Managing Financial Risks with Derivatives: The case of the UK Telecommunications Industry

Abstract

The increased volatility of the financial markets, has given rise to increased financial price risks faced by companies. Companies are now exposed to risks caused by unexpected movements in exchange rates and interest rates. With the growing global presence of the telecommunications industry, the companies in these industries are exposed to a wide range of financial risks, in particular foreign exchange risks and interest rate risk. The management of these risks has become paramount for the survival of companies in today's volatile financial markets.

1.0. Introduction

Over recent decades, the financial markets have become more volatile due to significant changes, which have taken place in the domestic and international financial markets. In the post war period, managers of corporations worried little about foreign exchange rate and interest rates, as interest rates were fairly stable and the fixed exchange rates of the Bretton Woods era allowed companies know with great certainty the amount of home currency it expected to pay for imports. However since the 1970's changes occurred. After the collapse of the Bretton Woods system and the move to generalized floating among the major exchange rates, it soon became clear that large movements in exchange rates were occurring far more frequently than many flexible rate advocates had expected, with the rates fluctuating widely in unanticipated directions and magnitudes, which consequently affected interest rate movements as the monetary authorities tried to influence exchange rates by movements in interest rates, (see Figures 1 and 2).

The business world today has little doubt about the existence of currency risks and interest rate risks. With the persistent volatility of these factors, businesses, whether multinational corporations or domestic firms who are exposed to the impact of exchange rate changes through international competition, can be largely affected by these unanticipated movements and can cause very large gains or losses if the risks remain unmanaged. Exchange rates movements generate business risks of many

types, often complex and sometimes hidden, which alter the value of existing foreign assets and liabilities, while movements in interest rates alter the value of a firm as it can indirectly affect the competitive position of the company which impacts the size of their future cash flows, also it alters the firms portfolio as interest rate movements influence the investment behaviour of firms through its effect on the cost of capital.

Multinational corporations and domestic firms alike, who face these risks, must ensure that they manage these risks fully as the potential result of not managing currency risks and interest rate risks properly can be total failure of the business. With the sustained changes in the financial and competitive environment of most corporations, increased internalisation of economic activity and the unprecedented era of world wide currency and interest rate volatility, new innovative foreign exchange risk and interest rate risk hedging techniques have grown at a rapid speed, and are designed to assist management in controlling risk and minimising the effect of uncertain cash flows. Financial institutions have provided companies with a range of products to assist in risk management. Table 1 shows the products and their year of introduction. The forward contract is the oldest instrument introduced to

Table 1.0. Introduction of Derivatives

Financial Derivative Instruments	Year of introduction
Foreign Exchange Instruments	
Forward Contracts on foreign exchange	1972
Foreign exchange futures	1972
Currency Swaps	1981
Options	1982
Interest Rate Instruments	
Futures contracts	1975
Interest rate swaps	1982
Interest rate options	1982
Interest rate forwards called “forward rate agreements”	1983

manage risks. It can be used to manage both interest rate and foreign exchange risks. A forward rate agreement is a forward contract on interest rates. A forward contract obligates its owner to buy a given asset on a specified date at a price specified at the origination of the contract. If the actual price at maturity is higher tan the specified price, the contract owner makes a profit and if the price is lower, the owner suffers a loss. A futures contract is similar to a forward contract in that it obligates its owner to buy a specified asset at a specified exercise price on the contract maturity date. The risk to the holder is unlimited, and because the payoff pattern is symmetrical, the risk to the seller is unlimited as well. As with forward contracts, futures contracts can also be used to manage both foreign exchange risks and interest rate risks. Swap contracts can be considered as one of the latest financing innovations, after its public introduction in 1981, when IBM and the World Bank entered into a currency swap transaction[1]. A swap contract obligates two parties to exchange specified cash flows at specified intervals. In general a swap contract can be defined as a series of forward contracts put together. A currency swap involves the exchange of interest rate payments in one currency for payments in another currency. Interest rate swap, which is the most common form of swap contracts, involves the exchange between two parties of interest obligations or receipts in the same currency on an agreed amount of notional principal for an agreed period of time. An interest-rate swap is an agreement between two parties to exchange interest payments calculated on different bases over a period of time. In the most common form, one party makes fixed-rate payments, while the other party's payments are based on a floating rate, such as LIBOR. Currency swaps give companies extra flexibility to exploit their comparative advantage in their respective borrowing markets. “Interest rate swaps allow

[1] Managing Finacial Risk; Smith, Smithson an dWilford

companies to focus on their comparative advantage in borrowing in a single currency in the short end of the maturity spectrum vs. the long-end of the maturity spectrum. Currency swaps allow companies to exploit advantages across a matrix of currencies and maturities" (Chand Sooran). Compared to a forward, future or swap contract, an option contract gives the owner a right but not an obligation to buy (a call option) or to sell (a put option) an asset at a specified price on or before a specified date. Upon exercise of the right, the option seller is obliged to deliver the specified asset at the specified price.

1.1. Research Objectives

As business becomes more global, more and more companies are finding themselves Increasingly exposed to increased risks with Exchange rate fluctuations and interest rate fluctuations being just some of the financial risks they face, therefore the management of these risks has become paramount for UK corporations.

1.2. Telecommunications Industry

The UK telecommunications sector is characterized by a small layer of large firms and a much larger population of smaller firms which supply much of the sector's innovation. Telecommunications markets are rapidly globalising, with ever-quicker technology change. Moreover, telecommunications, information technology and broadcasting technologies and markets are drawing ever closer together. The pace of this change is set to increase with the liberalisation of the EU and global telecommunications markets. This is stimulating innovative responses from the

industry, with key players increasingly looking to build global alliances.[1][2] The UK market is becoming increasingly competitive, with the top players in the field being BT and Cable and Wireless, while in the mobile telecommunications the top player is Vodafone. With the growing global presence of the telecommunications industry, the companies in these industries are exposed to a wide range of financial risks, in particular foreign exchange risks and interest rate risk. These risks if left exposed will create financial problems for the companies.

There has been considerable literature on the management of foreign exchange risks and interest rate risks but there are limited literature concerning UK corporations in managing these risks as well as industry comparison of management techniques. Previous empirical works on derivative usage in UK companies concentrated on large companies (Grant and Marshall 1997, Mallin, Ow-Yong and Reynolds, 2001) also previous empirical works carried out to investigate the management of foreign exchange risk of UK companies concentrated on the management of specific exposures such as transaction and translation exposure (Collier and Davies 1985, Belk and Glaum 1990) or economic exposure (Walsh 1986). There is also limited empirical study relating to the interest rate risk of multinational companies with most studies focusing on financial corporations (Choi/Elyasiani 1997) which, however, have primarily financial assets and thus are likely to show very different sensitivity with regard to interest rate changes.

There is an increasing number of new financial derivatives being developed to cope with foreign exchange risk and interest rate risk, however there is little empirical

[2] Communications and Information Technology Research, Value-added Services in Europe (1996)

study on how different companies from different industries use these derivatives to manage their exposures. The objective of this dissertation is to determine and examine how some companies in the UK manage their foreign exchange and interest rate exposure by investigating the derivative usage of companies in the telecommunications industry.

STRUCTURE OF DISSERTATION

2.0. An Overview

Changes in the international business environment and the increased volatility of interest rates and foreign exchange rate movements have profound implications on the way in which international firms deal with their financial risks. These risks cannot only affect quarterly profits, but it can determine a firm's very survival. The management of financial risks by corporate treasurers is becoming an important area of concern for UK corporations.

This dissertation seeks to establish how companies in the UK telecommunications industry manage their financial risks in this era of increased financial environment volatility.

2.1. Risk Management Objectives

There is nothing wrong with risk. It is the lifeblood of business and the test of entrepreneurs and managers. What matters, is how risk is handled and the culture in which the company operates. "The risk culture of a business is critical and must be established at the most senior level"(J Smith).

An effective financial risk management program requires well defined objectives, clearly stated guidelines and authority limits for managing financial risks such as exchange rate risks and interest rate risks, clear reporting lines, senior management who understand what is going on and ensure that adequate systems and controls are put in place, a good treasury department which can identify and seek to manage the risks accordingly, a good balance between delegation of responsibility and control….separating the trading "front office' from the administrative and controlling

"back office" and ensure that everything is subject to the "two pairs of eyes". Most importantly the risk management objectives should be in line with company objectives.

Hedging practices varies from company to company, with the decision to hedge being based on the risk attitude of the company's management team. Attitude toward risk can range anywhere from being averse to being a risk-taker. Risk averse companies, seek to cover every exposure as soon at it arises, while risk takers leave all exposures unhedged with the hope that gains or losses which arise from movements in foreign exchange or interest rates will be offset in the long term. If the company's attitude is to be risk-averse, then the treasury function will be organised as a cost centre[3], whereas if the attitude is to speculate i.e. risk-taker, then the treasury function will be organised as a profit centre[4]. In most cases companies take neither of these attitudes. Managers may seek to manage positions within an acceptable limit rather than eliminating all risks, which arise.

2.3. Measurement of Risk

A multinational firm with export sales and costs denominated in the home currency should exhibit exchange rate exposure. The determination of the effect of such exposures requires accurate measurement of foreign exchange risks. Exchange rate exposure is divided into three different exposures: translation exposure, transaction exposure, and operating exposure (e.g. Eiteman, Stonehill, and Moffet 2001

[3] (define cost centre and give references to where u can find info on cos centre)
[4]

Transaction exposure refers to the possibility that a company will incur gains/losses as a result of settling at a future date, a transaction denominated in foreign currency that was previously entered into. “A firms transaction exposure consists of its foreign currency accounts receivables/payables, its longer term foreign currency investments and debt, as well as those of its foreign currency cash positions which are t be exchanged into other currencies. Until these positions are settled, their home currency value may be impaired by unfavourable parity changes” (Martin Glaum). Previous empirical studies by Belk and Glaum (1990), Belk and Edelshain (1997), Duangploy, Bakay and Belk (1997), Cezairli (1988) and Aobo (1999), have shown that the management of transaction exposure is the focus of foreign exchange risk management.

Translation exposure refers to changes in the value of foreign assets and liabilities. It arises as a result of translating a company’s reported financial results from the company’s functional currencies to other currencies (parent company currency) for informational or comparative purposes. Translation exposure does not represent real movements of cash between different currency systems, but can clearly impact both the consolidated profit and loss account and the consolidated balance sheet. The balance sheet effects are often dismissed as illusory since they have no cash impact. However the level of assets and liabilities can affect financial ratios calculated using balance sheet figures, which causes practical problems where the company has restrictions on its level of borrowings placed by covenants.

Two major controversies exist in the translation of foreign currency financial statements, the first being related to the translation method which should be used and the second should the resulting gain or loss be reported in the income statement in the

income statement or deferred and shown on the shareholders equity section of the balance sheet. SFAS 8 was the accounting standard which governed the treatment of translation of foreign currency financial statements. This standard required companies to use the temporal method for translation and that all gains and losses resulting from translation should be included in the income statement. This gave rise to severe criticisms of the standard, as some believed that this method produced gains and losses, which were inconsistent with economic reality. The advent of hedging of translation exposure also began as a result of SFAS 8, as the reporting of unrealised gains and losses introduced unnecessary sources of variability in earnings and exchange rates fluctuated over periods. The introduction of FAS 52 saw the cessation or decrease of such hedging, as it introduced the attitude in which the treatment of translation gains/losses as well as translation method depended on the managements assessment of the degree of economic interdependence of the subsidiary and parent company[5], i.e. on the functional currency of the foreign entity. If the functional currency is a foreign currency, FAS 52 requires the use of the current rate method with translation gains and losses taken directly to shareholders equity. If the functional currency is the parents companies currency, the rules of FAS 8 apply.

Research has shown that the adoption of FAS 52 has reduced the need for hedging of translation exposure Smith and Stulz (1985) Ziebart and Kim (1987) and Shalchi & Hosseini (1990). C Olson Houston (1998) found that there was no evidence to support the assertion that firms decreased hedging of translation exposure as a result of the adoption of FAS 52. Garlicki, Fabozzi and Fonfeder (1987) found no significant positive reaction to the change or perceived change in reporting requirements for foreign currency translation from SFAS 8 to FAS 52.

[5] Translation Exposure Hedging Post SFAS No. 52, C. Houston 1990

The decision whether to hedge translation exposure has given rise to many debates. Many argue that translation exposure is uneconomic, as it relies on book values of transactions taken in the past and as such it ignores the longer term implications of exchange rate changes on the competitive posture and hence the profitability as well as the economic value of a firm[6]. The general recommendation of the finance literature is not to worry about this type of exposure and thus not to hedge it

Finance literature suggests that gains and losses resulting from translation of foreign currency financial statements have little direct impact on a firms cash-flows, and thus hedging this exposure creates little shareholder value through reducing expected cost of finial distress, taxes or under-investment problems[7]. Also it is said that translation gains/losses are poor estimators of real changes in firm value, which suggests that hedging such exposure will be inefficient in reducing share price exposure.

Glaum (1990) ,Kohn (1990) and Belk and Glaum (1992)emphasized that economic exposure management is the most relevant concept to be applied in foreign exchange management. Economic exposure is a less precise concept than transaction and translation exposure, and it is more difficult to measure and manage the risks. Economic exposure includes both transaction and translation effects but also incorporates the competitive situation of the firm (Shapiro, 1992). Economic exposure is defined as the sensitivity of the firm's future cash flows to unexpected exchange rate changes and changes in the competitive environment caused by these currency movements The measurement of a firm's economic exposure requires detailed knowledge about the firms operations and the impact of currency movements

[6] Thesis pg 18
[7] Eiteman et al 1995

on expected future cash inflows and outflows over time. A firm's economic currency exposure can be attributed to, the nature of the firm's international operations, the nature of its foreign competition, and the nature of the product or service it produces Booth and Rotenberg (1990). The extent, to which a firm sources, sells, finances or produces in foreign markets are the most obvious determinants of its sensitivity to currency effects. The greater the activities of firms in foreign markets, the larger its economic currency exposure is expected to be. Moles and Bradley (2002). Economic exposure affects the operating profits of companies in globally competitive industries as well as companies not engaged in international business but face foreign competitors in their domestic market. Belk and Glaum (1990) found that companies were less concerned about the real impact of exchange rate changes on the competitive position of the companies. Bradley and Moles (2002) find that there is a significant relationship between a firms exchange rate sensitivity and the degree to which it sells, sources and funds itself internationally.

In seeking to manage economic currency exposure risk, firms can adopt either operational or financial hedging approaches, or a combination of both Srinivasulu (1981), Aggarwal and Soenen (1989) and Soenen and Madura (1991). However financial It requires a strategic reorientation of operating policies regarding pricing, sourcing, locaton of production and financing. Moffet and Karlsen (1994) describe the use of production, financial and marketing policies to manage economic currency exposures as `natural hedging'. Diversification of international operations is an important aspect in managing economic exposure, as it allows companies to react competitively in light of currency movements. As exchange rate changes affect a firm’s cost of production at home relative to those of producing abroad, the firm may

relocate production between countries. The firm can also make marginal shifts in sourcing inputs or lengthening production in a nation whose currency has devalued and decrease production or sourcing inputs in nations with appreciating currencies. The diversification of financing across currencies is another operational strategy that can be used to hedge economic currency exposure. This will involve structuring the firms liabilities in such a way that changes in foreign assets values due to economic exposure is offset by relative changes n the debt service expense in the same currency, i.e. acquiring debt in a currency in which the company has continual cash inflow which is exposed to economic exposure. Current literature perceives economic exposure management as a dynamic concept that should be incorporated into the long-range, strategic planning system of the corporation and integrated with all areas of corporate decision-making (Glaum, 1990). Companies should diversify the markets for both output and sources of supplies internationally, this will allow management to be propositioned to both recognize dis-equilibrium when it occurs and react to it competitively.

Interest rate exposure has gained importance in recent years as a result of a trend toward increasingly variable interest rates and the growing popularity of short-term or variable-rate debt. Interest rates have become as volatile as exchange rates over the past two decades. In the 1970s and 1980s, interest rates whether short or long term have fluctuated by several percentage points on a month-to-month or even week-to-week basis. In the US short term interest rate levels ranged from 5 to 18% and similar movements took place in other major countries however there is little empirical work on interest rate exposure of non-financial multinational companies, with the limited work being about the interest rate exposure of financial corporations, Choi and

Eylasaini (1997). Interest rate exposure is the risk that unanticipated changes in the level interest rates will adversely affect a firm's profit or cash flow, theoretically affects the value of non-financial corporations as well due to changes in the cash flows and the value of their financial assets and liabilities. Interest rate exposure can also indirectly affect the competitive position of firms Bantram (2002).

The single largest interest rate risk of non-financial firm is debt service, with the second being the holding of interest sensitive securities, Eiteman, Stonehill and Moffett (2000). As multinational corporations operate in different countries, they are likely to possess debt and securities in different currency denominations, with different interest rate structures (floating versus fixed) and different maturities of debt.

Interest rate risk management is becoming more and more common in today's corporate world. This is primarily in response to increased competition and the availability of tools to manage the risk. Since 1977, a series of financial innovations has been introduced which enable corporations to control the risk of interest rate volatility, these instruments and techniques give treasurers the flexibility in managing their cash flows by allowing them to transfer interest rate risk to those better able or more willing to bear it, Farhi and Thurston (1988).

2.3. Derivative Instruments

Today financial price risk cannot only affect quarterly profits, but it can determine a firms very survival. Unpredictable movements in exchange rates and interest rates present risks that cannot be ignored. The financial markets have responded to this increased price volatility with the evolution of a range of financial instruments and

strategies than can be used to manage the growing exposure of companies to financial price risks. there are a wide range of internal and external techniques which can be used to manage financial price risks. External hedging techniques involve the usage of the use of derivatives. Derivatives are financial instruments that derive their value from an underlying variable such as *exchange* rates, interest rates or commodity prices. Derivative contracts include futures, forwards, options and swaps.

Derivative usage has become increasingly widespread since mid –1980s, particularly among large companies in economies with well-developed financial markets, Mallin and Ow-Yong (2000). Empirical work on the use of derivatives by companies is not limited, with the majority of the pats studies being based on US multinational companies Bodnar *et al* (1996,1998), Philips (1995) and Jesswein *et al* (1995). *Bodnar et al* carried out three different surveys in 1994, 1995 and 1998. The 1995 survey found that derivative usage among large firms was greater than among smaller firms. This assertion was also reinforced in the 1998 survey, which found that derivative use is still not as widespread with half of the US population survey using financial derivatives of any kind. Bodnar *et al* (1995) also found that derivatives are used most commonly to reduce the volatility of firm's cash flows. Phillips (1995) found that as well as using derivatives for financial risk management, 67% of firms surveyed use them in conjunction with obtaining funding and 21% for investment purposes. Bartram *et al* (2003), compare the derivative usage of 7,292 companies in 48 countries primarily US firms and find that 59.8% use derivatives with 43.6% using foreign exchange derivatives and 32.5% using interest rate derivatives.

In the UK, Grant and Marshall (1997) carried out a study on derivatives usage in large UK companies and found that most large companies use derivatives and that derivatives are most often used to manage foreign exchange and interest rate risks. Mallin et al (2000) found this to be conclusive as well, with over 60% of companies reported using at least one derivative.

The motives for the usage of derivatives have been widely studied by researchers, with the focus being on whether firms use derivatives for hedging purposes to maximize shareholder wealth or for speculation. Bartram et al (2003), Mallin et al (2000), Henttsche and Kothari (1995) and Bodnar et al (1995) find strong evidence that the use of derivatives is, in fact, risk management rather than simply speculation. For example, firms that use Foreign exchange derivatives have higher proportions of foreign assets, sales, and income and firms that use interest rate derivatives have higher leverage, Bartram et al (2003). Finance theory indicates that hedging with derivatives can increase firm value by reducing expected taxes, expected costs of financial distress, under-investment costs associated with investment opportunities in the presence of financial constraints, and agency costs. Mian (1996) studies a sample of 2,799 U.S. non-financial firms after the FASB introduced new reporting requirements for derivatives, found weak evidence with respect to taxes and inconsistent with regard to hedging based on financial distress costs, while Bartram *et al* (2003) find in line with the financial distress hypothesis. Nance, Smith and Smithson (1993) study the use of derivatives by 159 large U.S. non-financial corporations based on their responses to a questionnaire. They find that firms using derivatives have more growth options, are larger, employ fewer hedging substitutes, have less coverage of fixed claims, and face more convex tax functions.

2.4.1 Foreign Currency Derivatives

There are many new derivative instruments, which are being used by companies to manage their exposures to foreign exchange risks such as forward contract, futures contracts, swaps and options. Each of these techniques differ in the way they are applied in each companies situation. There has been much study concerned with the effeciveness of using thses techniques, particularly forward contracts and currency futures, Herbst et al. (1989),Castelino (1992), Herbst et al. (1992)..

A forward contract is an agreement to buy or sell a specific quantity at a predetermined price on a specific date in the future. The predetermined price is called the forward exchange rate. The forward exchange rate is set to a value such that no money is required up front to enter the contract. A currency forward contract is particularly useful for exposures that are short to medium term and whose timing is known for certainty. Forward contracts can normally traded with maturities of up to 1, 3 or 6 months, however forward contracts can also be taken out for up five years. There are a number of risks attached to forward dealing, which makes it essential for treasures to exercise caution. The forward rate is not purely a reflection of the strength or weakness of a currency, it also allows for interest rate differentials, and thus forward rates may move even more dramatically than spot rates. Forward contracts also expose companies to more risks such as settlement risk and counter party risk. Because of the obligation to fulfill, forward contracts contain considerable risks. The pay off structure of forward contracts is symmetric, that is the gain when the value of the underlying asset moves in one direction is equal to the loss when the value of the asset moves by the same amount in the opposite direction, Nance, Smith and Smithson (1993). The forward market is of great importance to treasurers because

they fix the costs of imports and exports in advance of the time that payments have to be made or receivable converted. Forward contracts have been said to increase firm value, Bessembinder (1991). Almost all empirical studies found that the most frequently used method is forward exchange contract (Cezairli 1988,Teor and Er 1988, Belk et al. 1992, Jesswein 1992, Bodnar et al. 1995, Phillips, 1995, Mallin et al 2000). Ease of use, effective in hedging short term foreign exchange exposure, flexibility and transaction costs are some of the reason cited for the use of forward exchange contracts.

Another instrument, which a company might use to reduce the risk of foreign exchange volatility, is to enter a futures contract. This contract is similar to forward contracts in that both involve the promise to buy or sell currency at a specific time in the future. The difference is that profits or loses from holding futures contracts are realized and paid out each day; in contrast, profits or loses from holding a forward contract are realized and transferred only when the contract expires. Futures markets is one of the most important ways to hedge risky assets. If a company takes out a long hedge futures contract, the company will be protected against a rise in a foreign currency value and vice versa if the company takes out a short hedge futures contract. Khoury and Chan (1988) found that currency futures were the least used method by most companies. The administrative costs incurred, inflexibility in contract sizes, and margin requirements acted as deterrents for not using futures contracts. Glaum and Belk 1992 also found that none of the companies which were interviewed used currency futures, with the main reason being that the standardized features of exchange traded futures most often do not enable the companies to hedge their positions perfectly. Mallin et al (2000) also found that only 9 companies out of 231

respondents to their survey used currency futures. The fact currency futures were not being traded in the UK exchanges meant higher transaction costs would be incurred, also the general lack of confidence in using futures might have deterred the companies.

Options differ from forward contracts in that holding an option gives the holder the right to buy or sell a certain amount of a certain asset at a specified price until or on a specified date, but he is not obliged to do so. Currency options have become increasing popular as a hedging devise, as it protects the company from adverse movements in exchange rates while protecting the companies' ability to gain from favourable movements in exchange rates. Call options protect hedgers against increases in the price of the currency, put options protect hedgers against price decreases. The fact that one is not obliged to exercise an option means that its payouts are not symmetric. The holder of a call option can profit if prices rise. If prices fall, however, he simply does not exercise the option. Options are available both standardised on exchanges and privately arranged over-the-counter. The over-the-counter market offers greater opportunities for customisation. Caps and floors are option-based contracts. A cap is simply a package of call options while a floor is a package of put options. Whenever there is uncertainty in the size of cash flows and the timing of cash flows, then option contracts would prove to be a better hedging technique than traditional hedging instruments such as forward contracts and futures contracts.

Currency swaps are becoming increasingly popular as a new variation of instruments used to manage foreign exchange risks. After its introduction on a global scale in the

early 1980's, currency swaps have become one of the largest financial derivative markets in the world. It is a contract in which two parties agree to exchange cash flows that is the principals and interest payments over a period of time at an agreed exchange rate. Companies that operate in one currency but need to borrow in another currency commonly use currency swaps. It is usually cost effective to borrow in a company's own currency as funds will be received up front and interest and principal payments are made in the same currency. If the company partakes in a currency swap, interest and principal will be received in its own currency, thereby offsetting or partially offsetting its payments on its debt, and receive funds up front and make payments in the other desired currency. Currency swaps enable each contracting party to borrow in the market in which it possesses comparative advantage, and both parties would benefit from the swaps through reduction in borrowing costs. Currency swaps allows corporations to adjust their liabilities according to the mix of their foreign operations and enables corporate treasurers to basically transform the currency profile of a companies liabilities relatively quickly. Currency swaps can be negotiated for a wide range of maturities up to at least 10 years, and can be viewed as a series of forward contracts between the two parties. |

2.4.2 Interest rate Derivatives

Interest rate derivatives are derivatives, which provide pay-offs determined by how an interest rate changes. The same derivative products used to manage foreign exchange risks can be used to manage interest rate risks i.e. forwards, options and swaps with the most popular being interest rate swaps.. the use of these derivatives have grown in popularirty for several reasons. Nearly all businesses face some form of interest rate

risk. Since the middle 1980's, over-the-counter interest rate derivatives have proven to be more re popular way to manage interest rate risks as they are customized to the needs of the risk manager.

A forward rate agreement is a forward contract on an interest rate. It is an inter-bank traded contract to buy or sell interest payments on a notional principal. It gives the buyer of the FRA the right to lock in an interest rate for a desired term that begins at a future date. If interest rate rise above the agreed limit, the seller will pay the buyer the increased interest expense on the notional principal, but the buyer will pay the seller the differential interest expense if interest rates fall below the agreed limit. Just like the currency forward contracts, maturities are for 1, 3, 6, 9 and 12 months.

Generally, FRAs are used to manage and cover short-term interest rate risks. Companies can protect themselves against the risk of unfavorable interest rate movements by buying or selling an FRA. If their financial liabilities carry a floating, short-term interest rate, they are at risk if interest rates rise. If it seems likely that rates will rise beyond the FRA rate for the transaction date in question, then buying an FRA allows them to lock in their short-term financing cost at the FRA rate for the period up to the settlement date. In situations where a company has fixed-rate, long-term financial liabilities and anticipates a significant drop in interest rates, selling FRAs has the effect of converting the fixed-rate obligation into a floating-rate one, and creates the possibility of a gain if rates fall further than the market expects. In contrast to currency forward contracts, forward rate agreements are the least used derivatives to manage interest rate exposures. (Phillips. 1995, Mallin et al. 2000). This might be due to the limited maturities and currencies available.

Interest rate futures, unlike foreign currency futures are widely used by financial managers and treasurers of non financial companies. (Bodnar et al. 1995, Eiteman, Stonehill and Moffett. 2000). The reasons for the increased used stems from the relatively high liquidity of the interest rate futures market, their simplicity of use and the standardized nature of interest rate exposures faced by companies. However Mallin et al (2000) and Phillips (1995) find that futures are the least used to manage interest rate risks. An interest rate futures contract fixes the effective interest rate for borrowing or lending funds at a specific date in the future. A company anticipating losses from a decrease in interest rates could take up a futures position that would provide gains from decreasing interest rates.

Interest rate swaps is the most widely used interest rate derivative (Phillips. 1995, Bodnar et al. 1995, Mallin 2000). An interest rate swap is an agreement between two parties in which each party makes a series of payments to other at predetermined dates at different rates. The main type of interest rate swap is a plain vanilla swap, which is where one set of payment is fixed, and the other is floating. This type of swap forms the largest single financial derivative market in the world, with over $25 Trillion on existing agreements at the end of 1998. The two parties may have various motivations for entering into the agreement. A corporate borrower of good credit standing may believe that interest rates are about to rise, by entering into a swap agreement to pay fixed and receive floating interest rates, the treasurer will be able to protect the firms against rising debt-service payments. Most firms use interest rate swaps in this manner, which is to manage the payment structure of their liabilities. Other firms holding interest sensitive assets use swaps to adjust the structure of their cash inflows.

Swap agreements involve less paperwork, and administrative procedures and cost are considerably lower than other forms of derivative instruments.

Interest rate options are like forward rate agreements, but instead of being a firm commitment to receive one interest rate and pay another, they provide the right to receive one interest rate and pay another. Interest rate options are as popular to use as interest rate swaps, compared to all other interest rate derivatives. (Bodnar et al 1995, Phillips. 1995, Mallin et al. 2000).

3.0. Research Methodology

Past empirical works on the management of financial risks with derivatives have been carried out by postal surveys, Collier & Davis (1985), Cazairli (1988), Bodnar et al(1995), Mallin et al (2000), and through the conduct of interviews Belk and Glaum (1990) who interviewed 17 companies in the UK and Collier et al. (1991) who compared 12 UK companies to 12 US companies.

The research method employed in this study will however involve the collation of data through the analysis of the annual reports of 10 companies in the UK telecommunications industry and 10 companies in the US telecommunications industry. The use of this research method, eliminates the risk of non response from companies. Also as, American companies are used in the analysis; this method proves cheaper than sending out postal surveys or conducting telephone interviews. In order to reduce the reliance on the annual reports as the source of all data used in the analysis, secondary sources are used as a supplement. Database such as Data Stream is used to gather some independent variables such as the amount of foreign sales, and industry classification. Websites such as Hoovers Online and Yahoo Finance provided information on the financial markets of the companies.

Sample Selection

Using information based in public data of companies**,** Firms that met the following three criterias were included in the research.

(1) The firms were in the telecommunication services industry

(2) The firm had been listed on the London Stock Exchange and the New York Stock Exchange.

(3) The firm is either a Multinational or a Domestic firm who is exposed to financial risks as a result of international competition.

Table 3.1. List of companies

UK COMPANIES	US COMPANIES
BT Group plc	Verizon Communications Inc.
Vodafone Group plc	France Telecom SA
Cable & Wireless plc	AT & T Corp.
Easynet Group plc	Crown Castle International
THUS group plc	SBC Communications Inc
MM02 plc	America Movil S.A. de. C.V.
Kingston Communication plc	American Tower Corporation
Fibernet Group plc	Nippon Telegraph and Telephone Corporation
Colt Telecom Group plc	New Skies Satellite N.V
Telewest Communications plc	Callnet

The research into these companies, covers a wide range of areas. The key areas being:

(i) Whether derivatives are used or not;

(ii) Which derivatives are used, and the exposures which these derivatives seek to manage;

(iii) Organization of risk management in the company

(iv) Disclosure of financial instruments

3.2. Firm Characteristics

As indicated in table 3.1, there were 20 companies for which I could obtain their annual reports for the the past 3 years. Table 3.2. presents information regarding size and the extent of international operations.

4.0. Analysis of Results

4.1. Descriptive features of companies

All UK companies used in the research were listed on the London Stock Exchange. All but 2 of the companies operated mainly in the UK with large international dimension. Only one of the companies operated solely in the UK. The annual group turnovers of the companies ranged between £1million to £25billion. With the American companies, all were listed on the New York Stock exchange however 3 of the companies were non-American companies but operated in the US and in other parts of the world. The annual group turnover of the US companies ranged from US$200 million toUS$90 billion. Table 4.2 and Table 4.3 details derivative usage in relation to size.

Table 4.1. Derivative usage by company size - UK Telecommunication Services Industry

Turnover £m	Use Derivatives	Don't Use Derivatives	Total
0-50		1	1
51 – 100	1		1
101 – 500	1	1	2
501+	6		6
Total	8	2	10

Table 4.2. Derivative usage by company size- US Telecommunication Services Industry

Turnover US$m	Use Derivatives	Don't Use Derivatives	Total
0-500		1	1
501-1000	2		2
1000+	7		7
Total	9	1	10

Of the combined 20 companies, 85% reported that they used at least one derivative if and when the need arises. Table 4.1 and 4.2 show that the use of derivative is related to company size, with more of the largest companies using derivatives compared to

smaller companies. In the UK only 1 company, which is classified as a small company due to its turnover being less than £100m, uses at least on derivative. This findings support the findings of previous studies (Grant and Marshall 1997; Mallin et al 2000), in that large companies measured by turnover are the main users of derivatives. Non of the companies trade or speculate in the derivatives market.

Non - Use of Derivatives

As with previous studies, the reason for not using derivatives was investigated. For the 3 companies' not using derivatives, the main reason stated by 33% of them was that there was no significant exposure to necessitate hedging, believing that the level of foreign currency payments and receipts has historically been very low on a net basis and it has not been considered necessary to hedge. Of these three companies, 66% employ other forms of risk management techniques to hedge against exposure. This might be by the diversification of risk with other parties or through foreign direct investments in the local markets.

4.2. Derivative instrument and purpose of use

This looks at the types of derivative instruments used to manage exposures to foreign exchange risk and interest rate risks and the objectives of the risk management function.

(a) Types of derivatives instrument used and risk hedged

The annual reports of the UK and US companies show that the OTC forward contract is the most common instrument used by companies to manage their foreign currency exposures. This is consistent with the findings of Khoury and Chan 1988, Cezairli

1988, Soenen and Aggarwal 1989, Belk et al 1992, Jesswein et al. 1994, Bodnar et al 1995 and Phillips 1995. The flexibility, ease of use and the low transaction cost involved with using forward contracts are some of the possible reasons for using forward contracts, as well as the fact that it is the longest trading derivative and well established in the financial markets. As depicted in Table 4.3 and Figure 2 and Figure 3 below, Currency swaps are also used more frequently by firms than are other derivatives such as Options and futures. The annual reports of the companies also showed no usage of exchange options and virtually low futures contracts in the management of financial risks. This might be attributed to the fact that these management techniques are relatively new and are currently not being traded in the UK exchanges, making transaction cost higher which deters UK companies from using them.[2] With US companies, the reasons for low usage may also be attributed to the fact that these contracts offer no flexibility in term of contract sizes, have high administrative costs and require marginal payments to be made everyday which result in cash flows taking place everyday.

In the management of Interest rate risks, swaps proved to be the most common. With 60% of UK firms and 70% of US firms using swaps. This is also consistent with the finding of Bodnar et al. 99 who find that 100% of US firms and almost 80% of German firms list swaps as their top three choice for interest rate risk management.

Engineered options also seem to be more popular in the US than in the UK. US firms also used other forms of derivatives especially Caps, Floors and Collars in the management of interest rate risks. This may also be attributed to the fact that these instruments are relatively new instruments, which are highly sophisticated and costly

Table 4.3. Firms use of derivatives by type of instrument and financial price risk

	UK		US	
	Foreign Exchange Risk Derivatives	**Interest Rate Risk Derivatives**	**Foreign Exchange Risk Derivatives**	**Interest Rate Risk Derivatives**
OTC Forwards	8		4	1
Futures	1	1	0	1
OTC Options	1		1	2
Exchange Options			0	
Swaps	3	6	3	7
Caps				3
Floors				2
Collars				2

and are not commonly used by UK companies. A reason suggested by Glaum and Belk (1992) is that the expected future tradability of a financial hedging product is important to corporate managers and the complex structure of the engineered hedging products may make them less tradable.

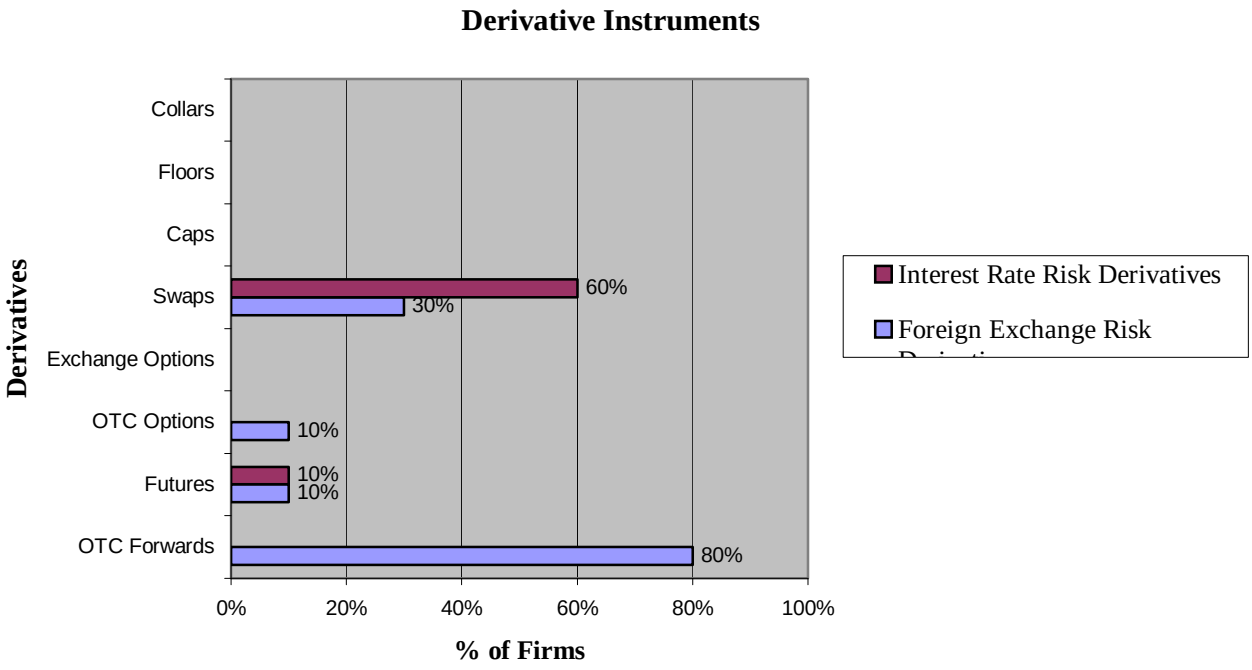

Figure 2. UK firm derivatives by type of instrument and financial price risk

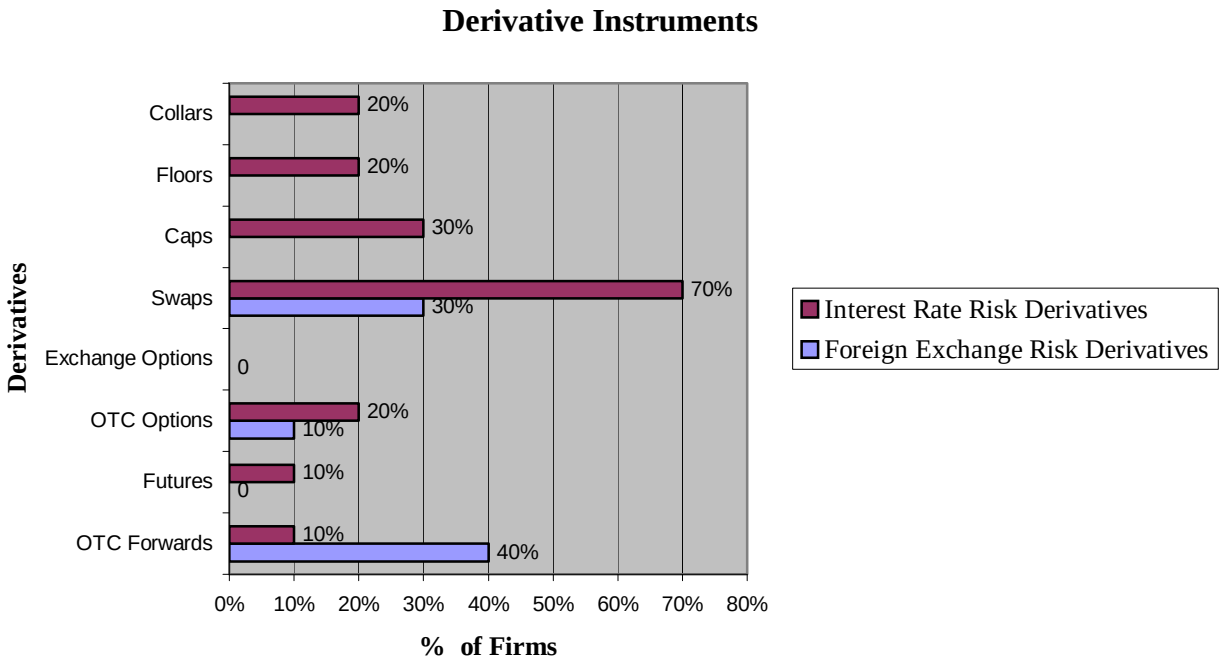

Figure 3. US firm derivatives by type of instrument and financial price risk

(b) Financial Risk Management Objectives.

An effective risk management objective can only be implemented when there are well placed, clearly defined policies regarding interest rates and foreign exchange, which are compatible with the overall company objectives. In the management of financial risks, it is important to have clearly defined risk management objectives, which can provide a framework for the assessment of how well the company is managing the risks. In the management of interest rate risks, companies are generally concerned with achieving competitive advantage in a market, which they can borrow at a cheaper rate. Companies are generally concerned with either swapping a fixed rate/floating rate debt to a floating/fixed rate debt, fixing a spread or a new debt or locking in a future financing date. The objectives of the interest rate risk management function among others include protecting earnings/cash flows, protecting key financial ratios and also reducing borrowing cost. The main objectives of foreign exchange exposure involves the elimination of the translation risk arising from

consolidation of foreign subsidiaries into parent currency, the elimination or reduction of risks relating to known payments and receipts denominated in foreign currency arising from previous contractual transactions, and finally the reduction of any economic exposure which may affect the companies competitive position and expected future cash flows.

Consistent with previous studies, Belk and Glaum (1990), Belk and Edelshain (1997), Duangploy, Bakay and Belk (1997), Cezairli (1988) and Aobo (1999), the annual reports and Table 4.4, show that the majority (70%; US and 80%; UK) of the companies actively manage their transaction foreign exchange exposure. The annual reports show that for all the firms who hedge their currency transaction risks, the positions are made up of both foreign currency receivables and payables as well as expected future cash-flows. About 25% of the companies also explained in their annual reports that in addition to known and expected transactions, they also hedge in regard to net foreign investments.

The management of translation risk even though minimal with only 25% of the companies in the sample actively managing their translation exposures, is surprising, as the elimination of translational risk can give rise to further transactional exposure. Academics in previous studies pointed out that the accounting concept of exchange exposure is not an appropriate concept to be used in foreign exchange risk management, as it does not reflect the real impact of foreign exchange fluctuations on the economic value of the firm. By trying to hedge translation exposure it can be said that companies are hedging against "paper losses" while at the same time incurring the

risk of real losses from their hedging transactions (see, for instance, Eun/Resnick 1997).

With 5% mentioning the management of economic exposure, this is consistent with the findings of Cezairli (1988), Belk and Glaum (1990) and Batten et al. (1993) who find that less attention is given by companies to the real impact of exchange rate changes on the competitive position of the companies. Although there is a general agreement between academics that the management of economic exposure should be the most important objective of foreign exchange risk management, many companies seem to pay less attention to the effect of exchange rate changes on their future expected cash flows. It was found in previous studies that some companies believe that as multinational companies with high geographical diversity (which can be said to be the case of the Telecommunication Industry) of operations and sourcing, this diversification, can provide them with some protection against economic exposure.

Table 4.1: Financial risk management Objectives

	US	UK	Total
Foreign Exchange Objectives			
Management of Transaction Risk	**7(70%)**	**8(80%)**	**15(75%)**
Management of Translation Risk	**2(20%)**	**3(30%)**	**5(25%)**
Management of Economic Risk	**1(10%)**		**1(5%)**
No stated objectives/do not manage foreign exchange exposure	**2(20%)**	**1(10%)**	**3(15%)**
Interest Rate Objectives			
Protect group's earnings/cash flows	**3(20%)**	**2(20%)**	**5(25%)**
Protect key financial ratio		**1(10%)**	**1(5%)**
Reduce borrowing costs	**3(30%)**	**2(20%)**	**5(25%)**
No stated objectives/do not manage interest exposure	**4(40%)**	**5(50%)**	**9 (45%)**

Though this may be the case for some companies, most companies, whether multinational or domestic are affected by economic exposure in one form or the other,

through the impact of exchange rate changes on interest rates and prices. If managers continue to argue that its overall corporate objective is the maximization of firm value and shareholder wealth, then the management of economic exposure should have precedence over the management of other forms of foreign exchange exposure.

(c) Managing Transaction and economic exposure

Looking at the annual reports of the company, it was possible to ascertain the type of derivative instrument used to manage exposure to contractual transactional commitments and expected future cash flows (economic exposure). The results are shown in Figure 4. For companies seeking to manage these exposures, forward contracts proved to be the most used instrument. The least used instrument for all exposure is futures contracts. This is expected with UK companies, as futures are not actively traded in UK exchanges. With the US companies, none at all use futures in

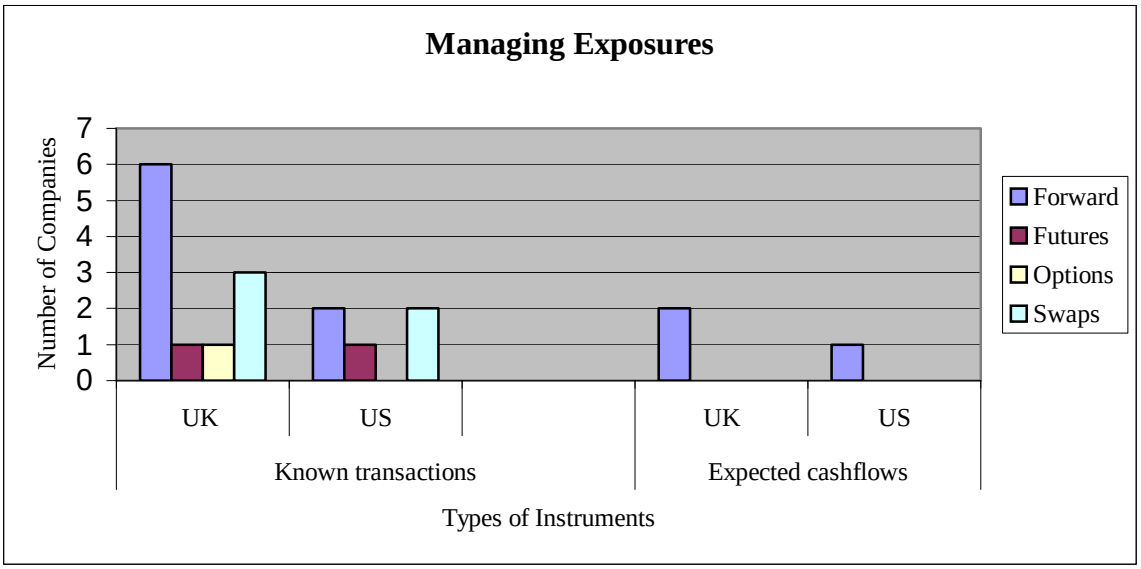

Figure 4. Derivative instruments used in managing committed transactions and expected cash flows

the management of risks even though this is actively traded on the exchange markets in the US exchange markets

4.3. Organisation of financial risk management function

The way in which financial risk management is structured often involves the issue whether the exposure management should be centralised or decentralized. By looking at the annual reports of the companies, it is possible to determine whether the risk management function is centralised or decentralised. If the risk management of a company is decentralised, this means each affiliate is responsible for its own risk management whereas if the risk management function is centralised, the responsibility of risk management lies with the corporate center. Centralised risk management systems are the core ways in which corporations especially multinational corporations organize their risk management function, Belk et al. (1992); Bodnar et al. 1998. Ankron (1974) found that the central control of foreign exchange activities was essential for a rational and consistent approach to controlling the currency exposure of a firm. In looking at the annual reports, 50% of the UK companies clearly stated that they operated a centralised risk management system. These companies were the large companies of the group (in terms of turnover). Centralisation provides numerous advantages for companies. Centralisation allows companies to benefit from economies of scale and it allows for the group-wide net exposure to be hedged rather than each subsidiary partaking in it's own hedging activity. While the other companies did not state whether there was a centralised or decentralised treasury function, 30% of the companies did have treasury policies stated in their annual reports, while the remaining 20% did not mention a treasury department or treasury policy. The reason for this might be due to the fact that these companies do not have

significant exposures to hedge any risks as they operate solely in a domestic market. Also a centralised system is costly and may meet with resistance by the management of local subsidiaries. US companies did not mention in their annual reports how the risk management function is organized, whether they have a centralised treasury function or decentralised treasury function. One can however presuppose that as most of these companies are large multinational companies, the management of financial risks will be dealt with centrally, with well-documented policies on their risks and how these risks are managed. It can be said that centralisation of financial risk management is essential for effective control, coordination and avoidance of dysfunctional actions taken by foreign subsidiaries.

4.4. Compliance with Accounting Standards Requirement

As with most information provided by companies in their annual report and financial statements, the disclosure of derivative instruments is governed by accounting standards which most be complied with by companies. In the UK the disclosure and presentation is governed by Financial reporting Standards 13 (FRS 13) and in the US Financial Accounting Statement 133 (FAS 133).

(a) FRS 13 and compliance by UK firms

Financial Reporting Standard (FRS) 13, "Derivatives and other Financial Instruments: Disclosures", published by the Accounting Standards Board on September 24, requires all companies with a capital instrument listed on a stock exchange or market in the UK to explain in financial statements the role that financial instruments play in their funding. This includes describing any risks involved and supporting with numerical disclosures.

In the disclosures companies must analyse and explain interest rate risks in terms of financial liabilities denominated in different currencies; provide details of currency exposures; analyse the maturity of borrowings and other financial liabilities; give summaries of the fair values of financial instruments held including derivatives and show the effects of any use of hedge accounting. The narrative disclosures should also include an explanation of the role that financial instruments play in creating or changing the risks that the entity faces in its activities. The directors' approach to managing each of those risks should also be explained, and this should include a description of the objectives, policies and strategies for holding and issuing financial instruments.

The annual reports of 90% of the UK companies, exhibit a compliance with the requirements of FRS 1. The only company not complying with the requirements of FRS 13 however complied with the requirements of FAS 133. All companies gave both narrative and numerical disclosures of their financial instrument. Each gave a description of their treasury or risk management policy, followed with a description of both their interest rate risk and exchange rate risk, including the derivative instruments used to hedge these risks. The numerical disclosure included the currency and interest rate risk profile of financial assets and liabilities, and each company gave a summary of the fair values of financial instruments held.. Though each company complies with the requirements of FRS 13, each do this in a manner that suits them and information disclosure varies from company to company.

(b) FAS 133 and compliance by US companies

The Financial Accounting Standards Board (FASB) issued Financial Accounting Standard 133 (FAS 133) on Accounting for Derivative Financial Instruments and Hedging Activities. The standard was so confusing and costly to implement that the FASB later extended the implementation deadline to January 1, 2001 for calendar-year companies. FAS 133. This Statement establishes accounting and reporting standards for derivative instruments, including certain derivative instruments embedded in other contracts, (collectively referred to as derivatives) and for hedging activities. It requires that an company recognize all derivatives as either assets or liabilities in the statement of financial position and measure those instruments at fair value. If certain conditions are met, a derivative may be specifically designated as (a) a hedge of the exposure to changes in the fair value of a recognized asset or liability or an unrecognised firm commitment, (b) a cash flow hedge or (c) a hedge of the foreign currency exposure of a net investment in a foreign operation, an unrecognised firm commitment, an available-for-sale security, or a foreign-currency-denominated forecasted transaction.

The adoption of FAS 133 has created confusion and increased costs for most US companies, however 80% of the companies researched have adopted FAS 133. each company according to its own preferences classified derivatives into the three criteria's suggested by FAS 133. Most derivatives especially interest rate swaps, currency swaps as cash flow hedges, and while some foreign exchange contracts are classified as accounting hedges.

5.0. CONCLUSIONS

The use of derivatives to hedge the financial price risks of foreign exchange exposure and interest rate exposure is well established amongst companies in the Telecommunication Industry both in the UK and in the US, as indicated by this research. With a cumulative figure of 85% of the companies reporting that they use at least one derivative instrument. Of these companies, all US companies with turnovers of over US$500m use derivatives while the small companies did not report using any derivatives. In the case of UK companies none of the small companies reported using any derivatives. This is consistent with the size effect reported in other studies.

This research, consistent with the findings of, Grant and Marshall (1997), Bodnar et al. (1999), Mallin et al. (2000) indicate that in hedging contractual obligations, OTC forwards is the most popular derivative instrument used to hedge currency risk (80%; UK and 40%; US) and swaps the most popular derivative instrument to hedge interest rate risks (60%; UK and 70% US). The use of engineered options to hedge interest rate risk is most common in the US than in the UK. This research indicates that none of the firms use derivatives for speculative purposes rather just for the management of financial risks.

As with the findings of Belk et al (1992) and Bodnar et al. (1998), this research finds clearly stated in the annual reports of a significant number of UK companies (50%) that the risk management function is centralised, while the US companies did not state or indicate how the risk management function was organised.

REFERENCES

1. Aggarwal, R., Soenen, L. (1989) Cash and foreign exchange management: theory and corporate practice in three countries, Journal of Business Finance and Accounting, Winter, pp.599-619
2. *Aabo, T.* (1999): Exchange Rate Exposure Management: An Empirical Study into the Strategies and Practices of Industrial Companies, Working Paper, Aarhus School of Business, June 1999.
3. Accounting Standards Board (1998) *Derivatives and other financial instruments: disclosures,* Financial Reporting Standards 13, ASB Publications.
4. Bartram, S. M., Brown, G. W., Fehle, F. R. (2003) International evidence on financial derivatives usage, Economics Working Paper at WUSTL
5. Belk, P. A. and Edelshian, D. J., (1997) Foreign exchange risk management-The Paradox, Managerial Finance, 23, 7, pp
6. Belk, P. A./ Glaum, (1990) *The Management of Foreign Exchange Risk in UK Multinationals; An Empirical Investigation,* Accounting and Business Research Vol 21, pp.3-13
7. Bodnar, G. M. and Gebhardt, G. (1999) Derivatives usage in risk management by US and German non-financial firms: A Comparative Survey, Journal of International Finanacial Accounting, 10,3, pp. 153-187

8. Bodnar, G. M., Hayt, G. S., Marston, R. C. and Smithson, C. W. (1996) 1995 Wharton survey of derivatives usage by US non-financial firms, Financial Management, Financial Management, 24, pp. 104-33.

9. Bodnar, G. M., Hayt, G. S., Marston, R. C. and Smithson, C. W. (1998) Wharton survey of derivatives usage by US non-financial firms, Financial Management, Financial Management, 27, pp. 70-91.

10. Cezairli, A. (1988) Foreign exchange exposure management in multinational corporations, PhD dissertation, Case Western Reserve University.

11. Choi, J.J., Elyasiani, E., 1(997). Derivative Exposure and the Interest Rate and Exchange Rate Risk of U.S. Banks, Journal of Financial Services Research, 12 2-3, pp. 267-286.

12. Collier, P. and Davies, E. (1985) The management of currency transaction ris by UK multinational companies. Accounting and Business Research, 15, pp.327-334.

13. Duangpoly, O., Bakay, V. H., Belk, P. A. (1997) The management of foreigh exchange risk in US multinational enterprises: An empirical investigation, Managerial Finance, 23, 7, pp. 85-100

14. Garlicki, T. D., Fabozzi, F. J., Fonfeder, R. (1987) The impact of earnings under FASB 52 on equity returns, Financial Management, Autumn, pp. 36-44

15. Glaum, Martin, Strategic management of exchange rate risks, Long range planning, 23, 4, pp. 65-72

16. Grant, K. and Marshall, A. P. (1997) Large UK companies and derivatives, European Financial Management, 3, pp.194-208.

17. Jesswein, K., Chuck C. Y. Kwok and William, R. Folks Jr (1995) What new currency risk product companies are using and why?. Journal of Applied Coprporate Fianace, 8, pp. 103-114

18. Khoury, S. and Chan, K. (1988) Hedging foreign exchange risk; selecting the optimal tool. Midland corporate Finance Journal, 5, pp. 40-52

19. Kohn, K. 1990. Managing Foreign Exchange Risk Profitably. Columbia Journal of World Business, September, pp.203-207.

20. Smith, C. and Stulz, R. (1985) The determinants of firm hedging policies. Journal of Financial and Quantitative Analysis, 20, pp. 391-405

21. Soenen, L. and Madura, I (1991) Foreign exchange management- a strategic approach, Long Range Planning, 24, 5, pp. 119-124

22. Mian, S. (1996) Evidence on corporate hedging policy, Journal of Fianancial and Quantitative Analysis, 31, pp. 419-439

23. Moffet, M. and Karlsen, J. (1994) Managing foreign exchange rate economic exposure, Journal of International Financial Management and Accounting, 5, 2, pp.157-175

24. Moles, P., Bradley, K. (2002) The nature and determinants of economic currency exposure of non financial UK firms, Managerial Finance, 28, 11 pp 1-15

25. Nance, D. R., C. W. Smith, and C. W. Smithson, 1993, On the determinants of corporate hedging, *Journal of Finance*, March, pp. 267–284.

26. Shapiro. A. (1992) *Multinational Financial Management* (4th ed.), London: Allyn & Bacon

27. Srinivasulu, S. L., (1981) Strategic response to foreign exchange risks, Columbia Journal of World Business, 1, pp. 13-23

BIBLIOGRAPHY

America Movil S.A. de C.V(2002) Annual Report

American Tower Corporation (2002) Annual Report

AT & T Corporation (2002) Annual Report

BT Group PLC (2002) Annual Report

Cable & Wireless PLC (2002) Annual Report

Call-Net Inc (2002) Annual Report

Colt Telecom Group PLC (2002) Annual Report

Crown Castle International (2002) Annual Report

Easynet Group PLC (2002) Annual Report

Fibernet group PLC (2002) Annual Report

France Telecom SA (2002) Annual Report

Kingston Communication PLC (2002) Annual Report

MM02 PLC (2002) Annual Report

New Skies Satellite N.V (2002) Annual Report

Nippon Telegraph and Telephone Corporation (2002) Annual Report

SBC Communications Inc (2002) Annual Report

Telewest Communication PLC (2002) Annual Report

Thus Group PLC (2002) Annual Report

Verizon Communications Inc (2002) Annual Report

Vodafone Group PLC (2002) Annual Report