it is not worth the time arguing."

Only one of the interviewed companies was unhappy with their access to the foreign exchange markets;

"It is very difficult to use these markets effectively. We need an on-line IT package to check if we're getting a fair rate. We suspect we're getting ripped-off by the banks. Our product is a low value, low margin product, so the other markets and management techniques would be too expensive for us to use."

Results from crosstabulation analysis showed a significant positive correlation between the use of the spot and forward markets, but a



significant negative relationship between use of the spot market and the over-the-counter market. Smaller companies appear less likely to use the spot market: results from crosstabulation analysis demonstrated a significant negative relationship between using the spot market and having a turnover of less than £30M. The eurocurrency market tended to be used by larger companies with a special interest in currency management.

Concerning access to the foreign exchange markets, it was found that over 70% of companies with less than 200 employees use a single house bank for currency management purposes. In conjunction with the personal interviews, **this result demonstrates that it is the smaller companies, without the time or the resources to give currency management special attention, that are inclined to utilise one bank when dealing with foreign currency flows.** There were also strong positive relationships between having a single bank and having a firm contract exposure source and measuring exposures by converting to Sterling. There were significant negative relationships between the use of a single house bank and short-term borrowing, the use of currency options and having overseas assets as an exposure source, suggesting that companies that use a single house bank for currency management purposes are not heavily involved in currency management. Nearly two-thirds of these companies use the advisory organisations, suggesting that some help with the basics of currency management is required by companies using their house banks. However, it is not the case that these companies largely ignore currency management, as 94% of them measure their currency exposures.

Size is obviously a key variable in determining a company's likely access point to the foreign exchange markets as correlations were found between large companies (in terms of turnover, number of employees and total assets) and using several banks. The other key variable in determining whether a company uses several banks is the existence of overseas assets and liabilities, with over 50% of companies that use several banks having this feature. The use of several banks was related to many other variables associated with large companies and companies with overseas assets (see sections 6.7.1 and 6.8).

No significant statistical relationships were found between using a broker for currency management purposes and other currency management variables.

#### 6.5.5. *Forecasting Exchange Rates*

The review of previous studies (section 4.6) suggests that exchange rate forecasting is considered by many companies in currency management, but is not generally believed to be a vital component of currency management and was ordinarily only used for short-term purposes. Analysis was required to see if this was also the case for companies in this sample.

**Around two-thirds of the sample companies did engage in exchange rate forecasting. Forecasting is then widely used in currency management, but none of the companies that were personally interviewed placed a great degree of reliance in it for currency management purposes.** Forecasting seems to be largely a technique, as one company explained;

"To keep an eye on and get a feel of the market."

The predominant forecasting method used by forecasting companies is market-based forecasting (64%), using market information such as the forward rate. Published forecasts (inexpensive, easily available forecasts from banks and other institutions) are also used by a significant number of companies that forecast (24%). From these results, there does seem to be a marked reluctance among companies to pay for external forecasting services. The methods of fundamental analysis and chartism are only used by small percentages of the sample that forecast (13% and 11% respectively.) The ACT (1992a) and Hakkarainen et al (1997) found much higher percentages for the use of chartism and fundamental analysis in forecasting, but both these studies were of large companies and results from statistical analysis in this study showed significant correlations between large size of company and use of these two forecasting methods. A low use of chartism was previously detected by Soenen and Aggarwal (1989). Some finance directors are very critical of these scientific methods;

"I'm cynical about chartism; it seems mumbo-jumbo. Fundamentals and charts are only of secondary importance in forecasting, it's all about how people feel. The best judge is market sentiment and we use public information as background reading to evaluate this."

Often a range of forecasting methods are used before a company arrives at a currency management decision, a finding that corresponds with Soenen

and Aggarwal (1989) and ACT (1992a).

**These results suggest that many companies believe they have to make some effort at forecasting exchange rates, but it is not a prioritised currency management activity.** An attempt certainly has to be made by companies with subsidiaries that have to set a group budget rate or a benchmark for the year. One company stated that it had to forecast because it felt a responsibility to the group to make it aware of what could happen. The personal interviews indicate that forecasting is used especially on more complex contracts.

Virtually all of the interviewed companies that forecast exchange rates were satisfied with their attempts at doing so, although one company qualified it by saying, "based on the information given."

Those companies that chose not to forecast were very critical of the activity. One engineering company stated;

"It is very difficult and complex to forecast, for example what economic model can predict a politician's statement, which may have a dramatic effect on currency movements. Forecasting seems to be pie-in-the-sky to me."

Companies were also asked to identify the time periods for which they obtained forecasts in order to test the hypothesis that exchange rate forecasting is predominantly short-term;

**Table 6.15. Frequency of Exchange Rate Forecasting.**

Time Period for which to Obtain Forecasts	Percentage of Sample that Forecast (66.4%)
Up to Three Months	33.3%
Up to Six Months	14.9%
Up to One Year	18.4%
Over One Year	8.0%
Other Time Period	6.9%
Don't Know/Didn't Answer	18.4%

This result in Table 6.15 seems to correspond with the results contained in section 4.6, notably those of Jilling (1978), Broder (1984)

and Mathur (1985a), that found exchange rate forecasting to be predominantly short-term, with very few companies attempting to forecast for over one year. One-third of the sample that forecast confine forecasting to only three months at most. Long-term forecasting can be difficult when market-based information is used (and the results suggest it is the main method used by Scottish companies) because rates like the forward rate, on which market-based forecasting relies, are only usually available for up to six months. Results from crosstabulation analysis proved that companies engaging in market-based forecasting were significantly more likely to forecast up to three months only. Those companies favouring other forecasting methods tended to forecast for a longer term than the norm, especially those companies using chartism, 60% forecast for up to one year, and those using "other" methods, 43% forecast for over one year. Companies did not really elaborate on what they meant by "other" methods, with a few companies simply referring to "a gut feel."

Taken together, the surveys in section 4.6 would seem to indicate that it is the larger companies that are more likely to forecast exchange rates, but the results from statistical analysis did not support this finding for forecasting in general, only for two forecasting methods, fundamental analysis and chartism. The complimentary relationship between chartism and fundamental analysis found in the surveys by the Bank of England (1989b) and the ACT (1992a) was confirmed.

#### *6.5.6. Provision of Currency Management Training*

An important consideration for companies engaging in currency management is whether to provide training for staff in this area and, if so, how?

**The results found that few companies (18%) in Scotland take currency management sufficiently seriously to train their staff in aspects concerning it.** Several interviewed companies gave reasons for not providing any training, one of the main reasons being that currency management was handled exclusively at group headquarters by a small number of staff who were already trained. There is some evidence from the interviews that these staff try to keep up with developments in the field of currency management through courses and journals, but the companies do

not place much priority on this. Another major reason given was that companies are not keen to incur the costs of training and the increased wages trained staff would receive. Other companies simply stated that currency management is not a prioritised activity and therefore there is no need for specialised training.

Companies that do provide training are seeking a more sophisticated currency management function. In many companies, several departments, not just finance and/or treasury, are involved in currency management, as section 6.5.2 makes clear, and many of the staff in these other departments may not be as fully informed about currency management procedures and practices as those in finance and treasury and therefore will need training.

External sources are comfortably the most popular sources for providing training. In this sample, 70% of companies providing training use external sources compared to 22% using internal sources. One company stated;

"External sources are particularly useful because they provide up-to-date training and we can keep up with changes in the currency management field."

It may also be the case that companies do not have the expertise to run internal courses and have to use an external organisation. External bodies may be hired or staff may be paid to attend external courses. The most popular external sources were found to be the banks and the Association of Corporate Treasurers.

Internal training largely consists of in-house seminars, but it may also be informal and personal, through word of mouth from other staff. One large Scottish company, with significant currency exposures, produces a regularly redrafted finance manual, including a focus on currency management, for the benefit of all staff directly involved with their finance function.

Four of the interviewed companies not currently providing training are considering it. One said;

"Non-provision of training is a possible flaw in our business. The general policy is fixed by the board, but the staff have to operate it and often they are not fully aware of the purpose of what they are doing and are not sure of the effect of dramatic changes like what



happened in the ERM recently. We are then looking to provide some internal training and may also look to the bank for some help."

The companies considering training are particularly those that see their overseas business extending. Three of the four companies considering training believe they would use external training services as they lack knowledge and expertise in this area.

Further analysis identified significant relationships between training and a number of other variables. However, the key relationships would appear to be with large company size and existence of overseas subsidiaries (see sections 6.7.1 and 6.8). Other relationships appear to be caused by these two relationships. There is a significant correlation between the provision of training and the centralisation of subsidiary operations, implying that training, when it does take place, is predominantly employed at group headquarters and not at local divisions.

#### *6.5.7. Management of Currencies*

The management of individual currencies and groups of currencies, identified in section 6.3.1, will now be examined to ascertain if there are any differences in the management of certain currencies and to explain these differences where possible.

Results from the crosstabulation analysis showed that companies hedging both EMS and non-EMS currencies make substantial use of both the spot and forward markets. This analysis also illustrates that companies hedging the EMS currencies depend on; a) external techniques such as currency accounts, currency overdrafts and short-term borrowing, which indicates that it is easier for companies to make use of these banking facilities when hedging EMS currencies than when hedging more volatile currencies, b) matching because there are more opportunities to match currencies that are strongly positively correlated, such as the French franc and the Deutsche mark and the Spanish peseta and the Portuguese escudo, c) invoicing in a foreign currency, possibly due to the stability of EMS currencies at the time of this analysis, d) the use of several banks for currency management purposes, probably because it is easier to obtain a range of quotes in the main European currencies than in some of the non-EMS currencies and e) currency management training. There was a significant negative

relationship between hedging EMS currencies and companies with less than £30M in turnover. This suggests that many small companies are particularly unwilling to hedge currencies with minimal fluctuations against Sterling.

As already explained in section 6.5.1, the one surprising result from examining the policies of companies hedging EMS currencies was the strong positive relationship with covering all exposures.

Those companies hedging non-EMS currencies, generally, rely on risk assessment (69%) as a currency management policy (the policy of risk assessment is explained in section 3.3.4). More volatile currencies do present opportunities for profits when uncovered or losses if not properly hedged and therefore it makes sense to assess risk before considering the hedging of these currencies. This also explains the strong relationship between hedging non-EMS currencies and forecasting exchange rates. Market-based forecasting is particularly preferred by companies hedging non-EMS currencies. Hedging non-EMS currencies was also strongly correlated with; a) incurring the three main forms of currency exposure, b) the use of external techniques in general, particularly forward contracts, currency accounts and currency options and c) having firm contracts as an exposure source. A relationship was found between hedging non-EMS currencies and matching, but it was not as strong as the relationship between matching and hedging EMS currencies because with the latter group of currencies, opportunities for parallel matching as well as natural matching can be utilised (definitions of these terms are provided in section 3.3.1.2).

Companies hedging EMS currencies and non-EMS currencies both depend heavily on performance measurement (over 65% of them use it in each group) and treat currency management as significant.

All companies hedging exotic currencies treat currency management as significant. These companies also show a greater awareness of currency exposures than the typical company in the sample, with 88% incurring translation exposure and 60% of those incurring economic exposure measuring this exposure at least once a month. As will be further evaluated in section 6.8, there is a significant relationship between hedging exotic currencies and decentralising currency management operations. The main

related techniques for companies hedging exotic currencies were forward contracts and currency options. This demonstrates the growth of forwards and options markets in exotic currencies in recent times.

#### *6.5.8. Management after Quantification*

The management of currency exposures after quantification was also examined to assess the effects of the quantification process on currency management practices. The basic quantification process was outlined in section 6.4. These results can be used to evaluate how the size of currency exposure, the significance attached to the various exposures and the measurement of the exposures impact upon the development and the implementation of currency management strategies.

In order to facilitate the analysis of the effect of exposure size on currency management, firms were classified as having a small amount of foreign currency exposure (less than 5% of turnover), a medium amount (5%-25%) or a large amount (over 25%).

No significant relationships were found between being exposed by 0-5% of turnover or 5-25% of turnover and any of the other currency management variables, except for a large negative correlation between small volume of exposure and treating currency management as significant, already explained in section 6.4.

The most significant results were obtained for companies with exposures amounting to over 25% of turnover. These companies are likely to be importers and to have top level management in charge of the foreign exchange function. The more exposed are likely to recognise economic exposure, although there is no similar relationship for the other exposure types. The only related currency management technique was netting.

No other major differences between the highly exposed and other companies in terms of their approach to currency management were found. For instance, there seems to be no particular technique, outside netting, market or forecasting method that highly exposed companies prefer. Under 9% of the companies exposed by over 25% of turnover have a treasury in charge of managing currency exposures. Volume of currency exposure is therefore not a key determinant in whether, for example, a company creates a treasury

division or develops a sophisticated approach to currency management, although companies exposed by over 25% of turnover do clearly believe currency management is a significant part of their business. **This appears to be corroboration of results from factor analysis in section 6.2 and of the findings of Batten et al (1993), who found that the proportion of sales to and purchases from foreign countries did not impact on companies' currency management practices.** However, these results contradict the results of some other surveys, such as Hakkarainen et al (1997), who found significant statistical relationships between the extent of foreign operations and the use of hedging instruments such as forward contracts and currency swaps.

Crosstabulation analysis was used to ascertain the differences in currency management strategy between companies believing currency management to be a significant part of their corporate strategy and those which did not. In order to facilitate analysis, companies that responded by stating currency management was "highly" or "moderately" significant were taken to regard it as significant, while those that stated it was "not very" or "not at all" significant were taken as regarding it as insignificant.

Company size was only found to have a slight impact on a company's decision to identify currency management as a significant part of their business operations. There was a correlation with large company size on the basis of total assets (see section 6.7.1 for company size definitions), but not with the two other variables that were used to describe large companies. More important and unequivocal relationships were found. For instance, there is a far greater use of external techniques among those companies viewing currency management as significant; they particularly prefer currency accounts, currency overdrafts and forward contracts. The related internal techniques were matching, netting and asset and liability management. Companies regarding currency management as significant also make greater use of the banks, the spot and forward markets and they are more likely to forecast exchange rates, especially by using market-based methods. Companies that import were also found to treat currency management as significant (this result is further evaluated in section 6.7.3).

The significance of currency management is directly correlated with hedging EMS, non-EMS and exotic currencies, particularly the US dollar, the



Australian dollar, the Deutsche mark and the Italian lira. The two other variables with strong correlations with significance of currency management were measuring currency management performance and providing currency management training.

There can be little doubt from the above results that treating currency management as significant leads to a more considered and sophisticated approach to currency management by companies.

The responses from personal interviews, detailed earlier, together with simple intuition, would lead one to assume that those companies measuring their exposure positions in the maintained currency take a more considered approach to foreign exchange risk management. The variables related to measuring in a maintained currency were measuring economic exposure, having foreign currency assets and liabilities as an exposure source, matching, using the forward market and engaging in risk assessment and performance measurement. Companies measuring economic exposure or with overseas assets or which engage in matching are probably more used to evaluating exposure positions in foreign currency terms. The fact that companies measuring exposures in the maintained currency adopt policies such as risk assessment and performance measurement does indicate that they take a considered approach to currency management.

Only three variables were found to be related to measuring exposures by Sterling conversion: having firm contracts as an exposure source, using a single bank for currency management purposes and inter-department consultation on currency management policy. There is therefore some evidence that companies that measure exposures in the maintained currency take currency management more seriously than companies that measure by Sterling conversion, but the fact that there appears to be consultation between departments in nearly half of the companies that measure exposures by conversion does suggest that Sterling conversion is not a rule of thumb. Combining these results with results obtained from the personal interviews, it is probably the case that, in many companies, the finance/treasury department has to convert exposure positions into Sterling in order for currency exposure positions to be understood throughout the company before discussion can take place. This is a possible flaw with the consultative approach.



When considering the companies that did not measure their exposure positions, significant negative relationships were found with using external and internal techniques, using the spot market, forecasting exchange rates, incurring transaction and translation exposures, having firm contracts as an exposure source and treating currency management as significant. The negative relationships are particularly strong for firm contracts and transaction exposure. It must be concluded that companies not measuring exposures do not really get involved in the basics of currency management; they believe that they do not really need to do so as they largely do not incur the most basic exposure types.

#### *6.5.9. The Relationship Between Currency Management Methods Used and Currency Exposures Incurred*

Further analysis was used to determine the characteristics of those exposed to each exposure type, highlighted in section 6.2.2, and to decipher how the exposures are managed. This will be the purpose of the next two sections of this chapter. This section will test the first of the hypotheses outlined in section 6.1: that currency management methods used are dependent on the currency exposures incurred.

Edelshain (1995) had found only 6.5% of all possible associations between vulnerability to the different forms of currency exposure and a range of currency management methods were significant and only 7.5% of all possible associations between reported advantage from the forms of currency exposure and the currency management methods were significant. Edelshain (1995) had predicted that around 60% of associations between the widely used currency management methods and forms of currency exposure would be significant, but, after statistical analysis, less than 20% of them actually were significant. However, largely, methods were not used where they were not expected to have an impact. **Edelshain (1995) concluded that there was prima facie evidence that companies were not making use of many of the available methods and that the management of currency exposure does not appear to be dependent upon the nature of currency exposure.**

Tables 6.16 and 6.17 below demonstrate all the relationships between the currency management methods and currency exposures identified in this

study:

**Table 6.16 Statistical Relationships between Internal Techniques and Currency Exposures**

Internal Technique	Transaction Exposure	Translation Exposure	Economic Exposure
Asset & Liability Management	.119	.375*	.351*
Invoicing in Foreign Currency	.281*	.211**	.269*
Invoicing in Own Currency	.017	.022	-.012
Leading & Lagging	.078	.152	.176**
Matching	.176**	.347*	.198*
Netting	.107	.295*	.096
Price Variation	.011	-.029	.068
Any Internal Technique	.068	.192**	.186**

\*Significant at 99%

\*\*Significant at 95%

**Table 6.17. Statistical Relationships between External Techniques and Currency Exposures**

External Technique	Transaction Exposure	Translation Exposure	Economic Exposure
Currency Accounts	.318*	.367*	.340*
Currency Overdrafts	.199**	.393*	.148
Discounting	.139	.105	.025
Factoring	.078	.058	-.019
Forward Contracts	.253*	.171	.283*
Government Exchange Risk	.078	-.035	-.019
Guarantees			
Short-term Borrowing	.212**	.303*	.066
Currency Swaps	.096	.149	.257*
Currency Options	.145	.244*	.175**
Any External Technique	.394*	.219**	.167

\*Significant at 99%

\*\*Significant at 95%

Of the 54 possible relationships between currency management

methods and currency exposures, 31% were significant at the 99% level and 48% were significant at least at the 95% level. Around 70% of associations were expected, but these results are far closer to their expected level than were Edelshain's (1995). No methods were used where they were not expected to have an impact. Admittedly, this part of the study, for reasons explained in section 6.3.2, was not as in-depth as Edelshain's (1995), **but it does provide evidence that the relationship between currency management methods used and the type of exposures incurred may be closer for smaller companies. However, there is also evidence to support Edelshain's claim that companies are not making use of all the available methods.**

The above results show that transaction exposure is managed predominantly through the use of external techniques, particularly currency accounts and forward contracts. There is also a reliance on foreign currency invoicing when managing this exposure. Translation exposure appears to be managed with the assistance of flexible currency management techniques to manage, what is in many cases, a contingent exposure that can change over a period of time. These results indicate that translation exposure is considered by companies as an exposure that has to be actively managed, supporting the findings of the majority of the surveys in the review of previous studies (section 4.3). **Even though there may be a debate in the academic literature, there seems to be no doubt among companies about the need to cover translation exposure.** In this sample, over 93% of companies incurring translation exposure also cover this exposure.

Given that economic exposure is a strategic and contingent exposure, its management needs to have an element of flexibility and this is reflected in many of the currency management techniques correlated with economic exposure: asset and liability management, matching, leading and lagging, currency accounts and currency swaps. However, there was also a relationship with using forward contracts. The technique of using forward contracts to hedge net present values of cash flows after subtracting the hedge effect by invoicing in foreign currencies is recommended by Buckley (1990), but forward contracts can be risky instruments for hedging contingent exposures and are generally not advised for these forms of exposure (see section 3.2.2.3). The final related technique was invoicing in a foreign currency, a strategy that may be adopted to gain an advantage over

competitors in foreign markets.

6.5.10. *The Relationship Between Currency Exposures Incurred and the Internal Corporate Environment*

Another of Edelshain's hypothesis was also tested: currency exposures incurred are related to the internal corporate environment (the second hypothesis listed in section 6.1). The internal corporate environment represents the structure and policy of the company and, as a proxy, the following variables were used as a measure of it: the firm's labelling of its overall currency management policy and currency management centre, the department(s) assigned to manage currency exposure within the firm, the firm's use of the banks and advisory organisations (as specialists and advisers) and the firm's use of currency management training, currency forecasting and measuring currency management performance. The results are provided in Tables 6.18 to 6.21.

**Table 6.18. Statistical Relationships between Currency Exposures and Currency Management Policy**

Currency Exposure	Currency Management Policy/Centre						
	Risk Assessment	Cover All Exposures	Cover No Exposures	Other Policy	Cost Centre	Profit Centre	Other Centre
Transaction Exposure	.261*	.003	-.137	.087	.121	.121	.121
Translation Exposure	.258*	-.024	-.249*	.191**	.085	.022	.067
Economic Exposure	.199**	-.031	-.208**	.219**	.159	.064	-.031

\* Significant at 99%

\*\* Significant at 95%

One-third of all possible associations in Table 6.18 are significant. Having a risk assessment policy is clearly associated with a strong recognition of the three main currency exposures. The policy of covering all exposures would not appear to be caused by incurring any particular currency exposure, but there were the expected significant

**negative relationships between covering no exposures and some of the exposure types.** It could be concluded from this last result that translation and economic exposures are less easily dismissed by companies compared to transaction exposure. The type of exposures incurred would not seem to affect the type of centre a firm chooses to call its currency management function.

**Table 6.19. Statistical Relationships between Currency Exposures and Departmental Responsibility for Currency Management**

Currency Exposure	Department in Charge		
	Top Level Management in Charge	Treasury in Charge	Finance Department in Charge
Transaction Exposure	-.027	.145	.145
Translation Exposure	-.061	.244*	.088
Economic Exposure	.112	.231*	-.120

\* Significant at 99%

\*\* Significant at 95%

There are a limited number of significant statistical relationships in Table 6.19, but it does suggest that firms incurring translation and economic exposures are more far likely to have a central treasury division. These findings would appear contrary to those of Walsh (1986), who found little treasury involvement in the management of economic exposure. Walsh argued that treasurers would only have a limited role in the management of economic exposure as operational, rather than financial, responses would normally be required. However, as the results from this study in the previous section demonstrate, **treasurers now make use of both operational and financial methods.**

Further statistical analysis showed that, despite strong suggestions by authors such as Srinivasulu (1981) and Bryans (1993), there is little evidence that inter-functional strategic decision-making plays a significant role in the management of economic exposure in the sample companies.



**Table 6.20. Statistical Relationships between Currency Exposures and Use of Banks and Advisory Organisations**

Currency Exposure	Use of Banks	Use of Advisory Organisations
Transaction Exposure	.376*	.148
Translation Exposure	.097	.073
Economic Exposure	.193**	.187**

\* Significant at 99%

\*\* Significant at 95%

The relationships between using the banks for currency management purposes and incurring transaction exposure and economic exposure are expected as Table 6.17 showed both these exposures to be significantly related to a series of financial instruments. Admittedly, it did also show translation exposure to be related to a similar series of instruments, but the result in Table 6.20 suggests that firms incurring translation exposure make less use of the banks and, perhaps, make more use of internal techniques for management purposes. The significant positive relationship between using advisory organisations and incurring economic exposure is unexpected as these organisations were found only to dispense very basic currency management advice (see section 6.9.3).

**Table 6.21. Statistical Relationships between Currency Exposures and Use of Training, Currency Forecasting and Performance Measurement**

Currency Exposure	Provision of Training	Use of Currency Forecasting	Use of Performance Measurement
Transaction Exposure	.147	.218**	.251*
Translation Exposure	.342*	.310*	.382*
Economic Exposure	.314*	.286*	.247*

\* Significant at 99%

\*\* Significant at 95%

There seems little doubt from the above results that incurring certain types of currency exposure significantly influences corporate policy on the use of training, currency forecasting and performance measurement.

In Tables 6.18 to 6.21, there is significant evidence of a relationship between forms of currency exposure and the internal corporate environment. Firms adopting a policy of risk assessment or with a treasury responsible for currency management have a far greater incurrence/recognition of exposure types. Forms of exposure were also shown to be strongly related to use of external organisations and sophisticated internal corporate management practices. These results are in contrast to those of Edelshain (1995) and this matter will be addressed in chapter 7.

#### *6.5.11. The Relationship Between Currency Methods Used and the Internal Corporate Environment*

In testing the third of the hypotheses listed in section 6.1, statistical analysis was used to view the associations between currency management methods and variables measuring the internal corporate environment. The proxy variables for measuring the internal corporate environment are the same as those defined in section 6.5.10 and the results are shown below in Tables 6.22 to 6.29.

**Table 6.22. Statistical Relationships between Internal Techniques and Currency Management Policy**

Internal Technique	Currency Management Policy/Centre						
	Risk Assessment	Cover All Exposures	Cover No Exposures	Other Policy	Cost Centre	Profit Centre	Other Centre
Asset & Liability Management	.218**	-.112	-.138	.103	.080	-.112	.145
Invoicing in Foreign Currency	.112	.140	-.082	.076	.092	.095	.051
Invoicing in Own Currency	.007	.068	.023	-.038	.069	-.105	.112
Leading & Lagging	.182**	-.073	-.090	-.035	-.007	-.073	.179**
Matching	.185**	.038	-.145	.145	.045	.086	.038
Netting	.122	-.030	-.028	.042	.235*	-.159	-.030
Price Variation	.039	-.098	.047	.013	-.043	.191**	-.001
Any Internal Technique	.190**	.115	-.092	.010	.223**	.011	.011

\* Significant at 99%

\*\* Significant at 95%

**Table 6.23. Statistical Relationships between External Techniques and Currency Management Policy**

External Technique	Currency Management Policy/Centre						
	Risk Assessment	Cover All Exposures	Cover No Exposures	Other Policy	Cost Centre	Profit Centre	Other Centre
Currency Accounts	.266*	.013	-.203**	.057	.180**	-.031	-.031
Currency Overdrafts	.115	.151	-.092	.041	.174**	-.038	-.085
Discounting	.166	-.131	-.096	.075	.094	.020	.020
Factoring	.093	-.073	-.090	.196**	-.096	.053	.179**
Forward Contracts	.406*	.130	-.424*	-.051	.159	-.087	.043
Government Exchange Risk Guarantees	.182**	-.073	-.090	-.035	-.007	-.073	.179**
Short-term Borrowing	.264*	-.035	-.151	-.097	.156	-.035	-.035
Currency Swaps	.151	.013	-.112	-.044	.211**	-.090	-.090
Currency Options	.237*	-.064	-.169	.067	.064	.008	.081
Any External Technique	.452*	.102	-.417*	.030	.213**	-.045	.004

\* Significant at 99%

\*\* Significant at 95%

Of all the associations between the currency management methods and currency management policy, around 40% were expected to be significant, but less than 20% actually were significant. It was particularly surprising to see the lack of significant negative relationships between companies that claimed not to be covering currency exposures and the currency management methods and the lack of significant positive relationships between companies claiming to cover all exposures and the methods. It was also surprising to see the limited number of relationships between a cost centre approach (with its emphasis on risk-minimisation) and methods such as asset and liability management, currency invoicing, matching and a range of financial instruments, as these were all considered to be methods of primarily reducing costs and risks.

**Table 6.24. Statistical Relationships between Internal Techniques and Departmental Responsibility for Currency Management**

Internal Technique	Department in Charge		
	Top Level Management in Charge	Treasury in Charge	Finance Department in Charge
Asset & Liability Management	-.049	.213**	-.064
Invoicing in Foreign Currency	.051	.085	.052
Invoicing in Own Currency	-.128	-.023	-.145
Leading & Lagging	-.118	.238*	-.071
Matching	-.037	.425*	-.076
Netting	-.059	.404*	-.076
Price Variation	.010	-.079	-.010
Any Internal Technique	-.006	.115	.076

\* Significant at 99%

\*\* Significant at 95%



Table 6.25. Statistical Relationships between External Techniques and Departmental Responsibility for Currency Management

External Technique	Department in Charge		
	Top Level Management in Charge	Treasury in Charge	Finance Department in Charge
Currency Accounts	.023	.361*	-.031
Currency Overdrafts	.100	.168	-.034
Discounting	.019	-.017	.032
Factoring	-.021	-.059	.107
Forward Contracts	.064	.315*	-.064
Govt. Exchange	-.021	-.059	.107
Risk Guarantees			
Short-term Borrowing	-.069	.294*	-.127
Currency Swaps	-.066	.294*	-.125
Currency Options	-.165	.402*	-.044
Any External Technique	-.176**	.200**	-.078

\* Significant at 99%

\*\* Significant at 95%

Associations were considered between the three main departments that have responsibility for currency management in Scotland and currency management methods, but **only the treasury department has significant relationships with a series of internal and external currency management techniques. This link between having a central structure and an active risk management policy was also demonstrated by Collier and Davis (1985) and Edelshain (1995).** In sharp contrast, the other two main departments were not found to be associated with any one particular currency management method. Only around 20% of all possible associations in these two tables proved to be statistically significant.

Factor analysis (section 6.2) had suggested significant relationships between having a finance department or top management in charge and use of invoicing techniques, but no such statistically significant relationships

were found.

**Table 6.26. Statistical Relationships between Internal Techniques and Use of Banks and Advisory Organisations**

Internal Technique	Use of Banks	Use of Advisory Organisations
Asset & Liability Management	.119	.125
Invoicing in Foreign Currency	.239*	.166
Invoicing in Own Currency	-.024	.057
Leading & Lagging	.078	.071
Matching	.176**	.007
Netting	.045	.167
Price Variation	.104	.079
Any Internal Technique	.268*	.293*

\* Significant at 99%

\*\* Significant at 95%

**Table 6.27. Statistical Relationships between External Techniques and Use of Banks and Advisory Organisations**

External Technique	Use of Banks	Use of Advisory Organisations
Currency Accounts	.235*	.093
Currency Overdrafts	.199**	.134
Discounting	.067	.181**
Factoring	-.043	.071
Forward Contracts	.253*	.125
Govt. Exchange Risk	.078	.161
Guarantees		
Short-term Borrowing	.106	.049
Currency Swaps	.096	-.022
Currency Options	.066	-.007
Any External Technique	.300*	.251*

\* Significant at 99%

\*\* Significant at 95%

As expected, use of the banks for currency management purposes was associated with a range of external techniques provided by the banks, although it was surprising to see no significant relationships with some financial instruments. Use of the banks was also strongly associated with a number of internal techniques, but use of the advisory organisations was only associated with one particular currency management method, although it was related to use of external and internal techniques as a whole. **These results indicate a reliance on banks for advice on as well as access to currency management products and little similar use of the advisory organisations.**

As a final test of this hypothesis, currency management methods employed were tested for associations with the provision of currency management training by companies, their use of exchange rate forecasting and their use of a currency management performance measurement system. These three variables give some measure as to the sophistication of the company's currency management policy and structure.

**Table 6.28. Statistical Relationships between Internal Techniques and Use of Training, Currency Forecasting and Performance Measurement**

Internal Technique	Provision of Training	Use of Currency Forecasting	Use of Performance Measurement
Asset & Liability Management	.271*	.193**	.314*
Invoicing in Foreign Currency	.103	.070	.185**
Invoicing in Own Currency	.024	.092	-.086
Leading & Lagging	.151	.126	.205**
Matching	.345*	.184**	.401*
Netting	.419*	.130	.309*
Price Variation	-.002	.025	.138
Any Internal Technique	.149	.205**	.201**

\* Significant at 99%

\*\* Significant at 95%

**Table 6.29. Statistical Relationships between External Techniques and Use of Training, Currency Forecasting and Performance Measurement**

External Technique	Provision of Training	Use of Currency Forecasting	Use of Performance Measurement
Currency Accounts	.341*	.232*	.352*
Currency	.304*	.121	.365*
Overdrafts			
Discounting	.201**	.058	.207**
Factoring	.035	.032	.205**
Forward Contracts	.357*	.297*	.417*
Govt. Exchange	.035	.126	.116
Risk Guarantees			
Short-term	.286*	.222**	.287*
Borrowing			
Currency Swaps	.187**	.156	.180**
Currency Options	.182**	.182**	.333*
Any External	.233**	.411*	.382*
Technique			

\* Significant at 99%

\*\* Significant at 95%

**Out of all possible relationships in the two tables above, 63% were significant, strongly suggesting that choice of currency management methods is related to these important corporate policy considerations.**

These results also provide evidence that certain methods are related to a sophisticated currency management approach, namely asset and liability management, matching, currency accounts, forward contracts, short-term borrowing and currency options, as they are positively related to all three measures of, what may be loosely called, a sophisticated currency management function. Performance measurement is strongly related to a host of external techniques, perhaps indicating the greater need to evaluate management performance when employing these techniques. The above results do appear to demonstrate that companies using external techniques have a more active and sophisticated currency management policy than companies using internal techniques. It was also interesting to note that certain basic methods, such as domestic currency invoicing, price variation

and government exchange risk guarantees, were not significantly related to any of the three variables.

**The above results in Tables 6.22 to 6.29 do seem to demonstrate that there is a relationship between the choice of currency management methods and the internal corporate environment.** Despite the surprising lack of relationships between overall currency management policy and the methods employed and between having top management or the finance department in charge of the currency management function and the methods employed, **there seems to be little doubt that a cautious policy of selective covering of exposures, having a treasury division responsible for currency management and using the banks leads to a wider use of currency management methods.** Certain key internal corporate currency management decisions were also found to be related to a range of currency management instruments and techniques. These results provide support for Edelshain (1995), who found a strong relationship between use of currency management methods and the internal corporate environment.

Further results obtained from statistical analysis related the use of internal techniques with the use of external techniques, clarifying the assumption that the use of both sets of techniques is complementary. No evidence was found to support the claims of the Royal Bank of Scotland Quarterly Survey of Exporters (1993) that companies make significantly greater use of invoicing in a foreign currency when they are exposed to the US dollar, the Deutsche mark or the French franc.

#### *6.6. Performance Evaluation*

In order to assess the impact of its management of its currency exposures, a firm requires to implement a system that can measure currency management performance. Performance measurement was an important currency management issue highlighted in the review of previous studies (section 4.9). If companies are not measuring their currency management performance, they cannot know if they are managing currency exposures optimally or even satisfactorily.

**The clear majority (63%) of companies in this survey that manage**



currency exposures also measure currency management performance and given that even large US MNCs have had recent criticism in this area (Quinn 1991), this must be seen as an encouraging result. This confirms the findings of ACT (1992b) and is a substantial improvement from a much earlier study by Abdel-Malik (1976), where only 10% of companies were found to be measuring performance in this area. **These results demonstrate the growth in importance of performance evaluation in the last fifteen to twenty years.** The reasons for measuring hedging performance are already well documented in section 3.3.6, therefore the personal interviews tried to ascertain why many companies, actively managing currency exposures, chose not to measure the success or failure of these management policies. Alarmingly, one Grampian company stated;

"If we've lost out on a deal, we don't want to find out."

However, other companies that do not engage in performance measurement are concerned about unnecessary currency losses and will take action if the losses are large enough by considering other currency management policies. The main reason given for not measuring performance among these companies is that they prefer a consistent hedging policy that has served them well, therefore performance measurement is regarded as superfluous. One company complained that it was not aware of how a performance measurement system could be implemented and chided the banks for not offering a service in this area. A finance director thought any performance measurement system would not be in his interests;

"I'm on a hiding to nothing with it as gains are quickly forgotten about, but losses aren't."

He and other like-minded finance directors are therefore unlikely to try to persuade their boards that a performance measurement system is required, even though it is an integral component of an effective currency management strategy.

Only one company in the interviews challenged the whole concept of performance measurement;

"If you look at it historically to judge whether you'd win or lose on currency movements, you'd be assuming that the past predicts the future in the currency markets. My experience is that the past seldom

repeats itself in foreign currency terms. Performance measurement in this context then is a waste of management time."

This view contradicts both empirical evidence (Bank of England 1989b) and expert opinion (for example, Cooper and Franks 1988, Koppel and Hotchin 1992 and Longden 1992) and is not commonly held among companies in general. Performance measurement was also rigorously defended in the personal interviews;

"Performance evaluation is important because we are in a competitive market and our competitors could easily get an advantage over us by managing their currency exposures better."

To gain a further insight into currency management performance measurement systems, companies were asked to state the frequency of their performance measurement;

**Table 6.30. Frequency of Performance Measurement.**

Time Period for Measuring Currency Management Performance	Percentage of Sample Engaging in Performance Measurement (42.7%)
On a Daily Basis	8.9%
On a Weekly Basis	12.5%
On a Monthly Basis	33.9%
On an Quarterly Basis	23.2%
On an Annual Basis	5.4%
Other Time Period	16.1%

Table 6.30 shows that in most companies that use it, **performance measurement is carried out at least once a month, a reasonably regular time interval on a par with measuring the main currency exposure types.** However, encouraging though these initial results are, they are insufficient as evidence that Scottish companies are evaluating their currency management performance properly. To ascertain this, closer inspection needs to be made of the methods that companies use to evaluate and monitor their currency management performance. In the questionnaire this was an open-ended question, allowing companies the opportunity to provide a full response. The results are given in Table 6.31;

Table 6.31. Methods Used in Performance Measurement.

Performance Measurement Method	Percentage of Sample Engaging in Performance Measurement (42.7%)
Viewed Against Alternative Policy	19.6%
Viewed Against Impact on Profit and Loss Account	19.6%
Viewed Against Budget Rate	10.7%
"Informally"	7.1%
Board Discussion	5.4%
Monitored Only	5.4%
Viewed Against Cost of Hedging	3.6%
Other Method	14.3%
Didn't Answer	19.6%

Largely, performance measurement in Scotland involves viewing the hedging policy against alternative strategies (such as not hedging or using a different hedging instrument), studying the impact of the hedging policy on the company's profit and loss account or viewing the success of the hedging policy against a pre-planned company target. **The use of such relative benchmarks by Scottish companies further emphasises their conservative, cost-conscious approach to currency management.** A study by Price Waterhouse (Knight and Flower 1993) also found relative benchmarks to be more popular for UK companies. The reasonably systematic approaches to performance measurement represent just over half of the total response to this question. **However, the selection of a performance measurement system remains arbitrary,** as also evidenced by the Price Waterhouse study, and, in at least 12.5% of companies, performance measurement is treated very subjectively, being undertaken on an informal basis by discussions within the finance/treasury departments or within the board of directors. Secondly, simply looking at the impact of a currency management policy on the profit and loss account, as undertaken by nearly 20% of companies measuring performance, does not tell the company what it could have achieved or inform it of the size of the risk taken to achieve its results, therefore this method is not by itself an accurate method for assessing currency management performance.

In a small minority of companies, currency management performance is only

monitored against, for example, spot or forecast exchange rates, with no attempt made to evaluate performance. Those companies classified under "other" methods were those that were vague in their explanation of their performance measurement system. Coupled with the high percentage of companies not providing an answer, **it must be concluded that many Scottish companies, although supporting the principle of measuring currency management performance, are not very clear about how to effectively implement a proper performance measurement system. These results are similar to those reported in Corporate Finance (1991).**

#### *6.7. Currency Management by Size and Type of Company*

This section will set out to ascertain the impact of company size, industrial sector, regional location and propensity to export and import in determining a company's currency management approach.

##### *6.7.1. Currency Management by Size of Company*

Company size was evaluated on the basis of turnover, total assets and number of employees. The necessary data was obtained from the FAME database and the Scottish Business Insider (1993a). Using this data, companies were divided into groups on the basis of three sizes: small, medium and large. It was a largely arbitrary process as to how companies were sub-divided into these categories for each of the standards. A small company was partially defined according to the criteria laid down by the Report of the Committee of Inquiry on Small Firms (1971), having less than 200 employees, but for the other categories there were no universally accepted definitions in the literature. An International Labour Organisation study in 1977 found over 50 different statistical definitions of "the small firm" in 75 countries (Hood 1984).

It was eventually decided to adopt the following criteria that was found to produce broadly consistent results. On the basis of turnover, a company was taken to be large if its turnover was in excess of £300M, medium-sized if it was between £30M-£300M and small if it was less than £30M. On the basis of total assets, a company was taken to be large if its total assets were over £100M, medium-sized if they were between £10M-£100M and small if they were less than £10M. On the basis of number of employees, a firm was

taken as large if its number of employees was in excess of 2,000 people, medium-sized if the number was between 200-2,000 and small if the number employed was less than 200. Using these standards and sizes, a figure can be generated to describe the sample;

**Figure 6.1. Size of Company**

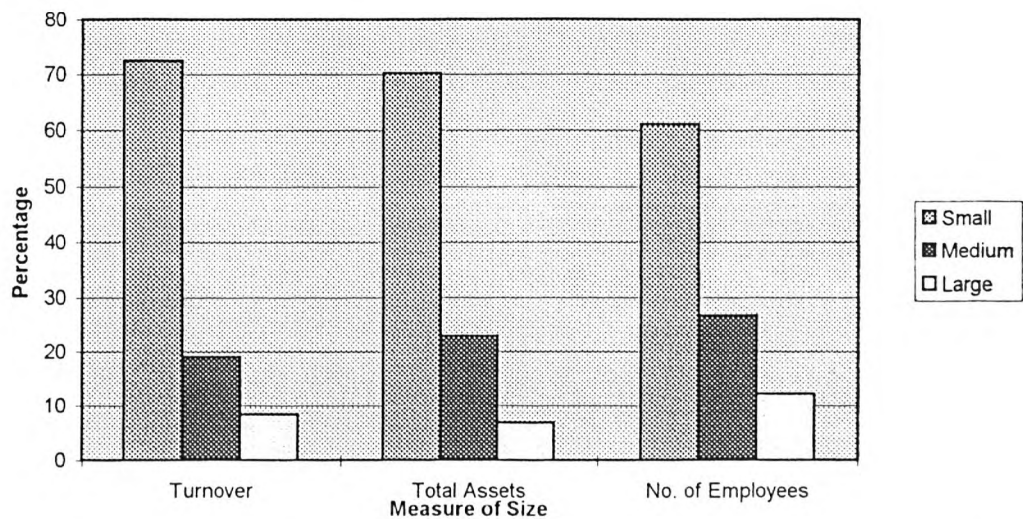


Figure 6.1 shows that the clear majority of firms in this sample are small, making the sample representative of UK as well as Scottish industry.

Since there was found to be much dispute in the literature regarding the influence of company size on the exposures a company faces and its currency management approach in handling these exposures (see section 4.11), this study set out to thoroughly test the nature of these relationships. By looking at the influence of three separate measures of size, this should improve the legitimacy of the results. The results below provide tests for hypotheses 4 to 6, outlined in section 6.1.

#### *6.7.1.1. The Relationship Between Currency Exposures Incurred and Company Size*

As a first step, the relationships between company size and currency exposures incurred was examined, the results provided in Tables 6.32 to 6.34.



**Table 6.32 Statistical Relationships between Company Size (in Terms of Turnover) and Currency Exposures.**

Currency Exposure	Measure of Company Size		
	Large Company	Medium-Sized Company	Small Company
Transaction Exposure	.057	.000	-.036
Translation Exposure	.361*	.180**	-.383*
Economic Exposure	.284*	-.104	-.085

\* Significant at 99%

\*\* Significant at 95%

**Table 6.33. Statistical Relationships between Company Size (in Terms of Total Assets) and Currency Exposures.**

Currency Exposure	Measure of Company Size		
	Large Company	Medium-Sized Company	Small Company
Transaction Exposure	.119	-.009	-.057
Translation Exposure	.312*	.218**	-.373*
Economic Exposure	.351*	.003	-.197**

\* Significant at 99%

\*\* Significant at 95%

**Table 6.34. Statistical Relationships between Company Size (in Terms of No. of Employees) and Currency Exposures.**

Currency Exposure	Measure of Company Size		
	Large Company	Medium-Sized Company	Small Company
Transaction Exposure	.036	.123	-.136
Translation Exposure	.368*	.072	-.313*
Economic Exposure	.318*	-.129	-.096

\* Significant at 99%

\*\* Significant at 95%

The above results are almost as anticipated. Transaction exposure is a trading exposure that companies will incur routinely if they trade abroad, regardless of their size, therefore it was not expected to be related to company size. However, translation exposure was expected to be related to company size because companies incurring this exposure have branches overseas and are therefore likely to be larger operations. What was slightly surprising was the lack of significant negative relationships between companies below large size and economic exposure. It was expected that, among the sample companies, that only large companies would have sufficient knowledge and expertise to recognise this exposure type, but the lack of significant negative relationships with the other definitions of company size may show a wider recognition of this exposure than previously thought, although the greater recognition of this exposure type by large companies was still confirmed.

**There seems little doubt that exposures incurred by the sample companies are significantly related to company size.**

*6.7.1.2. The Relationship Between Currency Management Methods Used and Company Size*

The methods companies employ to manage these exposures were also examined to see if they were in any way dependent on company size. The

relationships between both internal and external techniques and company size are provided in Tables 6.35 to 6.40.

**Table 6.35. Statistical Relationships between Company Size (in Terms of Turnover) and Internal Techniques**

Internal Technique	Measure of Size		
	Large Company	Medium-Sized Company	Small Company
Asset & Liability Management	.353*	.022	-.238*
Invoicing in Foreign Currency	.026	-.052	.029
Invoicing in Own Currency	-.135	-.016	.098
Leading & Lagging	.266*	.027	-.189**
Matching	.307*	.180**	-.349*
Netting	.375*	.044	-.271*
Price Variation	.050	-.115	.070
Any Internal Technique	-.037	.025	.001

\* Significant at 99%

\*\* Significant at 95%

**Table 6.36. Statistical Relationships between Company Size (in Terms of Total Assets) and Internal Techniques**

Internal Technique	Measure of Size		
	Large Company	Medium-Sized Company	Small Company
Asset & Liability Management	.284*	.139	-.285*
Invoicing in Foreign Currency	.140	-.087	.003
Invoicing in Own Currency	-.028	-.105	.112
Leading & Lagging	.303*	.009	-.176**
Matching	.306*	.112	-.272*
Netting	.344*	.006	-.196**
Price Variation	.070	-.049	.060
Any Internal Technique	-.001	-.016	.015

\* Significant at 99%

\*\* Significant at 95%

**Table 6.37. Statistical Relationships between Company Size (in Terms of No. of Employees) and Internal Techniques**

Internal Technique	Measure of Size		
	Large Company	Medium-Sized Company	Small Company
Asset & Liability Management	.360*	-.096	-.154
Invoicing in Foreign Currency	.019	.020	-.031
Invoicing in Own Currency	-.184**	.091	.041
Leading & Lagging	.340*	-.107	-.131
Matching	.240*	.131	-.280*
Netting	.411*	-.182**	-.111
Price Variation	.015	.010	-.019
Any Internal Technique	-.082	.031	.027

\* Significant at 99%

\*\* Significant at 95%

Again, these results are much as anticipated. **Basic techniques such as currency invoicing and price variation should be open to any firm regardless of size, but the other techniques considered, to use effectively, often require a degree of market power or the creation of a central treasury and therefore are only usually available to large companies.** Sterling invoicing is used by a range of companies and is not confined to certain industries or sizes of company, corresponding with the finding of the Barclays Quarterly Survey of Exporters (1991). The lack of relationships between currency management variables and being medium-sized was highlighted in factor analysis (section 6.2.) and is partly confirmed in this further analysis.

**Table 6.38. Statistical Relationships between Company Size (in Terms of Turnover) and External Techniques**

External Technique	Measure of Size		
	Large Company	Medium-Sized Company	Small Company
Currency Accounts	.274*	.021	-.189**
Currency Overdrafts	.218**	.142	-.260*
Discounting	.095	-.020	-.042
Factoring	.106	-.086	-.010
Forward Contracts	.177**	.071	-.173**
Govt. Exchange Risk	.106	-.086	.010
Guarantees			
Short-term Borrowing	.273*	.258*	-.397*
Currency Swaps	.329*	-.013	-.192**
Currency Options	.360*	-.031	-.196**
Any External Technique	.121	.074	-.140

\* Significant at 99%

\*\* Significant at 95%

**Table 6.39. Statistical Relationships between Company Size (in Terms of Total Assets) and External Techniques**

External Technique	Measure of Size		
	Large Company	Medium-Sized Company	Small Company
Currency Accounts	.235*	.046	-.172**
Currency Overdrafts	.148	.151	-.221*
Discounting	.123	-.110	.033
Factoring	.127	-.097	.019
Forward Contracts	.197**	.080	-.182**
Govt. Exchange Risk	-.048	.009	.019
Guarantees			
Short-term Borrowing	.252*	.198**	-.321*
Currency Swaps	.374*	-.033	-.177**
Currency Options	.213**	.123	-.231*
Any External Technique	.096	.083	-.129

\* Significant at 99%

\*\* Significant at 95%



**Table 6.40. Statistical Relationships between Company Size (in Terms of No. of Employees) and External Techniques**

External Technique	Measure of Size		
	Large Company	Medium-Sized Company	Small Company
Currency Accounts	.265*	-.036	-.146
Currency Overdrafts	.208**	-.026	-.117
Discounting	.043	-.132	.091
Factoring	.069	-.007	-.040
Forward Contracts	.120	.089	-.161
Govt. Exchange Risk	.069	-.107	.051
Guarantees			
Short-term Borrowing	.293*	.014	-.210**
Currency Swaps	.364*	-.132	-.125
Currency Options	.344*	-.027	-.206**
Any External Technique	.120	.014	-.093

\* Significant at 99%

\*\* Significant at 95%

Unlike the results for the internal techniques, where the popular, basic techniques were not found to be related to size, the results for external techniques are somewhat surprising, although the relationship between choice of external techniques and company size is clearly evident. **It is understandable that larger companies should make greater use of currency swaps and options as they are expensive and tend to be used by more experienced and sophisticated currency management operators.** The finding that use of currency options is significantly and positively related to company size contradicts Soenen (1989), who found that large companies were not heavier users of currency options, but it is in agreement with the results of Broder (1984), Touche Ross (1991) and Hakkarainen et al (1997). However, reasons cannot be so easily made for the significant positive relationships between a host of the relatively basic financial instruments and large size of company and the corresponding significant negative relationships with small size of company. **It may be that there is a general distrust of financial instruments, in general, among smaller companies or a lack of knowledge of how to use them.** Surveys

of small companies (the Barclays Quarterly Survey of Exporters 1991) and large companies (Edelshain 1995, Hakkarainen et al 1997) also found that larger companies in their samples were more likely to use forward contracts. Again medium-sized companies, under all three criteria, correlated significantly with very few techniques.

*6.7.1.3. The Relationship Between the Internal Corporate Environment and Company Size*

The final hypothesis to test in this section is whether the internal corporate environment is related to company size. The internal corporate environment is defined in section 6.5.3. Tables 6.41 to 6.43 examine the relationships between currency management policy and the three definitions of company size.

**Table 6.41. Statistical Relationships between Company Size (in Terms of Turnover) and Currency Management Policy.**

Policy	Measure of Size		
	Large Company	Medium-Sized Company	Small Company
Risk Assessment	.200**	-.164	.020
Cover Everything	-.047	.186**	-.135
Cover Nothing	-.154	.041	.060
Other Policy	.083	.005	-.056
Cost Centre	.016	-.038	.024
Profit Centre	-.125	-.090	.156
Other Centre	.188**	.076	-.183**

\* Significant at 99%

\*\* Significant at 95%

**Table 6.42. Statistical Relationships between Company Size (in Terms of Total Assets) and Currency Management Policy.**

Policy	Measure of Size		
	Large Company	Medium-Sized Company	Small Company
Risk Assessment	.097	-.060	.002
Cover Everything	.060	.085	-.111
Cover Nothing	-.138	-.143	.208**
Other Policy	.103	.081	-.132
Cost Centre	.020	-.021	.008
Profit Centre	-.112	-.173**	.221**
Other Centre	.231*	.033	-.159

\* Significant at 99%

\*\* Significant at 95%

**Table 6.43. Statistical Relationships between Company Size (in Terms of No. of Employees) and Currency Management Policy.**

Policy	Measure of Size		
	Large Company	Medium-Sized Company	Small Company
Risk Assessment	.102	-.038	-.034
Cover Everything	.045	.094	-.116
Cover Nothing	-.190**	.034	.097
Other Policy	.169	-.120	-.004
Cost Centre	-.014	-.109	.109
Profit Centre	-.154	.045	.062
Other Centre	.177**	.094	-.205**

\* Significant at 99%

\*\* Significant at 95%

The above results show a lack of significant relationships between company size and company policy. It appears that many large companies prefer to attach a non-standard label to their currency management centre and, coupled with the lack of relationships with any of the currency management policies, perhaps indicates that large companies change their policy and approach in this area quite frequently. There is some limited evidence from Table 6.42 that some small companies may keep open their

exposure positions in an effort to make financial gain. However, further statistical analysis showed no relationship, for small companies, between not covering exposures and being a profit centre. There is no support in these tables for the finding of Belk and Glaum (1990) that larger companies are significantly less risk-averse than smaller companies.

Tables 6.44 to 6.46 examine the relationships between company size and departmental responsibility for currency management.

**Table 6.44. Statistical Relationships between Company Size (in Terms of Turnover) and Departmental Responsibility for Currency Management**

Department in Charge	Measure of Size		
	Large Company	Medium-Sized Company	Small Company
Top Level Management in Charge	-.141	-.195**	.260*
Treasury in Charge	.452*	.099	-.368*
Finance Department in Charge	-.108	.185**	-.096

\* Significant at 99%

\*\* Significant at 95%

**Table 6.45. Statistical Relationships between Company Size (in Terms of Total Assets) and Departmental Responsibility for Currency Management**

Department in Charge	Measure of Size		
	Large Company	Medium-Sized Company	Small Company
Top Level Management in Charge	-.180**	-.164	.250*
Treasury in Charge	.515*	.062	-.342*
Finance Department in Charge	-.125	.164	-.082

\* Significant at 99%

\*\* Significant at 95%

**Table 6.46. Statistical Relationships between Company Size (in Terms of No. of Employees) and Departmental Responsibility for Currency Management**

Department in Charge	Measure of Size		
	Large Company	Medium-Sized Company	Small Company
Top Level Management in Charge	-.146	-.288*	.359*
Treasury in Charge	.422*	.030	-.311*
Finance Department in Charge	-.103	.390*	-.284*

\* Significant at 99%

\*\* Significant at 95%

The relationship between company size and departmental responsibility for currency management is very clear from these tables. Large companies tend to create a specialist treasury function to control their currency exposures. This relationship between size of company and existence of a treasury department was also demonstrated by Broder (1984), Touche Ross (1991) and Edelshain (1995). Medium-sized companies, generally, prefer to leave such exposures to their finance department, perhaps because they lack the resources or expertise to create a treasury. Senior management tends to take charge of currency management in small companies, perhaps because there is a more “hands-on” approach or because they do not have a separate finance department as such.

Tables 6.47 to 6.49 detail results examining the impact of company size on the use of external organisations.



**Table 6.47. Statistical Relationships between Company Size (in Terms of Turnover) and Use of Banks and Advisory Organisations**

Use of External Organisations	Measure of Size		
	Large Company	Medium-Sized Company	Small Company
Use of Banks	-.093	.000	.057
Use of Advisory Organisations	-.113	-.029	.096

\* Significant at 99%

\*\* Significant at 95%

**Table 6.48. Statistical Relationships between Company Size (in Terms of Total Assets) and Use of Banks and Advisory Organisations**

Use of External Organisations	Measure of Size		
	Large Company	Medium-Sized Company	Small Company
Use of Banks	-.046	-.108	.125
Use of Advisory Organisations	-.118	-.054	.115

\* Significant at 99%

\*\* Significant at 95%

**Table 6.49. Statistical Relationships between Company Size (in Terms of No. of Employees) and Use of Banks and Advisory Organisations**

Use of External Organisations	Measure of Size		
	Large Company	Medium-Sized Company	Small Company
Use of Banks	-.091	.029	.035
Use of Advisory Organisations	-.037	-.042	.064

\* Significant at 99%

\*\* Significant at 95%

There is no evidence at all of any significant association between size of company and use of the two main external organisations in

corporate currency management.

As a final test of this hypothesis, an assessment was made of the impact of company size on the provision of currency management training, the use of currency forecasting and the employment of a performance measurement system.

**Table 6.50. Statistical Relationships between Company Size (in Terms of Turnover) and Use of Training, Currency Forecasting & Performance Measurement**

Use of Sophisticated Currency Management Practices	Measure of Size		
	Large Company	Medium-Sized Company	Small Company
Provision of Training	.294*	.082	-.255*
Use of Currency Forecasting	.040	.057	-.076
Use of Performance Measurement	.295*	.052	-.228*

\* Significant at 99%

\*\* Significant at 95%

**Table 6.51. Statistical Relationships between Company Size (in Terms of Total Assets) and Use of Training, Currency Forecasting & Performance Measurement**

Use of Sophisticated Currency Management Practices	Measure of Size		
	Large Company	Medium-Sized Company	Small Company
Provision of Training	.351*	.035	-.226*
Use of Currency Forecasting	.065	.157	-.180**
Use of Performance Measurement	.253*	.153	-.281*

\* Significant at 99%

\*\* Significant at 95%

**Table 6.52. Statistical Relationships between Company Size (in Terms of No. of Employees) and Use of Training, Currency Forecasting & Performance Measurement**

Use of Sophisticated Currency Management Practices	Measure of Size		
	Large Company	Medium-Sized Company	Small Company
Provision of Training	.318*	-.097	-.125
Use of Currency Forecasting	.117	.028	-.104
Use of Performance Measurement	.290*	.001	-.196**

\* Significant at 99%

\*\* Significant at 95%

Two of the above variables, provision of training and use of performance measurement, are clearly related to company size, with large companies significantly more likely to use both and small companies significantly less likely. Currency forecasting, however, would appear to be unrelated to company size.

Examining Tables 6.41 to 6.52, there is a lack of consistent evidence of the impact of company size on the internal corporate environment. The size of the company does not appear to affect currency management policy, use of external organisations or use of currency forecasting, but it does appear to affect departmental responsibility for currency management, the provision of currency management training and the use of a currency management performance measurement system. **It could be concluded that company size has a limited impact on the internal corporate environment.**

The analysis throughout this section has clearly highlighted that large companies are likely to have overseas subsidiaries and, because of this, they have to operate an advanced, usually central, currency management function. Due to their size, they have more techniques and markets at their disposal than smaller companies and they appear to put the emphasis on

flexibility in choice of currency management instrument or technique. Their greater awareness in currency management is demonstrated by their greater recognition of economic exposure, provision of currency management training and measuring of currency management performance. **Thus, the initial results from factor analysis, highlighted in section 6.2, which related company size with an active and sophisticated currency management approach, are confirmed.**

In sharp contrast, the various definitions of a medium-sized firm had only a few related variables. From this small set of related variables, it can be concluded that medium-sized Scottish companies do not appear to be as distinguishable in terms of currency management practices as large or small companies. They did not appear to be significantly exposed and any exposures were predominantly with, at the time, stable currencies. As a result, medium-sized companies in this sample tend to simply incorporate currency management into their finance function and do not pursue an active currency management strategy. These results are also in keeping with the earlier factor analysis.

Small companies could be distinguished, but mainly, and not surprisingly, by opposite relationships of those found for large companies. The explanations as to why many techniques and markets are out of the reach of small companies were given earlier in this section and in chapter 3. The results demonstrate that even though currency risk is, generally, a concern for smaller companies, they do not have the time or the resources to effectively pursue a currency management strategy. The questionnaire was also conducted during a severe period in the recession, when many small companies were struggling to survive, and thus leaving even less time to engage in an activity that many of them believed to be peripheral.

**It must be concluded, from this study, that company size is a key determinant of the nature of corporate currency exposure incurred and the sophistication of a company's currency management strategy.** This supports the findings of Jilling (1978), Soenen (1989), Soenen and Aggarwal (1989), the Barclays Quarterly Survey of Exporters (1991), Batten et al (1993) and Nachtman and Sharma (1997), while disputing the findings of Abdel-Malik (1976), Koury and Chan (1988), Edelshain (1995) and Jesswein et al (1995). As mentioned earlier, in section 4.11, these conflicting results

could be caused by the varying measures of size used to classify sample companies and/or the different types of company used in the surveys. It was hoped to deal with the first of these problems in this study by evaluating the impact of size using three different measures, which produced broadly consistent results, but the second of these problems is not so easy to resolve as previous studies of a) MNCs, b) other large companies and c) smaller companies, have all contradicted each other on the impact of company size in currency management.

A further result from statistical analysis did not support the conclusions by Soenen (1989) and Nachtman and Sharma (1997) that there was a positive correlation between the size of exposure and company size. In fact, 44% of companies with over 2,000 employees had currency exposures amounting to less than 5% of turnover and over one-third of companies with less than 200 employees had currency exposures in excess of 25% of turnover.

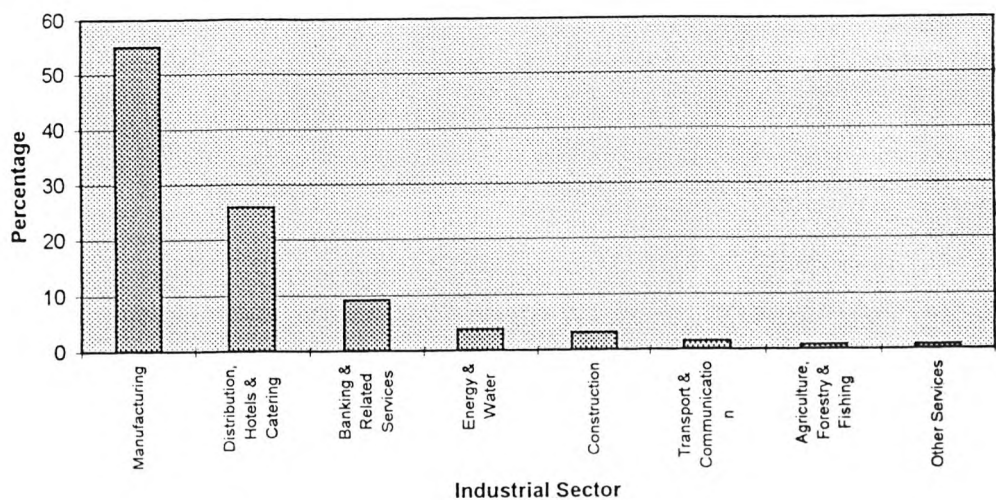
#### *6.7.2. Industrial Characteristics in Corporate Currency Management*

The sample can be analysed on an industrial sector basis and statistical analysis will try to establish if there are any notable industrial sector differences regarding corporate currency management approach in Scotland. If there are, further analysis will be required to account for such characteristics.

Figure 6.2 presents a breakdown of the respondents that fully replied by industrial sector;



Figure 6.2. Industrial Sector of Company



When compared with the share of total Scottish GDP by industry at constant factor cost (Scottish Economic Bulletin 1991), this sample would appear to be unrepresentative of Scottish industry in general, there being too high a share of manufacturing companies, which now only represent around one-quarter of Scottish industry, and too low a share for the services industry, which now comprises nearly 60% of Scottish industry. However, it is still manufactured goods that are predominantly traded internationally by Scottish companies and, therefore, it is these companies that are more likely to be exposed to currency risk, with which this research is concerned. When the sample is viewed against each industry's share of exports and imports through Scottish ports, the high proportional share for manufacturing industry in the sample is justified and the sample is representative.

**No significant relationships were found in crosstabulation analysis to distinguish the individual industries from Scottish industry as a whole in terms of currency management approach.** No evidence was found to support results from factor analysis (section 6.2) that suggested possible relationships between the construction sector and a non-conventional currency management approach or between the banking sector and use of bank-based financial instruments. Neither was there evidence to support the findings of Soenen (1989), the Barclays Quarterly Survey of Exporters (1991) and Jesswein et al (1995) that manufacturing and/or finance companies take currency management more seriously than companies in other industrial sectors. These results are far closer to those of Abdel-Malik (1976) and Batten et al (1993), who found no distinguishable currency

management practices on the basis of industrial classification, and Edelshain (1995), who found no significant associations between the nature of currency exposures and the types of products and services provided by companies.

### *6.7.3. The Characteristics of Exporters and Importers in Currency Management*

An examination was also made of the currency management policies of exporters and importers to see if there were any significant differences between them. In the sample, 40% of companies considered themselves to be exporters and 39% considered themselves to be importers.

The exporters in the sample tended to be exposed by 5-25% of turnover. The currency management technique with the strongest relationship with exporting was invoicing in a foreign currency; there was a relationship with the use of internal techniques in general, with over 90% of exporters using them. The final relationship ascertained for exporters was with measuring currency management performance, demonstrating that currency management is considered to be important by many exporters.

Importers, however, tended to have larger amounts of currency exposure (45% of them were exposed by more than 25% of turnover). **No significant relationship between importing and any currency management instrument or technique was found and this suggests that there is a lack of currency management methods geared specifically for importers.** Many of the techniques, detailed in chapter 3, are only applicable to exporters. This result is certainly not due to importers having little concern for currency management, as there are relationships between importing and viewing currency management as significant, having top management in charge of foreign exchange operations, forecasting exchange rates and measuring currency management performance. There was nothing to support the conclusion of Robertson (1991) that importers exert less effort than exporters in managing currency risk.

Surprisingly, there is a greater use of the advisory organisations among importers than exporters (69% compared to 64%). Advisory bodies are also regarded more highly by importers, with 27% giving the advisory organisations one of the top two rankings compared to only 21% of

exporters. These are not expected results as many of the advisory bodies were designed explicitly to encourage exporting activity. Importers also make greater use of the banks than exporters (96% compared to 85%). **Despite there being a wider range of services available from the banks for exporters, 15% of them do not use the banks for currency management purposes.** However, the above results must be viewed with some caution as the importers in this sample are generally more exposed than the exporters.

6.7.4. *Regional Characteristics in Corporate Currency Management*

The sample can be further broken down on a regional basis and an examination can be undertaken to find if there are any significant regional currency management characteristics in Scotland.

The regional composition of the sample delivering full replies was as follows;

**Figure 6.3. Region of Company**

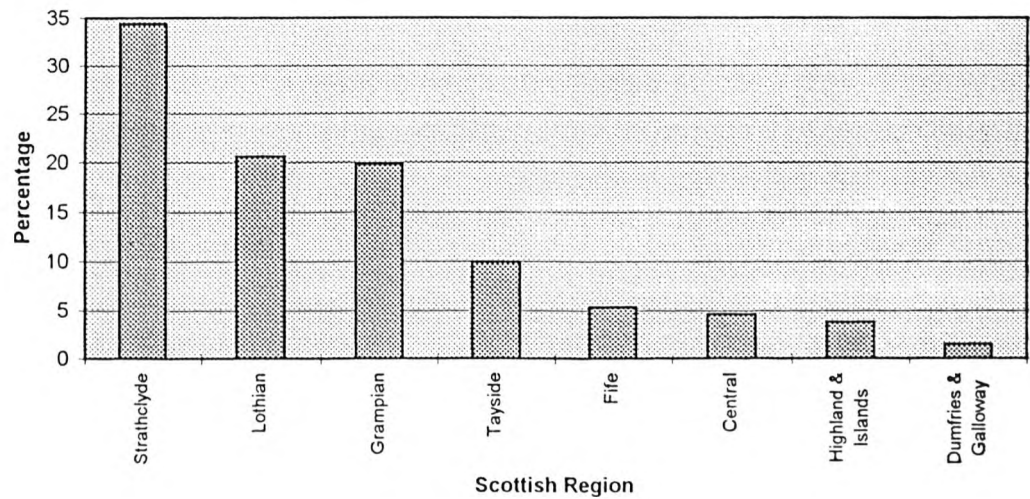


Figure 6.3 demonstrates this to be a reasonably representative sample when viewed against each region's share of Scottish GDP at factor cost (Scottish Economic Bulletin 1991). The only genuine differences from a fully representative sample were the percentage share for Grampian region around 7% higher than it should have been and Strathclyde region's share around 8% lower. The small Borders region was not represented among the respondents.

**No significant statistical relationships were identified between regional**

location and currency management practices. It must therefore be concluded that no individual Scottish region exhibits distinctive currency management policy characteristics.

Even though Scotland may be industrially and regionally diverse (as highlighted in chapter 2), there is no evidence that these factors make any significant difference to corporate currency management within Scotland.

6.8. Companies with Subsidiaries

A special group of companies within the sample were those with subsidiaries abroad. These companies have to make a number of very important currency management decisions that most other companies can ignore, such as deciding whether to manage translation exposure for their group, deciding whether to centralise currency operations and, if so, deciding if limits or regulations should be imposed on divisional operations. Due to these special problems, it was felt closer analysis of these companies was required.

Nearly one-third of the sample had subsidiaries abroad. It was immediately apparent that there was a high degree of centralisation in these companies;

**Table 6.53. Currency Management System in Large International Scottish Companies.**

Currency Management System	Percentage of Sample with Overseas Subsidiaries (31.3%)
Centralised	65.9%
Decentralised	19.5%
Combination of the Above Two	14.6%

The result in Table 6.53 is supportive of conclusions from the review of previous studies (section 4.5) that demonstrates that there is now general world-wide acceptance, among companies of all sizes, to centralise currency management operations when they expand overseas. Even among those companies with decentralised systems, the personal interviews suggest that some are planning to centralise operations to handle their growing overseas business. The main reason interviewed companies gave for having a centralised currency management system is



that they do not believe their subsidiaries have the expertise or the technology to control currency exposures. In one Grampian company, subsidiaries are even given the choice of dealing with currency management or handing it over to group headquarters and most choose the latter.

However, nearly one-fifth of international Scottish companies prefer a decentralised approach. One leading Scottish company said;

"There are certain rules to follow, but you can't tie local management in knots, that's when you lose control of them. Local management handle income and expenditure flows and therefore must handle currencies, but the rule is they must use forwards on significant exposures."

This compromise solution of allowing local management autonomy within certain group guidelines was highlighted in section 3.3.3. To see if this was common, companies with some form of decentralisation were asked if limits or regulations were imposed on their subsidiaries and **it is clear from their responses that they are largely allowed to manage currencies independently when the company is decentralised, as 64% said that no limits or regulations were imposed.** One group company said it relied on a "responsible attitude" from its subsidiaries.

Results from crosstabulation analysis showed that only 61% of companies with subsidiaries abroad felt they incurred translation exposure. This lack of recognition is particularly acute in companies with a centralised currency management system; only 48% said they incurred translation exposure and 56% do not bother to measure it. Translation exposure is recognised and treated far more significantly among companies with a decentralised structure: 86% say they incur it and 64% measure it. A possible reason for these results is that subsidiaries may be more concerned with the effect of translation losses on their performances, particularly if companies measure subsidiaries' performances by converting their receipts to the domestic currency of the group company.

There was a positive correlation between large size of company and having overseas assets. There was also a strong correlation between having overseas assets and having a treasury division in charge of the currency management function. Table 6.53 shows that nearly two-thirds of these companies had centralised structures, therefore it is no surprise to see a



strong relationship with the existence of treasury divisions. The currency management instruments and techniques related to having overseas assets were short-term borrowing, currency accounts, asset and liability management and matching; all are common methods of covering translation exposure, as section 6.5.9 demonstrates. Companies with subsidiaries prefer to use several banks when managing their exposures and their sophistication is shown by their significant associations with currency management training and performance measurement. Nearly half of companies with subsidiaries incur economic exposure. Easily the most popular method of forecasting for companies with subsidiaries is using market-based information.

All of these relationships, except the correlations with incurring economic exposure and measuring currency management performance, were also present for having a centralised structure, **that suggests the same link between a centralised structure and an active risk management policy highlighted by Mathur (1985a) and Collier and Davis (1985). Another of Collier and Davis' findings, that there is no connection between the size of risk and currency management structure, was also supported.** This finding is further corroborated by the work of Batten et al (1993). None of the exposure types were significantly related to centralising currency management operations, thus there was no support for Walsh's (1986) assertion that transaction exposure was more likely to be centralised than economic exposure because of transaction costs and measurement considerations.

There were a lack of related variables for companies with a decentralised structure. These companies also tended to be large and the only other significant association was with managing exotic currencies. If exotic currencies have to be managed, it may be better to leave their management to the local company, which will be more aware of local markets, instruments and regulations. However, **these results would seem to demonstrate that group companies with decentralised structures have a considerably less active currency management approach than those with a centralised structure.**

There was no support for an earlier possible finding from factor analysis (section 6.2) that MNCs whose currency management function is profit-

oriented have a relatively poor corporate performance.

*6.9. The Nature of the Relationships Between the Companies, the Banks and the Advisory Organisations in Corporate Currency Management*

*6.9.1. Company Opinion of the Role of the Banks and the Advisory Organisations in Corporate Currency Management*

Companies were asked to rate the performance of the banks and the advisory organisations in the area of corporate currency management. The results derived from this analysis will provide a useful synopsis of the requirements of the demand-side of corporate currency management that can be compared with the supply-side, reviewed in sections 6.9.2 and 6.9.3.

The results for the banks were as follows;

**Table 6.54. Evaluation of Banking Performance.**

Banking Performance Rating (1=Highly Satisfactory, 5=Not At All Satisfactory)	Percentage of Sample Using Banks (84.0%)
One	7.3%
Two	39.0%
Three	42.7%
Four	10.0%
Five	1.0%

As expected, Table 6.54 shows that there is a significant use of the banks by companies when they engage in currency management. Only 7.3% of companies awarded the banks the top ranking, suggesting that very few companies are completely satisfied with banking performance in this area, **but the results clearly indicate a general level of satisfaction**, with the vast majority of companies giving the banks one of the top three rankings. One company stated in a personal interview that it gave the banks a middling mark because;

"This is an average rating. There is some bad advice and complacency. The picture is mixed, the general advice isn't brilliant, but it has got us through."

Responses during personal interviews included considerable criticism by

companies towards the banks, particularly in terms of bank charges, which were deemed by many smaller companies to be excessive. Other criticisms mentioned in the interviews were that the banks did not offer competitive currency rates, they used too much jargon when trying to sell products, many did not have local international divisions and the banks were more reactive than proactive in this area. One company particularly criticised the Scottish banks for not being competitive enough in corporate currency management. Another company mentioned a banking fault highlighted by Glaum and Belk (1992);

"The banks have a tendency to be over-elaborate with 'new' instruments that are basically the same as the other instruments."

However, despite the criticisms, the majority of companies use a single house bank (Table 6.14). One company stated that it only used one bank for "the comfort factor." It only appears to be the larger companies that will replace a bank performing unsatisfactorily in this area.

The advisory organisations, usually government-run, offer advice to Scottish companies in a number of areas, including currency management. Examples of advisory organisations are Scottish Enterprise, Grampian Enterprise, Chambers of Commerce and the Department for Trade and Industry (DTI). The results for the advisory organisations, giving an indication of how companies view this advice, were as follows;

**Table 6.55. - Evaluation of Advisory Organisations' Performance.**

Advisory Organisations' Performance Rating (1=Highly Satisfactory, 5=Not At All Satisfactory)	Percentage of Sample Using Advisory Organisations (55.0%)
One	8.4%
Two	26.7%
Three	23.7%
Four	30.5%
Five	11.1%

Table 6.55 demonstrates that, relative to the banks, there is not a great deal of use of the advisory organisations in corporate currency management, 84% against 55%, and a general level of dissatisfaction

**was expressed by the companies that do use them**, with over 40% of companies using advisory organisations awarding them one of the two lowest ratings. Two typical company responses in the personal interviews, when asked why they did not use the advisory services, were;

"Our business is constantly changing and to survive in it you have to keep up with the times. Most of the advisory services seem to be behind the times."

and;

"We don't use any of the advisory organisations. They don't publicise any of the facilities they have and we wouldn't really trust them if they did. They are one step removed from the action."

These results are significantly poorer than those obtained for the banks. The standard of export consultancy services was particularly criticised by two companies in the interviews, one of which said;

"They seem to be people who don't want to work in business and if they don't work in it, how can they be experts in it?"

Chambers of Commerce were also generally seen as being of little practical use in currency management and the ECGD was singled out for criticism by three companies for charging excessive rates for credit insurance.

The low use of the advisory organisations could also be attributed to a number of other reasons, such as the all-round currency management service many banks now provide to their customers, the fact that many advisory organisations only have bases in the Scottish central belt and most advisory services existing to help exporters rather than importers. Interview responses indicate that companies with significant currency management experience are less likely to use the advisory organisations because they believe they already have significant knowledge and experience in this field of management. The seeking of advice tends to come from the company's own initiative.

The one advisory organisation to receive some praise in the personal interviews was the DTI, which was seen as proactive in recent years and a source of accurate reviews of foreign markets.

Further statistical analysis proved a strong relationship between use of the

banks and use of the advisory bodies, with all companies that use the advisory organisations also using the banks. This result is easily explained with reference to much of the advisory organisations' currency management literature, surveyed in more detail later in section 6.9.3, that advises companies to make use of the banks.

Among other findings, many of those companies providing the banks with a low rating had a decentralised currency management system; of those companies giving the banks a "four", 46% had a decentralised system. Perhaps these companies' subsidiaries are not obtaining favourable rates from the banks because they are not pooling currency volumes centrally. It was the larger companies that were the more satisfied with banking performance; 56% of companies with total assets in excess of £100M gave the banks one of the top two ratings. Over 70% of those companies using the advisory organisations are using a single bank for currency management purposes and 56% have a finance department in charge of the currency management function. **This suggests that companies use the advisory organisations to compensate for a limited relationship with the banks and a lack of in-house expertise.**

#### *6.9.2. The Role of the Banks in Corporate Currency Management*

The banks obviously play a pivotal role in the area of corporate currency management. Specifically, many companies lack expertise in this area and rely on the banks to provide the necessary advice, instruments and exchange rate forecasts that they require to manage their currency risk.

The incentive for the banks to participate in corporate currency management is the healthy profits gained from foreign exchange contracts. The margins involved may be small, but as the volumes accumulate, so do the profits. It has been estimated that around 10% of total banks' profits is from foreign exchange business (Robertson 1991).

Results found in the review of previous studies (section 4.10) and Table 6.14 suggest that most companies have house-banks. These are banks where a close relationship is nurtured and through which all the company's commercial business is normally conducted, including foreign exchange. The larger companies may use several banks and shop around for the best



rates and some very large corporations have treasury departments that can write their own currency management products. **However, the majority of companies appear willing to obtain a rate from a trusted operator that they use for other banking business and are reluctant to take business elsewhere, even when not fully satisfied.** In Scotland, the Scottish banks dominate the market, with the large English and foreign banks restricted to very small shares (Robertson 1991). There is undoubtedly a strong bank loyalty factor in Scotland, as discussed earlier in chapter 2.

The preceding analysis and the review of previous studies (section 4.10) suggests that most companies are content, if not highly satisfied, with the advice and instruments they receive from their banks on currency management. Interview responses suggest that companies do not place much trust in the banks' exchange rate forecasts, but they are still grateful to receive them to gain some idea of the direction of movements in the currency markets.

A critical assessment of the banks' corporate currency management activities in Scotland, through the use of bank documentation and interviews, will now be given. Anonymity was guaranteed, so no bank can be directly named.

Fourteen banks were requested by letter to send information on the foreign exchange advice and instruments that they make available to companies. At the time, these were all the main banks that had a base in Scotland. Twelve banks replied with the relevant documentation. Seven of these agreed to a personal interview that was designed to obtain more substantial details on their currency management products and general ethos. The other five were English or overseas banks with no significant treasury functions in Scotland.

**The most obvious conclusion from viewing the documentation is that the banks provide general information on currency management products and the associated strategies. However, they offered little specific or general advice, especially regarding internal currency management strategies.** This is perhaps understandable as the banks' primary motive in this field must be to sell products. One bank argued;

"We are an execution organisation mainly."

The glossier, more explanatory material came from the English banks, which only have a small presence in Scotland. They provided cogent and concise explanations of all of their major currency management instruments. There were a wide array of products provided, with a strong emphasis on the bank's own derivative products (usually forms of forwards, options or swaps), which, they argue, increase customer choice and instrument flexibility. In contrast, the majority of the Scottish banks had a very basic presentation, concentrating on explanations of the spot and forward markets and virtually no details of financial engineering products were given. **Several Scottish banks gave the impression that they were not actively trying to win foreign exchange business and one openly said so.**

This finding is supported from a leading English bank that claimed that there was plenty of competition from the Scottish banks on spot and forward rates, but little response from the Scottish banks to the modern instruments. In fact, most Scottish banks admitted that they have to contact their English headquarters or other English banks to provide financial engineering products for their customers. Even then, these products have not got the flexibility of those offered by other banks and the attachment of high minimum purchase prices puts them out of the reach of most small and medium-sized Scottish companies. When questioned on this, the Scottish banks claimed that there was little demand for products such as currency options among Scottish companies.

**None of the English banks have a substantial client base in Scotland, so they confess to "cherry-picking" companies that they believe have significant currency exposures. This tends to be the larger companies, again putting the more sophisticated financial instruments beyond the reach of SMEs.**

There appears to be no motivation among many of the Scottish banks to challenge the other banks in this field. They admit to allowing the other banks take the lead and following suit if they can. As explained above, the Scottish banks even go through the London offices of their English counterparts to provide a whole range of products to their customers. This problem is recognised;

"We are restricted at the moment from providing what we in Scotland feel is suitable for Scottish companies."

In Scotland this is particularly a problem for companies operating outside the central belt. It is likely that they will be firstly referred to Edinburgh or Glasgow for currency management instruments and perhaps then on to London. This presents difficulties for effective bank/customer relationships.

It must be appreciated that the English banks, because of their size, have more scope to offer specialist products, but there was little concern expressed by the majority of Scottish banks over their lack of competitiveness in this area and they had little desire to be proactive. As one leading Scottish bank declared;

"The onus is on the company to plug gaps in its information."

However, not all of the blame can be attached to the Scottish banks. They argue that as the Scottish companies are not shopping around for better currency management products, there is little need for the banks to develop their activities in this area;

"For the banks in Scotland, foreign exchange is a business that once you get, you're likely to keep."

This has brought criticism from the English banks, who claim that Scottish SMEs are not interested in developing their currency management strategies. **They argue that Scottish companies have too much of a parochial attitude, preferring to deal with their own Scottish house banks in all financial matters, regardless of what the competition is offering.** One bank said that Scottish treasurers and finance directors are less experienced about currency management because they largely come from a chartered accountancy background. This, it is suggested, contrasts with their English counterparts who often arrive from the banking sector and consequently are better versed in currency management operations.

All the banks seem to agree that there is more ignorance about this field in Scotland compared to the rest of the UK, but none offer a formal education and training programme. Their only formal initiatives appear to be visits to selected companies to explain how they can improve their currency management performance.

Apart from one overseas bank, there was little aid from the banks on the

problems associated with exotic currencies. The main advice offered by the other banks was to invoice in a strong currency or to seek bartering agreements. Again, the Scottish banks were looking for a lead from the English banks in this area.

However, there is some evidence that two of the leading Scottish banks are now making more of an effort to win corporate currency management business. One has created a separate treasury function and another is beginning to market its foreign exchange business more aggressively, designing new instruments and techniques and attempting to educate companies by arranging conferences and training events. Several English banks also now seem to be more active in winning Scottish business by moving many of their activities out of London to regional offices.

#### *6.9.3. The Role of the Advisory Organisations in Corporate Currency Management*

The advisory organisations, such as Scottish Enterprise, the DTI and trade associations, also have a responsibility to inform companies of currency risk and of the methods to manage it when extolling Scottish companies to have an international perspective. The advice made available will now be examined.

Research by Curran and Blackburn (1992) and Nayak and Greenfield (1992) suggests a low general use of the advisory organisations by small firms, particularly by established small firms. The review of previous studies (section 4.10) also found a low use of the advisory organisations for currency management purposes among large companies and experienced exporters. The advice made available was not of a high quality and there was found to be little expertise in these organisations beyond the basics of currency management.

To test these findings, eight advisory organisations were contacted with a written request to send the information they provide to companies that enquire about currency management. Seven of the organisations responded. The anonymity rules adhered to for the banks again apply.

**Only a minority of the responding advisory organisations had a view to express about currency management.** The others suggested contacting

the banks or another advisory body. However, they all certainly had much to say in encouraging Scottish companies to develop internationally. A typical statement read;

"If Scottish companies are to increase their value-added earnings and protect their domestic markets, they must adopt a truly international perspective."

Between them, the few organisations that did respond with some details make available plenty of information on how to establish overseas contacts and on how to market products on the international market. They also occasionally provide financial assistance to help Scottish exporters break into new markets and advise on how to cope with credit risk (they recommend credit insurance and factoring). **However, there is no explicit, systematic help on currency management and little on how to cope with currency exposure. These findings are thus supportive of the other research work outlined above.**

#### *6.10. Further Results from Factor Analysis*

The first six hypotheses listed in section 6.1, and tested by crosstabulation analysis in sections 6.5 and 6.7.1, were further tested using factor analysis and multiple linear regression. Factor analysis was used to find principal components underlying the groups of variables considered in the hypotheses and multiple linear regression was used to test for relationships between these components. These two methods, and the reasons for employing them, are described in section 5.7.

The internal currency management techniques produced three principal components. The first component is based on the use of internal techniques that are usually adopted when a central treasury has been created (see Table 6.24) and is labelled the treasury-based internal techniques component. The second component is based on the use of techniques that are usually considered as being part of a flexible currency management strategy and is labelled the flexible internal techniques component. The final component is only correlated with use of the two invoicing techniques and is simply labelled the invoicing techniques component. These three components explained 66% of the variance between the internal techniques variables. They are reproduced in Table 6.56;



**Table 6.56. Rotated Component Matrix Produced by Factor Analysis - Internal Techniques.**

Internal Technique	Component		
	Treasury-based Internal Techniques Component	Flexible Internal Techniques Component	Invoicing Techniques Component
Asset and Liability Management	.480	.564	-.050
Invoicing in a Foreign Currency	.242	.002	.781
Invoicing in Own Currency	-.180	.020	.834
Leading & Lagging	.244	.819	.148
Matching	.783	.107	.100
Netting	.783	.040	-.030
Price Variation	-.272	.750	-.090

The external currency management methods also produced three principal components. The first component is based largely on some of the more basic financial instruments. It is also moderately correlated with the use of discounting and currency options, but these correlations are much weaker than those of the other instruments. This first component is therefore labelled the basic financial instruments component. The second component is based on using the services of a number of special outside services and is labelled the specialist external services component. The third component, although similar to the first component, appears to be based on the use of more advanced financial instruments and is labelled the advanced financial instruments component. These three components accounted for 54% of the variance between the variables considered. The components are reproduced in Table 6.57;

**Table 6.57. Rotated Component Matrix Produced by Factor Analysis - External Techniques.**

External Technique	Component		
	Basic Financial Instruments Component	Specialist External Services Component	Advanced Financial Instruments Component
Currency Accounts	<b>.848</b>	-.090	.126
Currency Overdrafts	<b>.572</b>	.149	<b>.386</b>
Discounting	<b>.301</b>	<b>.662</b>	-.090
Factoring	-.060	<b>.705</b>	.007
Forward Contracts	<b>.735</b>	.070	-.030
Government Exchange Risk Guarantees	-.030	<b>.696</b>	.115
Short-term Borrowing	.252	.221	<b>.687</b>
Currency Swaps	-.060	-.188	<b>.740</b>
Currency Options	<b>.433</b>	.090	<b>.445</b>

The currency exposure types and sources produced four factors. The first component is particularly based on translation exposure and its main source, but also, more moderately, on economic exposure. This component is therefore named the exposures associated with international companies component. The second component is based on exposure sources that may materialise in the future and is labelled the contingent exposure sources component. The third component is strongly positively correlated with “other” exposures and “other” exposure sources, but negatively moderately correlated with some of the more basic exposure types. It is labelled the non-standard exposures component. The fourth component is only strongly correlated with transaction exposure and a firm contract exposure source. It is labelled the basic exposures component. These four components explained 64% of the variance among the variables concerning exposure types and sources. The components are presented in Table 6.58;

**Table 6.58. Rotated Component Matrix Produced by Factor Analysis - Exposure Types and Sources.**

Exposure Type or Source	Component			
	Exposures of International Companies Component	Contingent Exposures Component	Non-standard Exposure Sources Component	Basic Exposures Component
Transaction Exposure	.158	.066	.065	.868
Translation Exposure	.887	.060	.052	.133
Economic Exposure	.496	.265	-.343	-.059
Other Exposure	.114	-.002	.752	-.158
Firm Contract Exposure Source	.008	.098	-.366	.680
Potential Contract Exposure Source	.017	.758	-.052	.276
Tendering for Contract Exposure Source	.050	.804	.018	.128
Foreign Currency Assets & Liabilities Exposure Source	.874	.058	.055	.074
Overseas Competition Exposure Source	.172	.580	-.032	-.185
Other Exposure Source	-.101	-.015	.786	-.009

All of the variables that were used as indicators of the internal corporate

environment were also subjected to a factor analysis. These variables produced a total of five components. The first, with its strong correlations with having a treasury responsible for currency management, providing currency management training, measuring currency management performance and following a policy of risk assessment, clearly underlies an advanced currency management strategy and is labelled the sophisticated currency management approach component. The second component is most strongly correlated with use of both the banks and the advisory organisations and is labelled the use of external organisations component. The third component is based on the preference for attaching other than standard labels to describe the currency management centre and currency management policy and is therefore labelled the non-standard policy and centre component. The fourth component is strongly positively related to having top level management in charge of the currency management function and strongly negatively related with having a finance department in charge. It is called the top level management versus finance department responsibility component. The final component, with its strong positive correlation with a policy of covering all exposures and its negative correlations with a policy of risk assessment and a profit centre approach, is taken to represent a highly risk averse currency management strategy. These five components explained 63% of the variance between all the various indicators of the internal corporate environment and they are displayed in Table 6.59;

Table 6.59. Rotated Component Matrix Produced by Factor Analysis - Internal Corporate Environment Indicators.

Component					
Internal Corporate Environment Indicator	Sophisticated Currency Management Approach Component	Use of External Organisations Component	Non-standard Policy and Centre Component	Top Management versus Finance Department Component	Highly Risk Averse Policy
Top Level Management Responsible for Currency Management	-.060	.190	.002	.848	.119
Treasury Responsible for Currency Management	.660	-.155	-.100	.068	-.130
Finance Department Responsible for Currency Management	-.207	.310	.089	-.850	.059
Provision of Currency Management Training	.663	.039	.210	-.033	.154
Forecasts Exchange Rates	.460	.463	-.030	.121	.085
Measures Currency Management Performance	.578	.419	.211	.073	-.004
Policy of Risk Assessment	.592	.311	-.320	-.151	-.478
Policy of Covering All Exposures	-.085	.164	.076	.160	.719



Component

Internal Corporate Environment Indicator	Sophisticated Currency Management Approach Component	Use of External Organisations Component	Non-standard Policy and Centre Component	Top Management versus Finance Department Component	Highly Risk Averse Policy
Policy of Covering No Exposures	-.614	-.064	-.038	-.006	-.039
Other Type of Currency Management Policy	.131	.014	.715	.124	.102
Cost Centre	.257	.226	-.698	-.017	.391
Profit Centre	-.293	.261	.209	.323	-.616
Other Type of Currency Management Centre	.145	.036	.744	-.244	.059
Using the Advisory Organisations	.016	.774	-.064	-.147	-.039
Using the Banks	.052	.822	-.088	.074	.051

Finally, the various measures of company size produced two components each. The first clearly positively relates to medium-sized companies and negatively to small companies, and the second positively relates to large companies and negatively to small companies. These two components accounted for over 78% of the total variance between the variables considered. They are displayed in Table 6.60;

**Table 6.60. Rotated Component Matrix Produced by Factor Analysis - Measures of Company Size.**

Measure of Size	Component	
	Medium-sized Companies versus Small Companies Component	Large-sized Companies versus Small Companies Component
Large on Basis of Turnover	.000	.953
Large on Basis of Total Assets	-.018	.872
Large on Basis of No. of Employees	.157	.899
Medium-sized on Basis of Turnover	.845	-.086
Medium-sized on Basis of Total Assets	.849	.031
Medium-sized on Basis of No. of Employees	.760	-.262
Small on Basis of Turnover	-.743	-.516
Small on Basis of Total Assets	-.770	-.511
Small on Basis of No. of Employees	-.795	-.366

The hypotheses were tested in the order that they appear in section 6.1, therefore the first set of relationships to consider was between the use of currency management techniques and the types of currency exposure incurred, with the results from crosstabulation analysis reported in section 6.5.9. This hypothesis was further tested by examining relationships between the components derived from the currency exposure types and sources (Table 6.58) and the components derived from the currency management methods (Tables 6.56 and 6.57). The component measuring exposures associated with international companies was

significantly related to the use of treasury-based internal techniques, advanced financial external techniques and basic financial techniques. The incurrence of contingent exposures was significantly related to the use of specialist external services. There were no significant relationships between the component concerned with non-standard exposure sources (those firms that said they had “other” exposure types and sources), but incurring basic exposures (transaction and firm contract exposures) was related to the use of basic financial techniques and invoicing techniques. **These results are also in accordance with many of the findings from crosstabulation analysis (contained in section 6.5.9).** The basic exposures are managed predominantly through the use of the basic external instruments, such as forward contracts and currency accounts, and the basic internal techniques, such as currency invoicing. The management of translation and economic exposures (associated more with international companies) is more sophisticated, with a mixture of operational and financial methods used, although it was surprising to see no significant relationship between the component derived from these exposures and the component based on flexible internal techniques.

**Hypothesis 2 related the currency exposures with the internal corporate environment. Results from crosstabulation analysis were reported in section 6.5.10.** The hypothesis was further tested by examining relationships between the components derived from the currency exposures (Table 6.58) and the components derived from measures of the internal corporate environment (Table 6.59). Multiple regression analysis related the exposures associated with international companies with having a sophisticated currency management approach. The component measuring contingent exposures was also related to a sophisticated currency management approach and, in addition, to a non-standard currency management policy and centre and the use of external organisations. These contingent exposure sources are thus clearly important ones for companies to manage and outside advice would appear to be commonly sought in managing them. The relationship with having a non-standard policy and centre is slightly puzzling, but may refer to the uncertainty companies feel in coping with these exposure sources. The non-standard exposure sources factor was not related to any of the internal corporate environment factors. The basic exposures factor was related, as expected, to the use of external

organisations and, perhaps, more unexpectedly, with a sophisticated currency management approach. However, the latter relationship was somewhat weak and certainly not as strong as the relationship between the exposures of international companies component and a sophisticated currency management approach. **These results are fairly consistent with the results obtained from crosstabulation analysis in section 6.5.10.** They clearly demonstrate the greater consideration given to currency management by companies with an international dimension. Companies with only basic exposures would not appear to have to adjust their internal corporate environment as significantly to cope with such exposures. However, having contingent exposure sources would appear to lead to a more considered currency management strategy.

**Hypothesis 3 related currency management methods used with the internal corporate environment and was tested by crosstabulation analysis in section 6.5.11.** Multiple linear regression analysis further tested this relationship by examining relationships between components produced by the currency management methods variables (Tables 6.56 and 6.57) and components produced by the internal corporate environment variables (Table 6.59). Multiple linear regression analysis significantly related the use of treasury-based internal techniques with a sophisticated currency management approach, unsurprising since the creation of a treasury provides the company with a greater degree of expertise in this area. The use of flexible internal techniques was not related to any of the internal corporate environment factors and the use of invoicing techniques was only significantly related to one such factor; the use of external organisations. This latter finding was a little surprising, but perhaps indicates that companies are taking outside advice before employing such internal techniques. The use of basic financial external techniques was significantly related to two internal corporate environment measures: a sophisticated currency management approach and the use of external organisations. The use of specialist external services was not related to any of the internal corporate environment components, even, unexpectedly, the use of external organisations. The use of advanced financial techniques was only related, as expected, to a sophisticated currency management approach.

**These results are a confirmation of the conclusions reached when initially testing this hypothesis in section 6.5.11. Having a**

sophisticated, usually treasury-centred, currency management approach and using external organisations leads to a greater use of a range of currency management methods. Currency management policy has a very limited impact on the choice of methods.

Finally, hypotheses 4, 5 and 6 dealt with the relationships between size of company and currency exposures incurred, currency methods used and the internal corporate environment. These hypotheses were tested by crosstabulation analysis in section 6.7.1.

In testing hypothesis 4, it was found that the components that are based on medium-sized companies and large companies (Table 6.60) were both related to the exposures associated with international companies component, with the relationship with large companies being by the far the more significant. **This once again demonstrates the three-way association between company size, having an international dimension and having a greater recognition/incurrence of exposure types and is support for the earlier findings in section 6.7.1.1.**

In testing hypothesis 5, there was found to be a total lack of relationships between the component based on medium-size of company versus small size of company and the components produced by the currency management methods, but the component based on large company size versus small company size was significantly related to treasury-based internal techniques and advanced financial techniques, but not basic financial instruments, as Tables 6.38 to 6.40 had indicated. **This is also corroboration for the findings from much of crosstabulation analysis in section 6.7.1.2, which showed medium-sized companies not be distinctive on the basis of currency management methods used and large companies, probably because of their resources and market power, much more likely to use sophisticated currency management instruments and techniques.**

Tests for hypothesis 6, on the relationship between company size and the internal corporate environment, did find a significant negative relationship between the component based on medium-size of company and the top management versus finance department responsibility component. This indicates a tendency among such firms to incorporate currency management



into their finance function and rarely have top management in charge, further supporting the results contained in Tables 6.44 to 6.46. The component based on large company size was positively related to a sophisticated currency management approach and negatively related to use of external organisations. The second of these findings is surprising as results from crosstabulation analysis contained in Tables 6.47 to 6.49 suggested a negative relationship between use of external organisations and large company size but it was not significant. However, **much of these results are in keeping with earlier findings, showing that there is some relationship between company size and currency management policy, but it is weak.** However, large companies are much more likely to have treasury divisions and, as previous results have shown, this makes a major difference to the sophistication of these companies' currency management approach. The lack of any relationships between company size and use of external organisations, however, was not confirmed.

This further testing of the six initial hypotheses has found substantial evidence to support hypotheses 1, 2, 3, 4 and 5. There is more limited evidence to support hypothesis 6, but none of the hypotheses can be rejected outright.

#### *6.11. The Relationship Between Company Performance and Currency Management*

**The final hypothesis to test was the extent to which currency management performance was related to overall corporate performance.** Logistic regression and crosstabulation analysis were used to study relationships between a host of currency management variables and two key indicators of company performance: net profit margin and return on capital. Net profit margin is defined as the percentage of each sales Sterling remaining after all expenses, including taxes, have been deducted. Return on capital is defined as the amount capital earns for the firm minus its depreciation and taxes.

On the basis of profit margin, companies were labelled as having a high profit margin (over 5%), a lesser positive profit margin (0%-5%) or a negative profit margin. On the basis of return on capital, companies were labelled as

generating a high return on capital (over 20%), a lesser positive return on capital (0%-20%) or a negative return on capital. As with labelling company size in section 6.7.1, this process was rather arbitrary, but cut-off points had to be established somewhere to enable straightforward and comprehensible statistical analysis. The necessary data was extracted from FAME and the Scottish Business Insider (1993a).

The breakdown figures for companies on the basis of company performance are given in Table 6.61;

**Table 6.61. Company Performance.**

Company Performance Measure	Percentage of Sample
High Profit Margin (over 5%)	37.4%
High Return on Capital (over 20%)	27.5%
Lesser Positive Profit Margin (0-5%)	37.4%
Lesser Positive Return on Capital (0-20%)	45.8%
Negative Profit Margin	25.2%
Negative Return on Capital	26.7%

The percentage figures for the "negative" company performers are broadly similar on both standards, at around one-quarter of the total sample. There are undoubtedly more of the "high" company performers on the basis of profit margin than on return on capital, but substantial percentages for all the labels involved will avoid small-sample bias in statistical analysis. Each indicator of performance was significantly related to its equivalent indicator in both standards, for instance a high profit margin was related to a high return on capital (Spearman correlation value 0.51363), a lesser positive profit margin was related to a lesser positive return on capital (Spearman correlation value 0.55593) and a negative profit margin was related to a negative return on capital (Spearman correlation value 0.96105). These results demonstrate that the two standards for measuring performance, profit margin and return on capital, are consistent with each other.

Logistic regression was used to assign currency management characteristics and practices to companies on the basis of their overall performance. Each of the six indicators of performance given in Table 6.61 was taken in turn as the dependent variable. An explanation of this technique and the rationale for using it are both provided in chapter 5.

The first 90 cases in the dataset were used to build the model, with the final 41 cases used to test it. **A logistic regression model that satisfactorily classified the observed data was obtained for the dependent variable of high profit margin, but no such models were obtained for any of the other dependent variables;** the common problems being too low a group classification rate, too many or too few predictor variables (making the results impossible to interpret) or the results not being corroborated by crosstabulation analysis.

The rest of this analysis will therefore be devoted to distinguishing the companies with profit margins in excess of 5% on the basis of their currency management practices. **Logistic regression attached four variables to the group variable of high profit margin. They were: being a small company in terms of total assets, being in the manufacturing industry, using several banks for currency management purposes and using the eurocurrency market. The first of these relationships was negative and the last three positive.** The model is replicated below:

90 Selected Cases

Dependent Variable: High Profit Margin, Greater than 5%.

Initial Log Likelihood Function

-2 Log Likelihood            111.59762

Variables Entered

SASSETS        Small company in terms of total assets  
MANFAC        Company in the manufacturing industry  
SEVBANK       Use of several transaction banks as a point of access to the foreign  
                         exchange market  
EUROFX        Use of the eurocurrency market

-2 Log Likelihood            86.720

Goodness of Fit              98.877

	Chi-Square	df	Significance
Model	24.877	4	.0001
Block	24.877	4	.0001
Step	24.877	4	.0001

Classification Table

41 Unselected Cases

Observed		Predicted		% Correct
		Yes	No	
Yes	12		9	57.14%
No	5		15	75.00%
		Overall		65.85%

Variables in the Equation

Variable	B	S.E.	Wald	df	Sig	R	Exp(B)
SASSETS	-1.5075	.6141	6.0267	1	.0141	-.1900	.2215
MANUFAC	1.8138	.6457	7.8905	1	.0050	.2297	6.1334
SEVBANK	1.3875	.7196	3.7181	1	.0538	.1241	4.0047
EUROFX	7.0002	25.9296	.0729	1	.7872	.0000	1096.8108
Constant	-16.2019	51.8931	.0975	1	.7549		

This result indicates that there are certain variables a high level of corporate performance has in common with currency management. Operating in the manufacturing sector, using the eurocurrency market and using several banks in currency management are consistent with, and may even enable, a high level of corporate performance, but being small in terms of total assets seems to be detrimental to corporate performance. These results can be readily interpreted. Firstly, all sample companies using the eurocurrency market, have a profit margin of over 5%, demonstrating the profitability of this market for its participants due to the absence of government regulations. Secondly, coupled with the results contained in section 6.9, it is not just effective currency management practices that seem to be related to a high use of the banks, but sound corporate performance as well. Thirdly, there is some evidence that size of company does affect performance; from this model it could be the case that this is a factor because it restricts small companies' use of highly profitable markets and from shopping around a number of banks for the most favourable quotes. Finally, the association with companies in the manufacturing industry is a little surprising, but it is clear from crosstabulation analysis that many of the manufacturing companies in the sample are highly profitable.

As the significance levels for the variables in the equation show, all except one of the variables have coefficients significantly different than zero. The exception is use of the eurocurrency market, but this is probably caused by too large a regression coefficient producing too low a Wald statistic. It is obvious from the model that the coefficient for use of the eurocurrency market is significantly different from zero and when this variable was removed from the model, it weakened the model in terms of the change in the log likelihood. The R statistic in the model provides the partial correlation between the dependent and each of the independent variables in the equation. A positive R value indicates that as the variable increases in value, so does the likelihood of a high profit margin, while a negative R value indicates the reverse to be true. It can be readily seen that each of the variables make a fairly strong contribution to the model, except use of the eurocurrency market, but its value is again caused by too high a regression coefficient.

Crosstabulation analysis confirmed that each of the four variables examined



above was significantly related to having a profit margin of over 5%.

Although this one significant model was found relating corporate performance to certain currency management variables, there was little real corroborating evidence from the other models considered and even the significant model only produced limited information. It must be concluded from this evidence that any relationship between corporate performance and currency management performance is a weak one. There are undoubtedly more significant factors that account for corporate performance.

6.12. Respondents that Believed the Questionnaire was NOT Relevant

Of the total sample of 400 companies, 24% believed the questionnaire was not relevant to their company operations. This was despite attempts to ensure that all companies contacted were exposed to currency movements. It was therefore decided to analyse these companies to ascertain their reasoning for believing that they were not exposed to currency risk. An analysis was also made of these companies' size, performance, industrial sector and regional origins to try to find if firms that replied in this fashion could be characterised in anyway.

The reasons these respondents gave for believing the questionnaire was not relevant were as follows;

**Table 6.62. Reasons for Considering the Questionnaire to be Irrelevant.**

Reason for Not Completing the Questionnaire	Percentage of Sample
No Response Given/Response Not Clear	28.1%
UK-based Only	27.1%
Always Invoice in Sterling	17.7%
Minimal Foreign Exchange Exposure	12.5%
Refused to Take Part	9.4%
Do Not Export	5.2%
Other Reason	2.1%

Table 6.62 demonstrates that over one-quarter of companies did not give a reason or were not clear about why they were not exposed to currency risk. A high percentage of this sample then cannot be specific about why currency risk is irrelevant to their company.

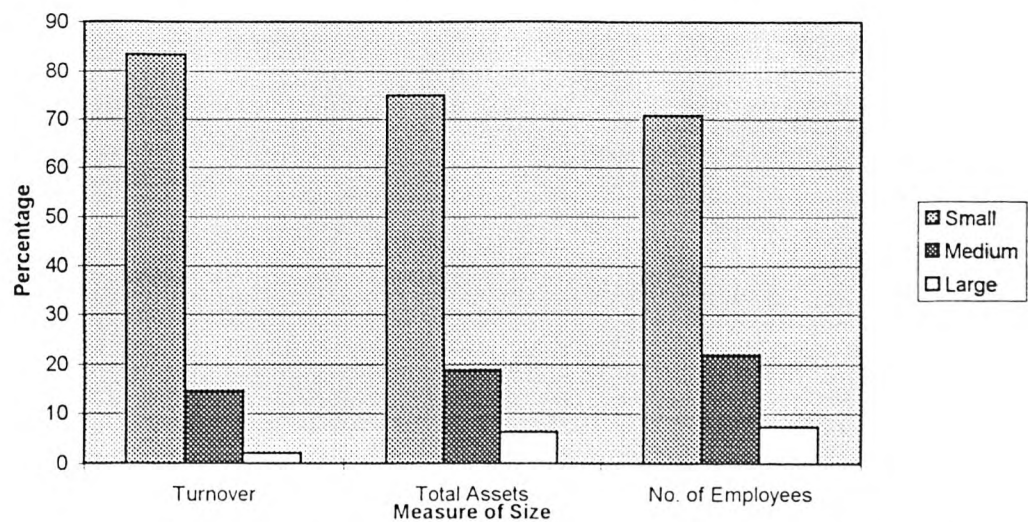
The clear main reason given by companies for finding currency risk irrelevant was that they were based solely in the UK. These companies avoid transaction and translation exposures, but economic exposure would still be relevant. All of these companies were in industrial sectors where they were prone to foreign competition, but it appears that for many this is not an adequate reason to develop a currency management strategy. Again, as discussed in section 6.5.3, a high percentage of companies are dismissive of currency management because they invoice only in Sterling, but the companies in this section used this as a reason for completely ignoring currency management. These companies are certainly still at risk, as section 3.3.1.5 makes clear. A small percentage of companies specifically stated that it was because they did not export goods and services that the questionnaire was irrelevant. These companies may be UK-based, but they could import, have overseas assets or may still be economically exposed.

Nearly 10% of this sample simply refused to take part in the research, citing reasons such as work commitments or confidentiality. These responses have to be expected in any study of this nature and it must be seen as a bonus that only a small number of companies replied in this fashion.

A legitimate answer given by companies for judging the questionnaire to be irrelevant was that currency exposure was such a minimal threat that it did not allow for the formation of a currency management strategy. Firms in this instance are still at risk, but the risk is so small that the costs of a currency management strategy may not be justified. These firms are at least recognising that they face currency risk, although they may still be underestimating its impact.

The sample can be broken down by the same means as the sample of full respondents in previous sections. On the basis of size;

Figure 6.4. Size of Company (“Not Relevant” Respondents)



When compared to the sample of full respondents in Figure 6.1, there are more smaller companies in Figure 6.4 and fewer larger companies, but such a difference was not statistically significant.

This sample was also broken down on the basis of company performance;

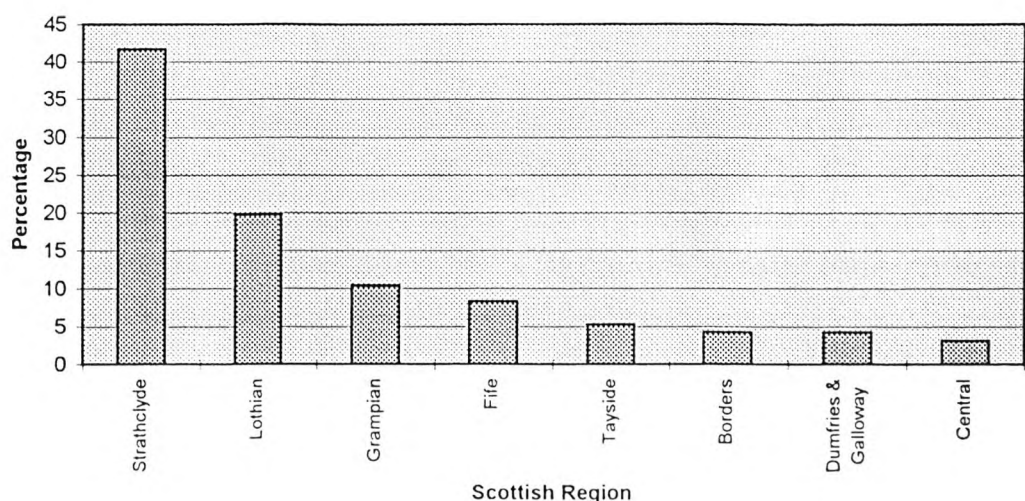
Table 6.63. Company Performance ("not relevant" respondents).

Company Performance Measure	Percentage of Sample
High Profit Margin (over 5%)	26.0%
High Return on Capital (over 20%)	22.9%
Lesser Positive Profit Margin (0-5%)	50.0%
Lesser Positive Return on Capital (0-20%)	50.0%
Negative Profit Margin	24.0%
Negative Return on Capital	27.1%

Compared to the sample of full respondents in Table 6.61, this sample tends to have more companies with lesser positive profit margins and returns on capital than the sample of full respondents, but this is the only real difference between the two samples and was not a statistically significant difference.

On the basis of region, the sample breakdown was as follows;

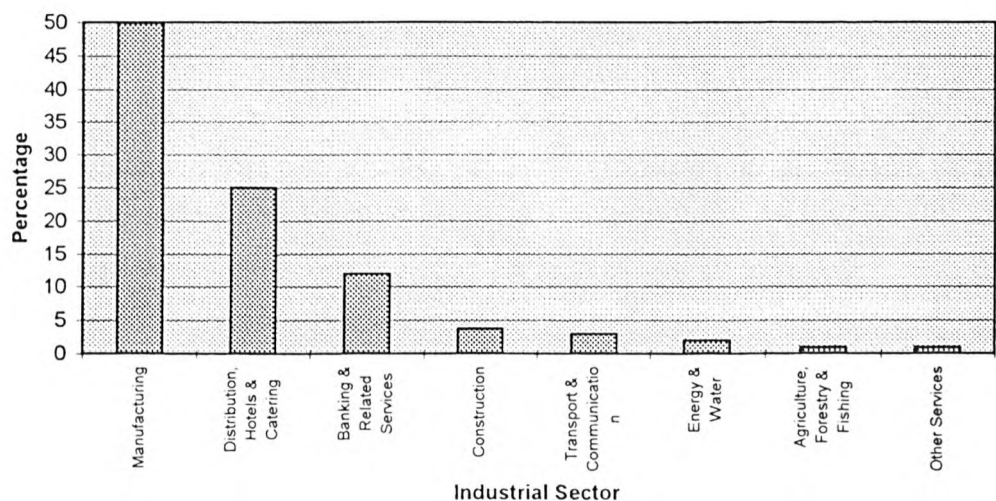
**Figure 6.5. Region of Company (“Not Relevant” Respondents)**



In terms of GDP at factor cost (Scottish Economic Bulletin 1991), this regional breakdown in Figure 6.5 is probably more representative than the equivalent breakdown for full respondents and all regions are this time represented (see Figure 6.3 for comparison with sample of full respondents).

On the basis of industrial sector, the breakdown of the sample was;

**Figure 6.6 Industrial Sector of Company (“Not Relevant” Respondents)**



This breakdown in Figure 6.6 is very similar to the breakdown given for full reply respondents in Figure 6.2 and must therefore also be taken as representative.

With a representative sample and with the figures known for size, location, industry and performance of each company, statistical analysis was therefore possible to identify relationships between the above variables, but factor and crosstabulation analysis highlighted no significant relationships. **It must be concluded that this form of respondents do not possess significantly different characteristics from respondents that replied in full to the questionnaire, apart from, of course, greater ignorance about currency management.**

#### *6.13. Summary of Key Findings.*

Scottish companies trade predominantly with the United States and the European Union, but greater emphasis was placed on managing the more volatile non-EMS currencies when the UK was part of the ERM. However, with the UK leaving the ERM in 1992, this strategy has changed and there is probably now little difference in the management of both groups of currencies. There is very little involvement with exotic currencies. The forward contract is the main hedging technique for a broad range of currencies.

Transaction and translation exposures are, unsurprisingly, the most significant exposure forms incurred by Scottish companies, but it was encouraging to find a relatively high recognition of economic exposure and attempts to manage it among the companies. However, the results indicate that there remains substantial ignorance about the nature of this exposure and how to manage it. Another concern is that too many companies are managing exposures on the basis of Sterling values. Even though there may be internal pressures to do this, it is not generally conducive to prudent currency management.

Translation exposure management is certainly prioritised by Scottish companies and is not ignored as some in the academic literature would suggest (see section 3.2.2.2). However, the results also found a degree of ignorance in companies' comprehension of this exposure and management of it by routine rather than careful consideration. There is a greater degree of sophistication in the management of translation exposure and economic exposure compared to the management of transaction exposure by the companies that have a proper understanding of the exposure types.



A majority of the sample are minimally exposed and, as a result, do not view currency management as a significant part of their business. Those companies that treat currency management as significant undoubtedly have a more sophisticated approach. The greater the size of the currency exposure, the more likely are companies to recognise economic exposure and to have top management in charge of their foreign exchange function, but there is little else to distinguish them in terms of currency management practices from companies that are less exposed.

A conservative, largely risk-averse approach to currency management has been identified for all types of companies in previous studies (section 4.7) and this study supports these findings. Although the haemorrhaging of the ERM forced many Scottish companies to rethink their approach to currency management, the nature of currency management in Scotland is expected to remain traditional and evolutionary. Even though companies occasionally take risks, cost minimisation remains the main currency management policy. There seems to be doubt among a large minority of companies regarding their description of their currency management centre, but this could simply be a problem with terminology. More companies are aware of their general currency management policy. Companies that prefer to use a non-standard term to describe their centre or policy tend to have overseas assets and may have changing policies depending on a given situation or are simply unwilling to explain their currency management function in a single term.

Companies that cover all exposures tend to cover EMS currencies in particular. This surprising result may be due to companies ignoring the stable environment of the ERM when implementing their currency management policy. Companies covering all exposures may do so because they have less opportunities for selective hedging due to the nature of their foreign currency cash flows. Companies following a policy of risk assessment have the most active and sophisticated currency management approach of the three main policies.

As explained earlier, most Scottish companies do not appear to believe that currency management is a very significant part of their business and such companies tend to incorporate their currency management operations into their finance function. In companies where currency exposures are

significant, but the company is small, top management tends to be in charge. A treasury department exists in companies with significant currency exposures that are large enough to regard a distinct currency management function as necessary and conceivable. A treasury is likely to be created in companies with overseas subsidiaries that feel a need to control currency inflows and outflows from group headquarters. These conclusions seem to offer reasonably accurate guidelines as to which department will take charge given a company's size and currency exposure situation, but it is important to emphasise that much consultation between departments still goes on in companies with significant currency exposures. However, few departments outside this main three are involved at all in currency management and adopting a consultative approach to currency management appears to make little significant difference from the norm in terms of currency management practices.

The vast majority of Scottish companies make use of internal and/or external currency management methods to manage currency exposures, but the use of these methods in most companies is governed by tradition and rules of thumb. Sterling invoicing is a very popular basic currency management technique, but this is because many Scottish companies appear to believe that this makes them immune to the consequences of currency risk. This is a false and potentially dangerous assumption that suggests the need for currency management education and training programmes in Scotland. The use of the main external techniques was associated with an active and sophisticated currency management approach. A low use of the new financial engineering products was found. Of these, currency options are the most popular, but their use is confined to the larger companies because of their cost, which is a similar story for a number of other external and internal methods.

Choice of currency management methods would appear to be significantly impacted by aspects of the internal corporate environment and types of currency exposure incurred. Transaction exposure tends to be managed by basic methods, such as forward contracts and currency invoicing. Translation exposure tends to be managed by the use of flexible methods. Economic exposure is commonly managed using a mixture of financial and operational methods. However, the precise relationship between currency exposures and the choice of currency management methods remains largely

unexplained, although there is evidence that companies are not making use of the full range of instruments and techniques available to them. It is possibly the case that the difficulties of quantifying some exposure types, particularly translation and economic exposures, makes it very difficult for firms to adopt a fully systematic approach to currency management. However, there is evidence that currency exposures incurred do impact on the internal corporate environment.

There are various foreign exchange access points available to companies, but the overwhelming majority restrict their business to the spot and forward markets. The eurocurrency market has grown rapidly and its lack of regulation makes it attractive to borrowers and investors, but due to the minimum size of contract required, it remains the preserve of the large financial institutions and MNCs. The results from the personal interviews demonstrated a broad satisfaction with the foreign exchange markets among companies.

Companies in the sample clearly prefer using a single house bank for currency management purposes, but the vast majority of the sample are small companies without the necessary resources to concentrate on currency management. Larger companies prefer a more active currency management strategy and the use of several banks, as points of access to the foreign exchange market, is obviously part of this strategy. There is a low use of foreign exchange brokers among Scottish companies.

A large proportion of the sample forecast exchange rates and this activity is associated with a sophisticated approach to currency management, but exchange rate forecasting is not a generally trusted activity and therefore is predominantly confined to the short-term. A range of methods are available to companies for forecasting, but they tend to adhere to the straightforward, easily available, inexpensive methods. The more scientific methods are not widely used except by some of the larger companies.

It is only a minority of the sample that provide currency management training for their staff, suggesting a lack of priority given to this activity within Scotland. It is the larger companies, those with subsidiaries abroad and those interested in a more sophisticated approach to currency management that tend to provide training. Results from statistical analysis clearly

demonstrate that a sophisticated approach to currency management is strongly associated with the provision of training. It is mostly external sources that are employed for training purposes, especially those supplied by the banks and the ACT. External sources are preferred because they are felt to be more up-to-date and many companies believe they have insufficient expertise to organise currency management courses or seminars internally. The results demonstrate that there is a serious lack of currency management training in Scotland, but, on a more encouraging note, several interviewed companies do recognise the dangers of not providing training and several companies that are extending their foreign operations are examining the possibility of providing currency management training.

Nearly two-thirds of Scottish companies are sufficiently concerned about currency management to measure their performance in this area. Of these companies, just over half have a reasonable performance measurement system, but the rest measure their performance very subjectively, having only a vague idea of the nature of performance measurement. Most companies measure currency management performance at least once a month, which corresponds with the measuring of the main exposure forms, and relative benchmarks are almost exclusively used. Performance measurement is used particularly by larger companies, companies with overseas assets, companies using the common external currency management instruments and by companies exposed to the major currencies. Companies not measuring currency management performance usually have a very traditional currency management approach that they are unwilling to change.

Most companies throughout Scotland are small and these companies appear to take only a very basic approach to currency management due to a lack of resources. Generally, it is the larger companies that view currency risk as important to manage. These are companies likely to branch out abroad and therefore incur translation exposure. Large companies also seem to be more aware of competitors' actions and therefore are also aware of the dangers of economic exposure. Being exposed to a variety of currency risks, many large companies create treasury divisions that will actively manage these risks through the use of a variety of instruments and techniques. They are also more likely to train staff in currency management and measure currency management performance. These results



corroborate many of the findings concerning the effects of company size on currency management performance identified in many previous studies and dispute the findings of other studies, which did not find size of company to be a key determinant of a sophisticated currency management approach. The consistent finding from this research is that it is companies with subsidiaries and/or which are large that tend to handle currency management in a more active and sophisticated fashion. However, size of company does not appear to impact on choice of currency management policy.

Medium-sized companies do not appear to have a distinguishable or an active currency management policy. Small companies prefer to make currency management decisions in conjunction with their house bank.

The sample of full respondents has been demonstrated to be representative on a regional and an industrial basis. There appears to be no significant distinctions in terms of currency management approach between the individual regions or industrial sectors.

Even though both exporters and importers make use of currency management instruments and techniques, there are few methods specifically related to exporting or importing. The banks should take note of these results in two respects. Firstly, they should be concerned by the relatively large proportion of exporters that do not use the banks for currency management purposes; exporters seem to prefer using internal techniques to manage currency risk. Secondly, they should heed the fact that many importers are as exposed to and as concerned about currency risk as exporters (in fact, these results suggest more so).

Companies with subsidiaries have a largely centralised currency management system, mainly because their foreign exchange expertise is located at group headquarters. Decentralised companies are more aware of the dangers of translation exposure, probably because of its effects on subsidiaries' performance, but centralised companies have the more active currency management approach. A few companies allow their subsidiaries some flexibility within certain group regulations, but this is not generally common. Companies with subsidiaries are generally sophisticated operators in currency management and their stronger recognition of translation and



economic exposures relative to other companies is reflected in their use of currency management instruments and techniques. A centralised structure is associated with an active currency management policy, but no association was found between size of risk and currency management structure.

Scottish companies make extensive use of the banks for currency management purposes and are generally, if not completely, satisfied with banking performance. The banks believe that their main objective in this area is to sell currency management products to the companies. In Scotland, the companies prefer to go through their Scottish house banks to purchase these products, even though the English banks have a superior range of products. The English banks do not help their case, however, by having such small bases in Scotland and by mainly pursuing the larger corporations. In general, the Scottish banks have a rather casual attitude to foreign exchange matters, but this can be partially excused because there is no pressure from the companies, which still generally manage currency exposures in a rudimentary fashion, for the banks to provide a wider, more competitive choice of instruments. However, there is evidence that some of the Scottish banks are becoming more proactive in this area and are making more of an effort to market their currency management products, but companies' attitudes to currency management will also have to change if the banks' efforts are to prove worthwhile.

The currency management services of the advisory organisations are less widely used and are held in a lesser regard than those of the banks. Companies lacking in currency management expertise and/or companies with only a house bank tend to be more likely to use the services of the advisory organisations. The objective of the advisory organisations in corporate currency management should be to raise general currency management awareness and to make companies conscious of the internal, largely cost-effective, techniques at their disposal, but the advisory bodies offer little to experienced international traders and are distrusted by many of the companies because they are seen as being removed from the practical side of business. Of the advisory organisations, the DTI fared best in the company interviews.

There is a complimentary relationship between the use of the banks and the use of the advisory organisations; they both offer different kinds of services

that, taken together, could help a company successfully manage its currency exposures. However, neither the banks nor the advisory organisations are particularly proactive in this area, tending to let the companies approach them rather than taking the initiative and apprising companies of the need for prudent currency management practices. If many companies are largely unsophisticated in their currency management approach, the banks and the advisory organisations must take their share of the blame.

Statistical analysis examined the relationship between currency management performance and company performance and provided an indication that companies performing well on the basis of profit margin are those using several banks for currency management purposes, those engaging in the eurocurrency market and those operating in the manufacturing sector. Small company size does appear to detrimentally affect corporate performance on one measure of size. However, this result by itself offers scant proof that currency management performance impacts significantly on corporate performance.

Nearly one-quarter of the total sample of 400 companies thought the questionnaire was irrelevant to their operations. This was such a large percentage of companies that were initially thought to be exposed that further analysis of these companies was required. The two main reasons that companies gave for ignoring currency risk were that they were UK-based only or that they always invoiced in Sterling. However, it must be appreciated that companies in these instances would still face currency exposure, notably economic exposure. Over 28% of this sample did not give a clear reason as to why currency exposure was irrelevant to their operations. These results suggest considerable ignorance regarding currency risk among many companies in Scotland.

Despite the logic of and the corroboration for many of these findings, it is important to qualify them by stating that the relationships and non-relationships highlighted may, at least in part, be due to the nature of the variables considered. Different variables or different ways of defining and measuring the themes considered may have produced different results. It is also the case, as highlighted in chapter 5, that the relationships found may be associations, rather than causal, and even operating at the 99% significance level, some relationships could conceivably be due to chance.

## CHAPTER 7

### CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

The summary of key findings at the end of the previous chapter has already provided the main results from this research. It is not the intention of this final chapter to repeat these results, but rather to highlight the most salient findings, to attempt to rationalise them in the context of previous research and to provide a basis for future research.

There can be no doubt today of the significance of currency management in a global environment of volatile exchange rates and increasing international trade and competition. It is also being increasingly accepted that currency risk is also one of the most difficult risks to manage.

Studies in this area were once confined to US MNCs, but are now being undertaken on all company sizes world-wide. The lack of research on Scottish companies prompted this study and it is hoped that it has contributed to the raising of awareness about currency management within Scottish companies as well as providing the first detailed examination of the behaviour of Scottish companies, banks and advisory organisations in the field of corporate currency management. **Even though the Scottish economy and business culture have distinctive characteristics, this does not appear to translate into different perspectives of and different approaches to currency management compared to the UK as a whole.** It was hypothesised, from existing theory and evidence, that Scottish companies may be more risk-averse, less sophisticated and less consultative and collaborative than their UK counterparts, but there were no significant differences found in these results compared to similar studies of currency management in general UK firms. As argued in chapter 2, the theories and assumptions on which such hypotheses are based, are probably too simplistic.

The one exception to this rule of no significant differences between Scottish and UK companies was a greater reliance on home-based banks by companies in Scotland. Even though the Scottish banks provide a fairly basic service to their companies in terms of currency management, this was not found to translate into less sophisticated currency

management practices in comparison with UK companies of a similar size. Arguably, this is because the banks that are offering the more advanced level of service in this area are targeting the larger companies on both sides of the border. **However, such findings can only really be tested with a contemporaneous study of Scottish companies and banks and their UK counterparts.**

The complexity of the exposure types, particularly economic exposure, and the degree of overlaps between the exposures does make comparisons between them difficult, but **the evidence from this study and most previous studies is that transaction exposure is the most pertinent currency exposure that companies believe they face, but translation exposure is also actively managed in the clear majority of companies with overseas subsidiaries**, despite criticisms of this practice, particularly in the academic literature. However, the management of translation exposure should not be a matter for routine, but should be undertaken after discussions with shareholders and the examination of some form of cost-benefit analysis. Unfortunately, this does not appear to be the case in many companies. **The concept of economic exposure is being recognised by a growing number of companies, but is generally not well understood.** This could be due to a number of factors: basic ignorance, a tendency to believe that the consequences of this exposure are caused by other factors or an acceptance that the exposure cannot be measured or managed in a meaningful way and therefore is not subject to much attention. It is also the case that foreign exchange managers prefer to reduce or close-out currency exposure, usually by using financial hedges, and this is not easily done with economic exposure. **Whatever the reason, further research in this field must include a comprehensive study of the causes and effects of economic exposure, especially in smaller companies, and how it is perceived by the corporate sector.** By not properly recognising and understanding economic exposure, companies may be putting themselves at greater risk to unfavourable exchange rate fluctuations or fail to take advantage of favourable exchange rate fluctuations. **Further research could focus on asking companies to rank the importance of the exposures under a number of criteria to attempt to resolve the debate of which are the most important exposures in terms of management, impact, etc.**



Generally, companies are using a range of currency management instruments and techniques in managing their currency exposures, but they appear to favour methods with which they are familiar. **More research has to be done on the interaction between exposures incurred and methods employed as previous studies, including this study, may be masking associations by not dealing with this issue more directly. Future studies should attempt to ascertain what method or combinations of methods are used in a variety of currency exposure situations.** However, this will be a difficult exercise given the overlaps between the exposures and the range of methods and strategies in use. It is apparent from the results that large companies have a considerable advantage in purchasing and using many of the currency management methods. The new derivative instruments do not have an extensive use among companies, but their influence is growing.

**In employing a currency management strategy, companies in Scotland, as elsewhere, tend to have a risk-averse, conservative currency management approach due to fear of exchange rate volatility.** This type of behaviour could be prevalent because of management's belief that the penalties for mistakes in currency management exceed the rewards of any successes or, perhaps, because companies believe that they can more ably close-out risk than manage it for profit. However, most companies will attempt to take advantage of obvious and favourable exchange rate movements. **Generally, companies' currency management strategies were found to be fairly basic and short-term oriented. Currency management is not yet seen by companies as worthy of, for example, an inter-functional strategic approach. Most of the sample companies are therefore only at the first two stages of Earl's and the first stage of Stobaugh's influential models.** The evidence is clear that currency management policy in companies changes slowly, even in the wake of significant external events.

The increasing use of performance measurement in currency management demonstrates the growing seriousness and sophistication of the corporate approach to currency management. **However, currency management performance is evaluated in a largely arbitrary and**



**haphazard fashion.** If companies are not measuring currency management performance correctly, it is likely to be a waste of management time and unlikely to lead to even a satisfactory currency management strategy. **It is clear that companies need to be further educated in this activity and further research needs to be undertaken into it due to an obvious previous lack of attention. This new research should particularly focus on an evaluation of performance measurement methods in an attempt to provide a more common and accurate standard.**

Currency management is incorporated into the finance function in the majority of Scottish companies. Senior management does play an active role in a minority of companies, but specialised treasury departments are only effectively created in large companies, usually multinationals. There is little evidence of a formal inter-departmental consultation process regarding currency management in Scottish companies, but it appears to be a similar picture elsewhere in the world. In most companies, currency management is simply not seen as an activity to be worthy of this sort of attention. Bearing this in mind, it is perhaps not surprising that most companies have an unsophisticated approach towards the subject.

Companies with subsidiaries predominantly centralise currency management operations, although few do so rigidly. There are arguments against this centralisation approach, but they are being increasingly sidelined as companies seek higher levels of efficiency. Centralisation appears to lead to a more active management of currency exposures.

There are certainly faults in Scottish companies general approach to currency management: there is too much use of Sterling invoicing, there is not enough use of more cost-effective internal techniques, currency management performance measurement is largely arbitrary and vague, Sterling conversion is commonly used in exposure measurement and there is a serious lack of currency management training. The large number of sample companies that dismissed the possibility of currency risk applying to them was also disappointing. These criticisms, however, do not tend to apply to large companies and companies with overseas interests. **In this study, company size and geographical dispersion were the key variables in determining a company's level of**

**sophistication in its currency management approach.** There was thus also evidence to support stage 3 of Earl's model and stage 2 of Stobaugh's, but there was no evidence to support stage 4 of Earl's (stage 3 of Stobaugh's), of compromise replacing the drive towards optimisation in currency management as the organisation of the firm becomes more complex. This is not a rejection of the existence of these stages; it is possible that none of the sample companies were large enough to have moved to this higher stage. **Volume of currency exposure (or the degree of internationalisation of the firm) was not found to be a key determinant of the level of sophistication of a company's currency management approach.** The industrial sector and regional location of companies was also found to make little difference in this regard.

The banks based in Scotland appear to deliver a satisfactory level of service in corporate currency management, although they still occasionally come in for criticism, especially the Scottish banks, for a less than active approach. **Despite this, there remains a strong bank loyalty factor in Scotland among the companies.** The advisory organisations are not highly regarded in terms of the currency management advice that they dispense. At best, they provide some information on the basics of currency management, but offer no systematic help for companies in this area and seem only too content to let the banks take the responsibility.

**Of the seven key hypotheses central to the study, the following five were confirmed:**

- 1. Use of currency management methods is dependent on the currency exposures incurred.*** This result contradicts the findings of Edelshain (1995), but it is possible that, in part, the differing results are due to the different types of companies sampled. This result shows that companies do have certain methodologies for dealing with specific exposure types.
- 2. Currency exposures incurred are related to the internal corporate environment.*** This also contradicts Edelshain (1995), but again this could be due to the different composition of the samples.

This result provides some evidence that currency exposure can directly impact on the structure of the corporation.

3. *Use of currency management methods is related to the internal corporate environment*, although not in the case of currency management policy. This result is generally supportive of the findings of Edelshain (1995) and demonstrates a degree of consistency between organisation and implementation regarding currency management in Scottish companies.
4. *Currency exposures incurred are dependent on company size*, in the case of translation and economic exposures. As expected, transaction exposure is incurred regardless of company size, but large companies would appear to have a greater recognition and incurrence of more exposure types than smaller companies.
5. *Currency management methods used are dependent on company size*. Large companies have a greater range of currency management methods at their disposal because of their greater expertise, resources and market power.

One hypothesis was neither confirmed nor rejected:

6. *The internal corporate environment is dependent on company size*. Company size was found to impact on some aspects of the internal corporate environment, but not on all.

One hypothesis was rejected:

7. *Currency management performance is related to corporate performance*. Even though a significant logistic regression model was generated linking currency management variables with corporate performance, not enough evidence was generated to derive a clear and unequivocal relationship between the two.

There is still much dispute about the impact of company size on currency management performance and more research will undoubtedly have to be undertaken on this matter. This study does not claim to be definitive. It is

a similar matter for the first and second and hypotheses, above, that also contradict existing evidence. **It is speculated that this may be due to the different types of sample selected.** Indeed, many of the contrasting results in this field could be put down to this factor. For example, this study found that company size was an important determinant of a company's level of currency management sophistication, whereas Edelshain's (1995) study did not find this. However, Edelshain only considered large companies and the difference in approach between very large companies and large companies may be minimal compared to the difference between large companies and small companies. **Different ways of measuring the same phenomenon, for example company size and degree of internationalisation, may also partly account for the lack of consistency between some of the studies. Only further research can fully evaluate the influence of such factors. However, in general, the studies that have examined currency management have much in common with each other and this study is no different in this regard.**

The major achievements of this research are felt to be:

- A full quantitative and qualitative analysis of the currency management performance by Scottish companies of an extent not undertaken before.
- An extensive review of the previous literature and of previous studies in the field of currency management.
- An evaluation of the demand and supply sides of the corporate currency management market, whereas most previous studies had concentrated on one side or the other.
- The first known attempt at trying to assess the impact of currency management performance on corporate performance.

This research has therefore made a contribution to the existing knowledge in this field. It will be up to others to take this and other work forward.

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# APPENDIX

PLEASE NOTE THAT ANY INFORMATION GIVEN WILL BE TREATED IN  
THE STRICTEST CONFIDENCE

Could you please state your company's main activities:-  
.....  
.....

**PART 1. THE NATURE OF COMPANIES' INTERNATIONAL CURRENCY TRANSACTIONS.**

**QUESTION 1.** What currencies do you as a company invoice exports and imports in and make and receive capital remittances and transfers in?

Please tick as appropriate;

- |                              |                          |                   |                          |                          |                          |
|------------------------------|--------------------------|-------------------|--------------------------|--------------------------|--------------------------|
| US Dollar                    | <input type="checkbox"/> | German D\Mark     | <input type="checkbox"/> | Japanese Yen             | <input type="checkbox"/> |
| French Franc                 | <input type="checkbox"/> | Swiss Franc       | <input type="checkbox"/> | Belgian Franc            | <input type="checkbox"/> |
| Spanish Peseta               | <input type="checkbox"/> | Italian Lira      | <input type="checkbox"/> | Dutch Guilder            | <input type="checkbox"/> |
| Irish Punt                   | <input type="checkbox"/> | Portuguese Escudo | <input type="checkbox"/> | Greek Drachma            | <input type="checkbox"/> |
| Danish Krona                 | <input type="checkbox"/> | Norwegian Krona   | <input type="checkbox"/> | Swedish Krona            | <input type="checkbox"/> |
| Australian \$                | <input type="checkbox"/> | New Zealand \$    | <input type="checkbox"/> | Canadian \$              | <input type="checkbox"/> |
| European Currency Unit (ECU) |                          |                   |                          | <input type="checkbox"/> |                          |
| Other(s)                     | <input type="checkbox"/> | Please list.      |                          |                          |                          |

**QUESTION 2.** Which currency movements would you actively implement a hedging strategy on?

Please list;

**QUESTION 3.** How significant are the Sterling values of your company's foreign exchange receipts and payments in terms of the companies' total turnover?

As a percentage of total turnover, are they approximately;

- |        |                          |               |                          |
|--------|--------------------------|---------------|--------------------------|
| 0-5%   | <input type="checkbox"/> | 15-20%        | <input type="checkbox"/> |
| 5-10%  | <input type="checkbox"/> | 20-25%        | <input type="checkbox"/> |
| 10-15% | <input type="checkbox"/> | More than 25% | <input type="checkbox"/> |

**QUESTION 4.** Is such currency exposure considered highly significant in terms of the company's overall corporate strategy?

Please tick one;

Highly significant (Top management involved) ☐

Moderately significant (Prioritised by certain departments) ☐

Not very significant (Not especially prioritised) ☐

Not at all significant (Not at all prioritised) ☐

**QUESTION 5.** Does your company rely heavily on....?

Please tick one;

Exporting ☐ Importing ☐

Both of the Above ☐ Neither of the Above ☐

## **PART 2. FORMS OF CURRENCY EXPOSURE COMPANIES HAVE TO MANAGE ARISING FROM THEIR INTERNATIONAL TRANSACTIONS.**

**QUESTION 6.** Which type of currency exposure does your company incur?

Please tick as appropriate;

**Transaction Exposure.** ☐

(The risk that the domestic currency value of a foreign currency denominated transaction will vary as a direct result of changes in exchange rates).

**Translation Exposure.** ☐

(The risk that the reported domestic currency values of foreign currency denominated assets and liabilities will vary as a direct result of changes in exchange rates).

**Economic Exposure.** ☐

(The risk that the future cash flows generated by a company's activities will vary in domestic currency terms as a result of changes in exchange rates).

**Other(s).** Please specify. ☐



**QUESTION 7.** How does your company measure foreign currency exposures?

Please tick one;

In the maintained currency (Currency of the foreign buyer/seller) ☐

Converting the exposures to Sterling ☐

Converting the exposures to a third currency ☐

**QUESTION 8.** If you answered with either of the latter two responses in question 7, how is the conversion exchange rate established?

Please explain;

**QUESTION 9.** What are the sources of these exposures?

Please tick as appropriate;

Firm Contracts ☐

Potential Contracts ☐

Tendering for Contracts ☐

Foreign Currency Assets and/or Liabilities ☐

Overseas Competition ☐

Other. Please state - ☐

**QUESTION 10.** How often are the company's exposure positions measured?

Please state the time period for each relevant exposure;

Transaction Exposure.-

Translation Exposure.-

Economic Exposure.-

**PART 3. THE CONDUCT OF CURRENCY MANAGEMENT BY COMPANIES.**

**QUESTION 11a.** Which department is **primarily** responsible for conducting currency management in your company?

Please tick **one**;

- Top Level Management. ☐
- Treasury Department. ☐
- Finance Department. ☐
- Planning Department. ☐
- Purchasing Department. ☐
- Marketing Department. ☐
- Other. Please state.- ☐

**QUESTION 11b.** What other departments, if any, are directly involved in the conducting of currency management?

Please list;

***QUESTIONS 12a AND 12b ARE SPECIFICALLY FOR COMPANIES WITH SUBSIDIARIES ABROAD:-***

**QUESTION 12a.** Which of the following best describes the nature of your company's currency management system?

Please tick one;

- Centralised. ☐  
(Direct control from the centre).
- Decentralised. ☐  
(Subsidiaries largely autonomous).
- A Combination of the Above Two Methods. ☐

**QUESTION 12b.** If you answered with either of the latter two responses to question 10a, are limits or regulations imposed on divisional operations?

Please explain;

**QUESTION 13.** What method(s) of exchange rate forecasting, if any, does your company use?

If a combination of methods are used, please tick more than one;

Fundamental Analysis. ☐

(Based on the historical evaluation of the specific relationships between exchange rates and key economic factors).

Market-based Forecasting. ☐

(Using current market information).

Using Published Forecasts. ☐

(Buying-in information from other institutions)

Chartism. ☐

(Looking for trends and trend reversals in currency movements).

Other(s). Please state.- ☐

**QUESTION 14.** What time period(s) do you attempt to obtain exchange rate forecasts for?

Please state;

**QUESTION 15.** Which of the following best describes your currency management operating system?

Cost-operating centre. ☐

Profit centre. ☐

Other. Please state.- ☐

**QUESTION 16.** Generally, what is the currency risk management policy of your company?

Please tick one;

Cover everything. ☐

Cover nothing. ☐

Risk assessment. (In-between the above two extremes). ☐

Other. Please state.- ☐

**QUESTION 17.** Do you provide any training in currency management for your employees?

Yes ☐

No ☐

If you answered yes, please explain the sort of training you provide;

#### **PART 4. THE TECHNIQUES USED BY COMPANIES IN CURRENCY MANAGEMENT.**

**QUESTION 18.** Which foreign exchange markets does your company use?

Please tick as appropriate;

The Spot Market. ☐

The Forward Market. ☐

The Eurocurrency Market. ☐

Over-the-Counter Markets. ☐

(Buying tailor-made products from the banks).

**QUESTION 19.** Which internal techniques of currency management does your company use?

Please tick as appropriate;

Netting. ☐

Matching. ☐

Leading and Lagging. ☐

Price Variation. ☐

Invoicing in your own currency. ☐

Invoicing in a foreign currency. ☐

Assets and Liability Management. ☐

(e.g. Holding assets in strong currencies and liabilities in weak currencies).

Other(s). Please list. ☐

**QUESTION 20.** Which external techniques of currency management does your company use?

Please tick as appropriate;

- |   |                          |
|---|--------------------------|
| Forward Contracts.                                  | <input type="checkbox"/> |
| Short-term Borrowing.                               | <input type="checkbox"/> |
| Discounting Foreign Currency Denominated Bills.     | <input type="checkbox"/> |
| Factoring Foreign Currency Denominated Receivables. | <input type="checkbox"/> |
| Currency Accounts.                                  | <input type="checkbox"/> |
| Currency Overdrafts.                                | <input type="checkbox"/> |
| Government Exchange Risk Guarantees.                | <input type="checkbox"/> |
| Currency Swaps.                                     | <input type="checkbox"/> |
| Currency Options.                                   | <input type="checkbox"/> |
| Financial Futures.                                  | <input type="checkbox"/> |
| Other(s). Please list.                              | <input type="checkbox"/> |

**PART 5. THE EVALUATION OF HEDGING PERFORMANCE BY COMPANIES.**

**QUESTION 21.** How often are your hedging performances evaluated and monitored?

Please state;

**QUESTION 22.** By what methods are hedging performances evaluated and monitored?

Please explain;



**PART 6. COMPANIES' ACCESS TO THE FOREIGN EXCHANGE MARKET.**

**QUESTION 23.** What point(s) of access to the foreign exchange market does your company favour?

Please tick as appropriate;

- Brokers. ☐
- A Single House Bank. ☐
- Several Transaction Banks. ☐
- Other(s). Please list. ☐

**QUESTION 24.** On a scale of 1-5, how would you score the performance of the banks in this area? (1 =highly satisfactory, 5 =not at all satisfactory):-

Please give a number -

**QUESTION 25.** On the same scale, how would you score the performance of the advisory organisations (DTI, ECGD, Scottish Export Office, etc.) in this area?

Please give a number -

If you have any additional comments to make regarding you company's approach to currency management or if you wish to qualify any of the above answers please do so below;

A copy of the results of this research can be made available to your company. If you wish to have a copy, please tick the box. ☐

We would appreciate if you could fill in the following details so we know which companies have completed the questionnaire. We repeat that the information you have given is strictly confidential.

NAME..... COMPANY.....

ADDRESS.....  
.....  
.....

TEL. NO.....

**Thank you for your co-operation.**

24th July 1992.

Dear Treasurer\Finance Director,

I am a research student at the Robert Gordon University in Aberdeen undertaking a Ph.D. in "Currency Management Strategies within Scottish Companies." To aid my research I am sending out a questionnaire to several hundred Scottish companies to ascertain how such companies manage their currency exposures.

This field of activity has rapidly increased in importance in recent years as virtually all companies that trade directly internationally will now find themselves at risk to currency movements and even those who do not deal directly overseas may still find themselves economically exposed (because of foreign competitors, who may be advantaged by an appreciation of Sterling relative to their home currency). However, this field still remains relatively unexplored and the purpose of this and other ongoing research is to plug the information-gap, giving Scottish-based companies a comprehensive view of how currency management is being conducted here.

Your company may possibly be exposed to currency movements and I would be grateful if you could complete the enclosed questionnaire that forms a critical part of my research activity. If you feel that large parts of the questionnaire are irrelevant to your company, please answer where possible or provide a brief reply stating your company's position on currency risk.

Please return the completed questionnaire to the above address and do not hesitate to contact me if there are any problems with its completion. Thank you for your time.

Yours faithfully,

John Boyle.  
Research Student.

10 August 1992.

Dear Treasurer/Finance Director,

I sent a questionnaire to you two weeks ago as part of a study into how Scottish companies manage their exposure to foreign exchange movements.

I have not as yet received a reply and as the data obtained from the study is soon to be analysed, I would be grateful if you could return the questionnaire to me as soon as possible.

If you have any queries concerning the questionnaire or if you would like a new copy of it, please contact me at the above telephone number.

Yours faithfully

John Boyle.  
Research Student.

25 August 1992

Dear Treasurer\Finance Director

I sent a copy of my questionnaire on foreign exchange risk management to you on 24 July and a letter reminding you of this on 10 August. Unfortunately, I have not as yet received a reply.

I understand that you will have numerous other work commitments, but it is extremely important for my research that I get as high a response rate as possible.

I am therefore enclosing another copy of the questionnaire and I would be very grateful if you could respond to it. If you do not feel it is relevant to your company, please explain so in a short letter as even this could be significant information for my research.

I have had several replies from companies who have not given their full name or have used a different name, e.g. that of their holding company. It is then not possible for me to judge who has responded in some cases and I would be obliged if such companies could clarify their position with a phone call.

If you have replied just before this letter has reached you, please ignore it.

Thanks again for your time.

Yours faithfully

John Boyle.  
Research Student.



*Could you explain a little further your hedging strategy?*

We're risk-averse, so we hedge nearly all currency exposures. The size of volumes does matter a little, however, in deciding whether to hedge.

*What are the sources of your currency exposures?*

We incur transaction exposure because 55% of our UK business is exporting and it is largely done in foreign currencies. We have translation exposure because we have overseas subsidiaries. We manage this by loans, which is a very simple way to do it. Economic exposure arises from the materials we buy overseas being purchased in dollars. We use options to secure the dollar forward.

*How great a concern is economic exposure to you?*

It is not too great a concern as we tend to be market leaders in most areas we are active in.

*Could you explain further how your conversion rate is established for converting your exposures to Sterling?*

In the case of transaction exposure, the bulk of our risk arises from overseas sales, where price lists change twice a year. We guarantee the operating company a rate and manage this rate. For translation exposure, we convert on an average rate basis. We don't worry too much about this as it is a paper risk. How you handle economic exposure is subjective. We hedge with options.

*Why do you choose to centralise your currency management system?*

It's the most efficient way to do it, but where appropriate we'll net down.

*Have you always centralised decision-making in this area?*

Yes.

*Why do you use the methods selected for exchange rate forecasting?*

We don't really believe that they work too well, but neither do we believe that the forward rate is an unbiased predictor of the future spot rate. All the methods have their place at different points in time. We don't exclusively use one method and sometimes we'll use them all to arrive at a decision. We might still hedge even if a forecast suggests that the rate is moving in our favour.

*How satisfied are you with your forecasting of exchange rates?*

The general trend we've been getting right here.

*Why do you choose to call your currency management function a service centre?*

We're providing a service for the operating companies. We do make money on currency movements with a fair wind, but this is not an end in itself. Our behaviour is largely risk-averse.

*How much do you prioritise training for your staff in currency management?*

When someone new joins our treasury team, training for them is essential.

*What is your opinion of the foreign exchange markets that you use?*

We're broadly satisfied with them. The options market is the most difficult to use because of the volatility in price. The easiest market to use is the cash market, spot and forward, because of its liquidity.

*Why do you use the selected currency management methods?*

Netting and matching decrease costs; leading and lagging provide opportunities; invoicing in a foreign currency ensures stable prices; asset and liability management helps liquidity; short-term borrowing is an alternative to the forward contract, if receivables are due and interest rates are low we'll use it. We don't use other methods, like factoring and discounting, because they are expensive.

*Could you elaborate on how you measure performance in this field?*

At the end of each month, we provide a report to the board of our performance. We also look, to some extent, at alternative scenarios and what we could have done differently.

*Could you elaborate on your ratings for the banks and the advisory organisations?*

With the banks, there is a big choice and we would replace a bank that is not performing satisfactorily. We would use a bank just for currency management purposes. I should have given the advisory organisations a lower mark as they don't have much idea: the theory they understand, but the practice they don't.

*Did Britain's membership of the ERM make any difference to your currency management system?*

The country's ejection from it makes things more complicated in the short-term. More volatility up and down makes life difficult. We were apathetic to the ERM initially as there was still a 12% band, but it did contain Sterling. The central rate we entered at was marginally too high.

*Are you now concerned about the country being outside the ERM?*

We lived with floating exchange rates prior to the ERM and can do so again. The country cannot return to the ERM too quickly.

END OF INTERVIEW.