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Managing Foreign Exchange Rate Exposure
A Case Study in Sinochem International Corporate

By
Qing Ru
2008

A Dissertation presented in part consideration for the degree of
MA Risk Management

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Abstract

This dissertation is purposed to seek an exploration on the measurement and management foreign exchange exposure and the application in China.

Although China has a tremendous improvement on economy in the recent three decades, its financial derivatives market is still undeveloped. Limited available derivatives constrain the corporate foreign exchange exposures management. A case study of Sinochem International Corporation is present for the research. By examining the firm's hedging data, the motivation and objective of the foreign exchange is disclosed, and the techniques employed by the firm are effective for managing the foreign exchange exposure. This dissertation also suggests a well-structured and holistic strategy involving the financial, business and market environment is a crucial factor for exchange exposure management.

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Chapter One: Introduction

1.1 Corporate risk management

Corporate risk management is an important element of a firm's overall business strategy. Stulz (1996) draws on extant theories of corporate risk management to argue "the primary goal of risk management is to eliminate the probability of costly lower-tail outcomes - those that would cause financial distress or make a company unable to carry out its investment strategy".

Enterprise risk management has captured the attention of risk management professional academics worldwide. Unlike the traditional "silo-based" approach to corporate risk management, the key of enterprise risk management is managing the risk on the company level which enables firms to benefit from an integrated approach to managing risk that shifts the focus of the risk management function from primarily defensive to increasing offensive and strategic (Liebenberg & Hoyt, 2003). The major external factors that have driven firms to approach risk management in a more holistic behavior are a broader scope of risk arising from factors such as globalization industry consolidation, and deregulation; increased regulatory attention to corporate governance; and technological progress that enhance the better risk analysis (Miller, 1992; Lam and Kawamoto, 1997).

In the past decade, our acknowledgment of risk management has been change by many events and developments, such as of some such scandals including the subprime mortgage meltdown, the asset backed commercial paper and structured investment vehicle debacle, the Asian crisis, the failure of long term capital, the Russian debt crisis and the bursting of the technology bubble.

1.2 Foreign exchange exposure management

In the recent decades, a tremendous attention of risk management has been paid, particularly in the realm of foreign exchange exposure area, both in corporate practice and the literature in a range of world.

Demirag and Goddard (1992) indicate that foreign exchange management has been increasing highlighted due to the continuing growth of international trade and of world financial market over the past thirty years, since the movements of the exchange rate change the terms of competition with foreign firms for domestic exporter and imports, input price with internationally pricing and the value of assets denominated in foreign currencies (Bodnar and Gentry, 1993)

Since the breakdown of Bretton Wood system¹ in 1973, the volatility of foreign exchange rate has affected the whole world inevitably. Therefore, the volatility of both current and future cash flows of international and domestic firms has been paid more attention (Bartov et al., 1996), as cash flow volatility not only enhances the probability that a firm will need to access capital markets, but also increases the relevant cost of those projects, consequently, firms value shrinks. (Shapiro and Titman, 1985; Lessard, 1990; Froot et al., 1993; Minton and Schrand, 1999).

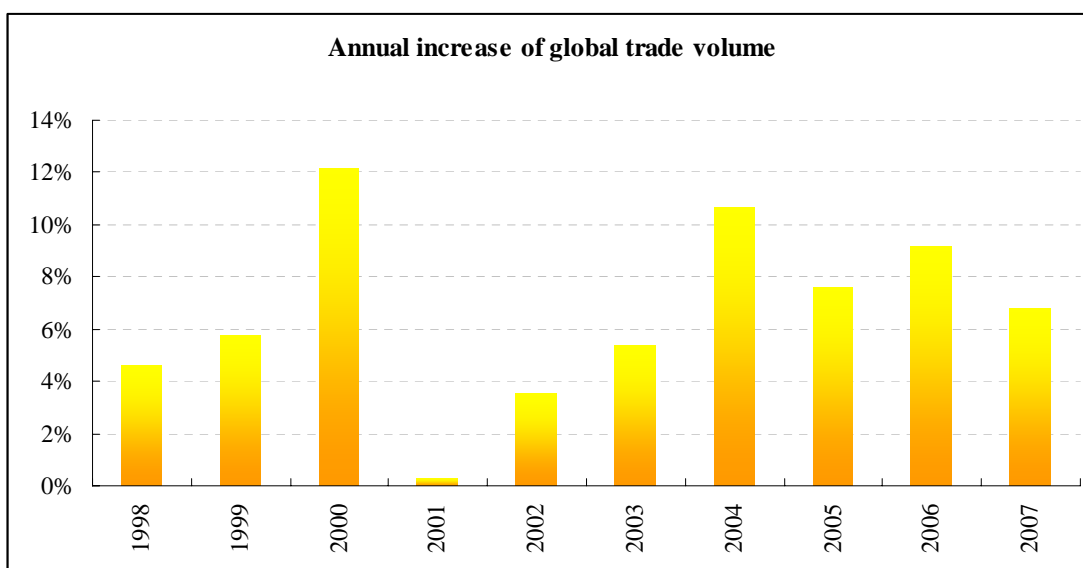
A multinational firm makes itself vulnerable to potential gains and losses subject to changes in the values of its assets which are denominated in foreign currencies. Exporting, importing, and investing in subsidiaries abroad hold the potential for exposing the firm to foreign exchange risks. In the recent decades, foreign exchange risks has formed one of the most challenging and persistent problems for the managers of multinational firms who are

¹ The Bretton Woods system is commonly understood to refer to the international monetary regime that prevailed from the end of World War II until the early 1970s. Taking its name from the site of the 1944 conference that created the International Monetary Fund (IMF) and World Bank, the Bretton Woods system was history's first example of a fully negotiated monetary order intended to govern currency relations among sovereign states. In principle, the regime was designed to combine binding legal obligations with multilateral decision-making conducted through an international organization, the IMF, endowed with limited supranational authority. In practice the initial scheme, as well as its subsequent development and ultimate demise, were directly dependent on the preferences and policies of its most powerful member, the United States.

supposed take the responsibilities of efficient management of their firms' foreign exchange risks by implement of a optimal strategy.

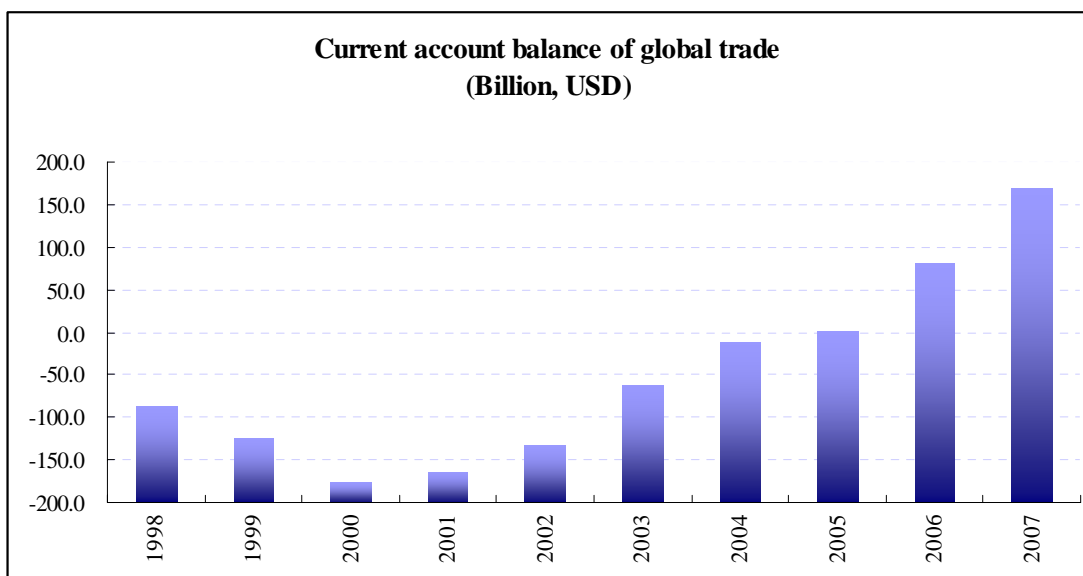
From the data of International Monetary Fund, the growth of the international trade, particularly for the unbalance of the import and export make the foreign exchange risk to a more important position. Here below please find the annual data in the past then years.

Figure 1: Annual increase of global trade volume



Source: Data from the official website of International Monetary Fund, available at: <<http://www.imf.org>>

Figure 2: Current account balance of global trade



Source: Data from the official website of International Monetary Fund, available at: <http://www.imf.org>

Table 1: Annual increase and current account balance of global trade in the past decades

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Annual increase of global trade (%)	4.61	5.79	12.17	0.27	3.54	5.38	10.69	7.63	9.18	6.78
Current account balance (Billion USD)	-86.0	-124.5	-176.4	-163.8	-132.2	-62.8	-10.5	0.9	81.5	167.6

Source: data from the official website of International Monetary Fund, available at: <<http://www.imf.org>>

No company can assert that it could ignore the impact of international economic changes and exchange rate movements, even a local firm, as it could not be isolated from the competition from the market. Among the uncertainties, currency exposure has come under the spotlight.

With the motivation the perpetual development of business and increase of the firm's value continuously, the firms should manage the exchange exposure as a well-structured and implemented currency risk management strategy not only reduces of risk in future cash flows therefore improving the planning capability of the firm, but also reduces the likelihood that the firms' cash flows will fall below a necessary minimum; meanwhile as the markets are usually in disequilibrium because of structural and institutional imperfections, as well as the unexpected external shocks (such as an oil crisis or war), managing the exchange risk with a forward-looking perspective, could also add the firm's value by accurately predict the movement of the exchange rate.

The purpose of this dissertation is to discuss the importance of the corporate foreign exchange exposure management and how to hedge the risk in different scenarios. The second section of the article is the literature review which including the categories the foreign exchange risks; motivation, objective and techniques of foreign risk management. The third section presents the back ground of Chinese foreign currency market and international trade status. The fourth section provides a case study of the foreign exchange

risk management in Sinochem International Corporation, a Chinese listing company. Finally a conclusion is given.

Chapter Two: Literature Review

2.1 Introduction

Foreign exchange risk refers to a risk that is associated with the uncertainty of the exchange rates. Therefore, the investment's value of the financial assets is changing due to the exchange rate's fluctuation, the risk usually affects the business of e export and import, and it also affects investors' international investments. For example, if one currency must be converted to another currency to make a certain investment, then any changes in the currency exchange rate will cause that the value of investment to either decrease or increase when the investment is sold and converted back into the original currency. It is implied that the loss caused by the foreign exchange movement could be both direct as a result of an unhedged exposure and indirect as the influence on the firm's financial statements (e.g. cash flow statement, balance sheet and income statement), even more, the share price as well (Muller & Verschoor, 2006). The volatility of currency fluctuations performed in the last few decades heightened the interest in the potential exposure of multinational firms to foreign exchange rate risk, and this issue has evoked a lot of research.

Muller & Verschoor (2006) indicate in their report of survey and suggestions that from a theoretical perspective, a general view is hold that exchange rate fluctuations are an important source of macroeconomic uncertainty which is typically affected by the balance of payments, interest rates and inflations rates (Buckley, 2004; Shapiro, 2006). They should thus have a significant impact on firm value, regardless of whether the firm is domestically or internationally oriented (Shapiro, 1975; Hodder, 1982; & Marston, 2001).

2.2 Classification of foreign exchange exposure

Ankrom (1974) is the first person who divides the foreign exchange exposure into three separate heading: translation exposure, transaction exposure, and economic exposure. It is later developed by others authors in their books (Demirag &Goddard, 1994; Eteman et al, 2007; Shaprio, 1999; and Buckley, 2004)

2.2.1 Translation Exposure

Theoretically, a firm with overseas subsidiary is facing translation risk. Translation commonly refers the preparation of statements expressed in terms of home currency units, the amounts expressed in foreign currency to home currency.

Shaprio (2006 p.337) defines “*the translation exposure arises from the need, for purposes of reporting and consolidation, to consolidation, to convert the financial statements of foreign operations from the local currencies involved to the home currency. If exchange rates have changed since the previous reporting period, this translation, or restatement, of those assets, liabilities revenues, expenses, gains, and losses that are denominated in foreign currencies will result in foreign exchange gains or losses.*”

Demirag & Goddard (1994, p.97) further explain that translation exposure exists as the reason of the need to periodically consolidate or aggregate parents’ and foreign subsidiaries’ financial statements.

2.2.2 Transaction Exposure

Ankrom (1974) defines transaction exposure as “*the exposure arising from future actions that are contained in sales and profit plan assumptions rather than in balance sheet accounts*”. While translation exposure measures the effect of currency value changes on balance sheet accounts, transaction exposure measures the effect of the same change on the operating performance of the firm. Transaction exposure is difficult to quantify as it relates to the possible consequences of future actions (Demirag & Goddard (1994), as it is the effect of exchange rate changes on committed cash flows such as account receivables

(Chow and Chen, 1998). Ankrom (1974) points out that transaction exposure can arise, for example, on future product sale in a foreign currency. Shapiro (2006) gives an example for sources of transaction exposure; cross border trade, borrowing and lending in foreign currencies, and sales activities of foreign subsidiaries.

2.2.3 Economic Exposure

Economic exposure results from the fact that a company's economic value will change as a result of a movement of exchange rates. Basically, this means that economic exposure is the present value² of assets minus liabilities which change in value with exchange rate changes (Demirag & Goddard, 1994, p.113). This is the change in the net present value of expected future, after-tax, flows. In other words, economic exposure is the extent to which the market value of a firm or subsidiary changes when exchange rates changes (Click & Coval, 2002). Demirag & Goddard (1994) split the economic exposure into two types: transaction exposure and real operating exposure, while Eiteman et al (2007) point that the economic exposure is also called competitive or operation exposure due to the price changing with the exchange rate. Shapiro (2006) explains the terminology economic exposure is the extent to which the value of the firm – as measured by the present value of its expected cash flows changed with the exchange rates.

Both translation and transaction exposure are short term effects and are supposed to be effectively managed by well-structured hedging approaches. For example, a firm has some contractual cash flows denominated in foreign currency at some future dates. The certain amounts of cash flows are stipulated in the contract, while the exchange rate is the only uncertain source for the firm. Therefore, the exposure can be logically hedged by using financial techniques such as derivatives including forward contract, currency option and currency swaps. However, those financial instruments could not eliminate the foreign exchange risk absolutely (Pantzalis et al, 2001), as the explicit exposure such as the volatility of cash flow can be managed by financial instruments or other economic method,

² Present value is the value on a given date of a future payment or series of future payments, discounted to reflect the time value of money and other factors such as investment risk. Present value calculations are widely used in business and economics to provide a means to compare cash flows at different times on a meaningful "like to like" basis

but the implicit risks original from the market cannot be hedged. Meanwhile, economic exposure is a long-term effect which the fluctuation of exchange rate caused the undulation of the firm's long-term cash flows or real net asset³ position, moreover, which is hard to be assessed and managed.

2.3 Management of foreign exchange exposure

As the prior introduction, unexpected fluctuation in foreign exchange rates have been an important concern to firms with foreign trade or international business operation since it will cause the uncertainty of future cash flows, and therefore the value of the firms will be affected. The impact of exchange rate movements on a firm is determined by whether the firm has a long or short economic position in foreign currency (Bartov and Bodnar, 1993). If the firms has long net position in foreign currency, the expected future cash inflow (revenue) will be influenced by the exchange rate. For example, the depreciation of the home currency will benefit these firms, who have export business and / or foreign operations that have current or future cash inflows denominated in foreign currency. Contrarily, firms with short net positions in foreign currency, the expected future cash outflows (expenses) changed with the fluctuation of exchange rate. These firms with importing business have woes when the home currency deprecating (Bartov & Bodnar, 1993; Kiyamz, 2003). The exchange rate movements also affect the purely domestic firms through effects on aggregate demand or on the cost of traded inputs. Domestic firms that sell goods competing with imports will also be exposed to exchange rate movements (Jorion, 1990), As the exchange rate can directly lead the change of relative price on domestic and foreign goods that affect both the current and future expected cash flows of firm with the international operation, consequently, extending to the whole market. It is obviously irreversible that foreign risk management has become a major endeavour to academics, practitioner and regulators.

In the foreign exchange exposure management, hedging is an often use method which is

³ Real net asset position means the market value of the total assets less of the market value of the liabilities (Click and Coval, 2002).

defined as the act of reducing uncertainty about the unknown future price movements in a commodity, financial security and foreign currency. And hedging is frequently used to predict future cost and secure upcoming earnings. Eiteman et al (2007) also indicate that the owner of the existing asset could be protected from loss by hedging. Namely, hedging a particular currency exposure means establishing an offsetting currency opposition so as to lock in a home currency value for the currency exposure and thereby eliminated the risk posed by currency fluctuations (Shapiro, 2006)

The determinant factors of whether implement a hedging strategy are the expenditure and the benefit. As the movement of the exchange rate is unknown, the future return or loss of hedging becomes uncertain and unpredictable. The central topic of the foreign exchange risk management, whether companies should hedge exchange exposure or not, and what kind of method should be employed for hedging have attracted a number of studies to discuss.

Some previous studies give the negative suggestion of hedging the exchange risk, since they believe hedging can increase risk and hedging is too costly. Eiteman et al (2007) give the reasons that firm should not hedge the exchange exposure, since the most of the firm's shareholder's portfolio are much more diversified than the individual firm's, therefore the firm's hedging could not increase shareholder's value obviously. Meanwhile, the management of exchange exposure doesn't increase the expected cash flow but consumes some of firm's resource and therefore reduce the cash flow, even the agent problem will also cause the bias of the spirit of the foreign exchange management which makes it unworthy. It is admitted that the market is difficult to predict. The motivation to reduce the variability is some times driven by accounting reason and it's meaningless to the firm's value. Furthermore, efficient market theorists believe that investors can see through the "accounting veil" and therefore have already factored the foreign exchange effect into a firm's market valuation.

Hagelin (2003), Glaum (1990) and Dufey (1972) found no evidence shows that hedging

translation exposure increases firm value, Hagelin (2003) emphasized that translation exposure should not be hedged as it has an insignificant effect on firm value and also creates additional transaction exposure. Soenen & Madura (1991) and Pritamani, et al (2004) suggest although hedging is an important activity for reducing currency risk, practically, it may also increase risk, as it is very easy to turn hedging into speculation, if the firm take an aggressive strategy on it. Dodd (2000) says: hedging could also be used to restructure positions in financial reports, which reduces market risk but meanwhile increase the credit risk. Zenoff, (1978) points out that given that translation and transaction exposures are not synonymous, reducing the former could cause an increase in the latter, and vice versa. Brown's (2001) case study suggests that the cost of initiating and maintaining a hedging program with derivatives is not trivial, and he could not give a positive support for hedging the exchange rate exposure. Guay and Kothari (2003) conclude that the value of using derivatives to hedge the firm's exposure is economically small in relation to their entity-level of risk exposure by regression the data from 234 large non-financial corporations, which is consist with Brown's find.

However, majority of the previous studies give the optimistic support. Adler and Dumas (1984) mention that the financial hedge could reduce the likelihood of loss form exchange exposure. Chow and Chen (1998) also support this point of view as hedging activities might affect foreign exchange exposure. Firms with well-structured hedging activities may have a relief on to reduce the loss on the foreign exchange exposure.

According to the survey conducted by Jesswein et al (1995), an overwhelming majority of firms believe that managing currency risk is worthy, however, insufficient supportive data is available for the opinion, as most of the firms are reluctant to open their hedging activities. Hegelin (2003) find that no evidence to show that derivatives, which is often used for hedging purposes, will lead the firm a positive leverage. Nevertheless, Gilman (1995) explains that hedging activities is a measure to reduce the number of variables affecting profitability, especially in non-financial institutions. As exchange movements could hardly be predicted accurately and professionally (Demirag and Goddard, 1994),

firms should design a specified risk hedging strategy based on their own firm's characteristics to minimize the volatility of the factors affecting the profits. Rationally, hedging should only to be considered when the effects of unexpected exchange rates are significant (Shapiro, 1999).

After investigating the performance of the foreign exchange management in UK multinationals, Belk and Glaum (1990) result that the management of transaction exposure is the focus of corporate exchange risk management, because the transaction exposure influences the firm's real cash flow.

In fact, firms prefer to use natural hedges in stead of financial hedging instruments (derivatives) to overcome the currency risks (*No gambling in treasure*, March 2003), which can be evidenced by the prior empirical studies, such as Moffet and Karlsen (1994) describe that production, financial and marketing policies can be used as tools to manage economic currency exposures as 'natural hedging'. As being in a globalization business environment, diversification of international operations is crucial for multinational corporations to manage operating exposure. So it can provide companies maintain competitive advantage and defensive reactions to adverse exchange rate movement.

Bodnar et al (1999) carry out three different surveys in 1994, 1995 and 1998. They find from the 1995 survey that derivatives are used most commonly to reduce the volatility of firm's cash flows and derivative usage among large firms was greater than the usage in smaller firms. The latter find is also reinforced in their survey of 1998, which is that 78 percent derivative use is still not as widespread in half of the surveyed U.S. companies.

Martin Glaum (1999) did an empirical study on exchange risk management of 154 large German non-financial corporations, which results that the majority of the firms concern managing their transaction exposure, and most of them adopted a selective hedging strategy based on exchange rate forecasts, small minorities of firms did not hedge foreign exchange risk at all, and only few firms could hedge their transaction exposure completely. More

detailed information is given about the management of US-dollar exchange exposure; Glaum finds that only 16 percent of the firms are fully hedged. The majority of firms had realized hedge ratios between 50 and 99 percent. A three-country study of risk management by Belk (2002) results that 66 percent of the sample companies highly centralized their exposure management, 19 percent lowly centralized their exposure management and only 15 percent decentralized their exposure management.

Marshall (2000) made a survey on UK, USA and Pacific Asian companies and he indicates that general foreign exchange risk management is an important activity for many MNC. It has been reported that the overall objective in foreign exchange risk management of many firms is defensive in an attempt to minimise foreign exchange loss (Tran, 1980 and Rodrigues, 1981). Other stated objectives of managing exchange risk include: reducing the volatility of cash flows (Copeland and Joshi, 1996, Cummins et al., 1998) and protecting earning fluctuations (Tran, 1980). Previous research by Lessard (1990) and Belk (1990) who suggests that transaction exposure is the most actively managed foreign exchange exposure.

Kim and Kim (2006) give the examples of a survey of large US multinationals by Business International and Arthur Andersen & Co. which found that 65 percent of the sample companies hedged their transaction exposure, while only 26 percent hedged their translation exposures. Apparently, only some of the executives think that they should hedge paper gains and losses for translation exposure and potential exchange gain and losses from future operations (economic exposure). In addition, most of the executives do not pay too much attention to these two types of exposure, because they believe that these exposures are not as important as transaction exposure. Therefore, transaction exposure is more likely to be hedged in the company's perspective.

Unlike transaction and translation exposure, economic exposure is less numerical measurable and more difficult to manage. The movement of exchange rate will bring the changes in the competitive environment, and individual firm has the different sensitivity

of the future cash flow of the unexpected exchange rate changes. Moles (2002) suggest that the management of economic exposure should be a significant objective of foreign exchange risk management because of its considerable effect on a firm's cash flow and competitive position. Belk and Glaum (1990) find that the real exchange rate doesn't have a significant impact on firm's competitive position in the market. This is also explained by Shapiro (2006), who concludes that a firm's economic exposure on foreign exchange movements is attributed to the differentiated its products is, the internationally diversified its competitive is, the ability to shift production, the sourcing of inputs among countries, and fluctuations in the real exchange rate. To some extent, the more the activities of firm in foreign markets the larger its economic exposure a firm will be expected to face.

However, Shapiro (2006) says that firms can hedge of transaction exposure while economic exposure with the character of long-term existence, is hard to manage simply by financial hedging techniques, this exposure requires the firm to make a longer-term operation plan. A strategic reorientation of operating policies including pricing, sourcing, location of productions and financing should be considered besides the financial hedging instruments. Those approaches to manage the economic exposure are defined by Moffet and Karlson (1994) as natural hedging. Standing in a globalization business environment, diversification of international operation is crucial for multinationals to cope with the economic exposure. Nature hedging not only provides firms opportunities of maintaining the competitive advantage but also hints a defensive reaction to adverse exchange rate movements. If the domestic production or service cost of a firm is affected by an exchange rate changes, the firm can shift product sourcing from those countries whose currency is depreciated or remove the plant to there. The strategic marketing and production adjustment is similar in cost-effective perspective. Froot et al (1993) believe that the existence of a natural hedging in which cash inflows and outflows are positively correlated.

Although the diversification of sources and production across region can offset the long-term exposure, it is an assumption only holds when the market is efficient.

Unfortunately, in the real world, the market is not always efficient since the existence of information asymmetries, government interventions, and monopoly forces (Pringle, 1991). Moreover, the factors affecting the exchange rates are complicated, e.g. economic attribute, arbitrage activities, legislation, political conflicts and natural disasters. It is concluded by Demirag and Goddard (1994) that no single model or theory could be used to precisely predict the direction of exchange rates neither empirically and nor theoretically. Eiteman et al (2007) suggest the exchange risk can be hedged by pricing in firm's home currency or in whichever currency the costs are booked. But in a global competitive market, this strategy could not be sustained as the firms are always competing with firms who get the favour from the exchange movements. Moreover, Shapiro (2006) indicates that the more efficient market is, the more random the exchange rate moves. Therefore, efficiency of natural hedging seems somewhat ambiguous.

2.4 Hedging techniques of foreign exchange exposure management

Derivatives, a variety of financial instruments emerge according to the demands on the financial market for against the different exchange exposure the firm encounters. Those financial techniques are employed by the company as external hedging tools, such as forward and future contracts, swap, options and so on. Each of them differs to hedge different exchange risk in different scenarios. There are many studies involving the positive effectiveness of using these techniques, such as Allayannis and Ofek (1997), Allayannis and Weston (2001) and Geczy et al (1997).

2.4.1 Currency exchange forwards

A forward foreign exchange contract is an agreement to exchange one currency to another with a specific quantity, where the exchange rate is fixed on the day of the contract but the actual exchange takes place on a pre-determined date in the future. The predetermined exchange rate is the forward exchange rate. The amount of the transaction, the value date, the payments procedure, and the exchange rate are all advanced stipulated in the contract, namely before the exercise of the contract. Forward contracts in major currencies can be

available daily with maturities of up to 30-, 90-, and 180-day Two types of forwards contracts are often used: deliverable forwards (face amount of currency is exchanged on settlement date) and non-deliverable forwards (which are settled on a net cash basis).

Normally, a currency forward contract is used to hedge exposures that are short to medium term and with the certain timing. It is very important for the firm's treasurers to take a forward contract, as they can fix the costs of imports and exports in advance for the payable or receivable amount. A lot of empirical researches such as Belk et al. (1990), Bodnar et al. (1996), Mallin et al. and (2000) indicated that the most frequently used hedging derivatives is forward exchange contract. With forwards, the firm can be fully hedged for the transaction exposures. However, some risks including settlement risk that exchange rate moves in the opposite direction as their forecast, and counter party risk which the other party is unable perform on the contract, the high cost of forward contracts will sometimes prevent firms to exercise this tool to fully hedge their exchange exposure.

Forward contract are easy to use and could be effective, for example, Avon successfully escaped from the Asian Financial Crisis in 1997 by selling about 50 million US dollars worth of five Asian currencies forward against the U. S. dollar (Shapiro, 1999). And there is no extra premium cost out of the forward price itself, as the premium cost has been added into the forward price. Redhead (2001) further projected that forwards are particularly useful for short to medium exposure or with the certainty timing. Additionally, Shapiro (1999) mentions the loss of forward contract should be offset by sales gains. In other words, if the future exchange rate of the home currency depreciates further than the forward rate⁴, the income can offset the loss of forward contracts. However, in this situation, whether the selling price is forced down by the trend of currency depreciation. Meanwhile, the forward rate is generally determined by referring to the interest rate differentials between two countries, therefore, it is often be described that exchange rate is an unbiased future exchange rate. The determination of forward exchange rate assumes

⁴ Forward rate refers an exchange rate quoted today for settlement at some future date. The rate used in a forward transaction.

purchasing power parity⁵, and interest rate parity⁶ and freely floating exchange rates (Woods, 2001). Actually, there are a lot of factors including financial distress, governments, oil price and etc. affecting real exchange rates⁷. The forward rate is only one of a number of possible rates in the futures, as other factors could influence expected future rate. However, every coin has a flip side. Woods (2001) indicates that although the forward contract lock the company's future out come into the forward rate, it could not resistant the threaten form the depreciation of one currency. The technique gives certainty of the firm's future cash flows, but could not protect the company against absolute adverse exchange rate impact on earnings. In consistence with Wood's view, Redhead (2001) emphasise the reality that forward contracts isolate the firm from the likelihood of getting potential profit gains. And such hedging method also could influence the firm's bank credit line, since the firm's additional loan in a limited credit will be reduced accordingly. Additionally, Grant & Soenen (1991) give a negative view of using long-term forward contract to hedging the exposure as even if the technique could freeze the volatility of exchange rate effects, the inflation rate differentials between the countries still remain exposure. This means that economic exposure could not be hedged under the forward contracts, as another exposure would be create which does not exist originally. Apparently, it is an evidence to support Shapiro's view that economic exposure is difficult to hedge with financial techniques due to its character of long-term effects.

2.4.2 Currency exchange options

Another widely used hedging technique is currency exchange options. These are also contracts, which give the right, but no the obligation, to exchange an amount of one currency to another at a predetermined rate (Hull, 1998). Bartram (2006) indicates that option is a very versatile approach to hedge the risk, especially when the exposure is uncertain. One character of this technique is the amount and the exercise price can be

⁵ Purchasing power parity is the theory that the price of internationally traded commodities should be the same in every country, and hence the exchange rate between the two currencies should be the ratio of price in the two countries.

⁶ Interest rate parity is the theory that the difference in national interest rate for security of similar risk and maturity should be equal to but opposite in sing to the forward exchange rate discount or premium for the foreign currency.

⁷ Real exchange rate is an index of foreign exchange adjusted for relative price level changes since a base period. Sometimes referred to as real effective exchange rate, it is used to measure purchasing-power-adjusted changes in exchange rates.

tailor-make or negotiable in an OTC⁸ market (Redhead, 2001; Eitman et al., 2007). One significant difference between options and forward contracts is options give the holder of the contract a right to buy or sell a certain amount of a certain currency at a predetermined price called strike or exercise price⁹ until or on a specified date, but the holder is not obliged to execute the contract, so options seem more flexible, but the seller of a currency option has an obligation to perform the contract if the holder requires. The right to buy is a call; and the right to sell is named as a put. Of course, unlike the forward contract, an option premium should be paid by those who obtain such a right. Different options entail different level of risks, which is probably the reason why hedging incurs divided opinions. The holder of a call option, which gives the buyer the right to buy an asset by an agreed date at a promissory price, can benefit from a price increase (profit is the difference between the market price and the strike price minus the premium), while the call holder can choose not to exercise the option when the price decreases (locked in loss of the option premium). A put option gives the buyer the right to sell an asset by an agreed date for a promissory price, and the holder can benefit if the price decreases. The common use of options is to buy a protective put option to cover the exchange risk of future cash flow or a call option for anticipated payments (Stambaugh, 1994). It is recommended by Maugham (2000) to buy a call or a put option to protect against a foreign exchange loss, but to keep all the possible gain. Gilman (1995) says that options are similar as insurance contracts because both of them are against the risk, but options leave opportunities open for price gains. Conversely, by selling a call or put option, the firm puts itself in the exposure of limited gain but unlimited loss. Generally, the motivation for selling an option could be attributed to earn the premium or to offset the cost of buying opposite options.

Recommended by Dufey et al (1995), options can be used to hedge cash flows that may not take place, such as a contract bid, for instance, if the bid is taken, options can be exercised, but if the bid is declined, it could be revocable. So the maximum loss of option is only

⁸ OTC (Over-the-counter) trading is to trade financial instruments such as stocks, bonds, commodities or derivatives directly between two parties. It is contrasted with exchange trading, which occurs via corporate-owned facilities constructed for the purpose of trading.

⁹ The fixed price at which the owner of an option can purchase, in the case of a call, or sell, in the case of a put, the underlying asset.

concerning the premium expenditure. Also, firm can use such technique to sustain its competitiveness advantage in a global market, through buying the options on its main competitor's working currency. If the competitor's home currency depreciates, the competitor will have the predominate by reducing the price because the cost on its home currency is getting lower and the relative benefit from the revenue will increase resulting from the depreciation of its home currency. Holding the currency options mentioned previously, firms can get a portion of compensation of the weakness in competition or reduce profits by execution of the option in hand (Kanns, 1996).

Options, with characters such as simplicity, flexibility and lower cost comparing with forwards, and the predicted maximum loss—which is the premium, therefore has become increasing popular as a hedging devise to protect firms against the exchange movements. Whenever there is uncertainty in the size of cash flows or the timing of cash flows, currency option contracts would be superior to traditional hedging instruments such as forward contracts. Grant and Marshall (1997) find that a frequent use of both forwards and options (respectively 96 percent and 59 percent) after examining the extent of derivative use and the reasons for their use by carried out surveys in 250 large UK companies,. They conclude that comparing to the elementary reasons for the use of forwards are company policy, commercial reasons and risk aversion, while the primary reasons for firms to use options are a good understanding of instrument, and price are prominent. The latest survey on 287 multinationals by ACT / Citi (2008) on foreign exchange risk management shows a consistent result that a majority of respondents (72 percent) that use options spend premium to purchase options and of those firms spending premium, 40percent indicate defined budget spend.

However, there are some limitation and weakness associated with options. The financial institutions and brokers set a very high level as the minimum contract size of an option, actually options is not suitable for small-scale firms. Some researchers also oppose that firms buy options for an uncertain bid (Kim and Kim 2006). They claim that taking the bid is unnecessary if the promised rate move unfavourable for the holder, but the premium is

considerable. Dufey et al (1995) also reminds the option users that even though the rate is unfavourable, the holder still has the commitment to execute the option. It is implied that the protection function of options is somewhat limited. Maugham (2000) further highlights that the theoretically committed high margin benefits of option might not work when needed. The gains or losses caused by option do not correlate in a one-to-one or linear fashion with exchange rate movements. Briefly, the relationship between premium and exchange rate gains is not stable, as it changes with anticipated volatility and other unpredictable factors as well. This increases the complexity of involving with an option. Giddy et al (1995) therefore suggest the firms not leverage for gaining profits through financial instruments, should not enter into option contracts.

Summarily, various debates on options are standing on different perspectives. Options, not only can be used as risk control tools, but can also be operated for speculation purposes.

2.4.3 Currency futures

Currency future is another financial instrument to hedge the risk of foreign exchange volatility impact; it is an exchange-traded contract specified a standard volume of a particular currency to be exchanged on a specific settlement date. Similar to forward contract, both of them allow a firm to buy or sell certain currency at a fixed price and at a future point in time.

But, there are some differences between these two techniques. The future characteristics differ from forward as it is standardized both for amounts and delivery date (normally in calendar date such as March, June, September and December), while forward is for any amount and any delivery date with the agreement of two parties. Another difference is that a forward contract is traded by phone or telex, it is completely independent of location or time, where as all clearance for futures markets are handled by an exchange clearing house. The most significant difference is in terms of liquidation, futures contracts are settled by offset of gains and losses daily, while forward contracts are settled by actual delivery whether full delivery of the two currencies or net value only at the contract maturity. It is believed that

daily cash compensation feature largely eliminates default risk. Both futures market and forward market are important approaches to hedge the exchange risk. Tien (2002) indicates “Firms uncomfortable with the uncertainty involved in receiving a fixed payment in foreign currency can easily hedge the transaction using either futures or forward contracts.” But Belk and Glaum (2002) find that none of the companies in their survey uses currency futures, because the characteristics of exchange traded futures most often do not enable the companies to hedge their positions perfectly. Mallin et al (2001) find that only nine companies out of 231 respondents in their survey used currency futures. Forwards and futures serve similar purposes, which are both tending to have identical rates, but differ in their applicability. Most big companies use forwards; whereas futures tend to be used whenever credit risk may be a problem.”

2.4.4 Currency swaps

In the recent years, a new financial derivative named currency swaps for hedging foreign exchange exposure appears in the market, and it is developing quickly. Since its launch the global market in early 1980's, currency swaps market has become one of the largest financial derivative markets in the world. Revealing its mysterious mask, the currency swap is a foreign exchange agreement between two parties to exchange a given amount of one currency for another and, after a specified period of time, to give back the original amounts swapped. It can be negotiated for a wide range of maturities up to at least 10 years, and can be regarded as a series of forward contracts. It is ordinarily used when a firm operates in one currency but need to borrow in another currency. Currency swaps are often associated with interest rate swaps, as the common cross currency swaps the cross-currency coupon swap which is to pay fixed and receive floating interest payment meantime buying the currency swap. Another commonly used approach is cross currency basis swap which is operated as to pay floating interest in a currency and receive floating interest in another currency. Currency swaps enable each contracting part to borrow in their comparative favorable market, and both parties can benefit from the swaps by reduction in borrowing costs. The use of swaps now has grown rapidly in western countries. Grant and Marshall (1997) found that the use of swaps and forwards/futures is dominant in UK. Bodnar et al. (1993) found

that swaps dominate for interest rate risk management in US. Non-financial, global firms are the primary users of currency swaps. The motivation of these firms for using currency swaps is closely linked with their long-term hedging and financing strategies, which is positively related to the firm's economic exposure (Goswami et al, 2004).

2.4.5 Money market hedge

Defined by Goddard (1994, p.139), "*money market hedge is the process of borrowing in the money markets, converting the funds borrowed at the spot rate into the currency in which payment is due, and investing in the second country. The total receipts, principal plus interest from foreign currency investment is then used to make payment for goods.*"

Money market hedge is advanced for its fewer constraints on the amount of the contract size, it could be negotiated with the banks or lenders. Meanwhile, it also be conducted when forward, option, future or swap markets are not available at arm's length in some undeveloped derivative markets, Jones et al. (1998) advises an applicable guideline for money market hedge, which suggests that if the differential of the interest rates in two countries is less than the forward spot rate (the cost of the forward cover), funds should be moved towards the market with lower interest rate. Otherwise, they should be kept in the higher interest market. One possible disadvantage of money market hedge is that it could probably involve expensive corporation resource since the firms is required to concerning the regularly examine interest rate differentials and exchange rate movements. In some countries, the amount of foreign currency borrowing is constrained by their legislations due to the political and accounting reasons.

2.4.6 Foreign currency borrowing

Demirag & Goddard (1994) believe that foreign currency borrowing is a major foreign currency risk management device, which is applied as borrowing in a foreign currency in which the company expects to have future cash inflows from the exports or other operations; these cash inflows can be used for the interest and principal payment on the foreign currency loan. The extent of such payments is not subject to foreign exchange risk,

although the company must make sure the interest rates that are payable on the foreign currency loan. Such loans are generally arranged for flexible periods and possibly with variable rather than fixed rates of interest.

2.4.7 Currency risk sharing

Demirage & Goddard (1994, p.132) point that currency risk a customized hedge contract including in the trade transaction between two or more parties is an approach to achieve the currency risk sharing purpose. Such an agreement is usually suggested to be employed by those firms who are involved in long-term trade contracts; these agreements can reduce the frequency of contract revisions and the effects of currency fluctuation on profits, because this technique is working for price constant.

The application of the risk hedging techniques is often regarded as merely a speculative trick, as they (particularly for derivatives) sometimes results the insufficient transparency of the firm's financial disclosures; or, they are used for the purpose of avoiding capital requirements, manipulating accounting rules and credit rating and evading taxation (Dodd, 2000). Derivatives, especially for options, can also be adopted to increase the level of market risk exposure. And, they are not always designed on risk protection, instead, are employed to raise cheaper funds (Haddock, 2000) HSBC suggests that the strategy of hedging should be programmed, and the implementation should also be carried out in stages over a period of time, e.g., for one year. Thus an specified exploitation could be conducted for the development on favorable currency moves (Anon, 1997).

Geczy, Minton, Schrand (1997) suggests that firms could use derivatives to reduce the volatility of cash flow. Makar, DeBruin and Huffman (1999) present evidence that using foreign exchange derivatives in large firms increases with the level of foreign currency exposure. This may probably because large multinationals are more capable to take advantage of the economies of scale in the transaction costs of foreign exchange derivatives (Nance, Smith and Smithson, 1993). If firms use foreign currency derivatives to hedge against exchange-rate movements, then the use of derivatives should reduce the foreign

exchange exposure. In another word, the use of derivatives should decrease foreign exchange exposure for firms with potential loss, and increase (decrease in absolute value) foreign exchange exposure for firms with potential gain (Allayannis and Ofek, 2001). The empirical evidence of Nguyen and Faff (2003) supports the opinion that the use of foreign currency derivatives reduces short-term foreign exchange exposure, as the return horizon lengthens, foreign currency derivatives appear to be less effective in hedging foreign exchange risks.

Empirical examination of hedging theories has been difficult due to the general unavailability of data on hedging activities. In the beginning of the 1990s, the information of a firm's action of taking derivatives held privately as a very important component of strategic competitiveness, till the middle of 1990's, the firms were required to disclose the notional amount of derivatives and other financial instruments. However, few studies (e.g., Allayannis and Ofek, 2001; Nguyen and Faff, 2003) have yet use the actual notion amount of derivatives to measure its impact on the exposure, while many studies (e.g., He and Ng, 1998; Chow, and Chen, 1998; Nguyen and Faff, 2003) use substitute-hedging proxies of the hedging incentives. They consider that firms with a greater incentive to hedge should actively manage the foreign exchange risks and results in less exposed to exchange rate fluctuations. In addition, they hypothesize that multinationals with greater financial leverage are more likely to hedge. Thus, the exposure is lower (e.g. He and Ng, 1998; Chow, and Chen, 1998; Nguyen and Faff, 2003). The firm's book-to-market value of equity is a proxy for a firm's growth opportunities. The lower the book-to-market ratio, the greater a firm's incentive to employ more currency derivatives to hedge in order to reduce underinvestment costs (e.g. He and Ng, 1998; Chow, and Chen, 1998). Firm size is also a factor for economies of scale in hedging costs. Large firms that have access to risk management programme, or that have economies of scale in saving cost, are more likely to hedge than smaller firms. However, there are circumstances where smaller firms have more incentive to hedge than larger firms; for instance, smaller firms will hedge more because they face greater bankruptcy costs (e.g. He and Ng, 1998; Chow, and Chen, 1998; Nguyen and Faff, 2003).

The results of Elliott, Huffman and Makar (2003) also present the positive relationship between the exposure of foreign currency risk and the level of foreign borrowing, indicating that this debt may be used as a hedge. Allayannis and Ofek (2001) state that a firm with revenues denominated in foreign currencies (cash inflows) can issue foreign debt, since it creates a stream of cash outflows in a foreign currency. By holding foreign-currency-denominated cash inflows and outflows simultaneously, one can remove the foreign exchange exposure. The results of Allayannis and Ofek (2001) are that exposure through foreign sales is positively and significantly related to a firm's decision to issue foreign debt and to the level of foreign debt.

2.5 Objective of foreign exchange exposure management

A company's decision to hedge against these potential losses may be determined by its forecasts for foreign-currency values. (Kim and Kim, 2006)

In order to assess whether a hedging strategy is to be undertaken, it is important to evaluate all of the cost involved before. Most hedging strategies involve premium, interest or transactions costs, which can be considerable, especially if options are involved. (Demirag & Goddard, 1994).

A company can benefit from the preceding techniques only in the circumstance that it can forecast future exchange rates more accurately than the general market. For example, if the company has a foreign currency cash inflow, it would hedge only if the forward rate exceeds its estimate of the future spot rate¹⁰. Conversely, with a foreign currency cash outflow, it would hedge only if the forward rate was below its estimated future spot rate. Apparently, it is following the profit-guaranteeing dictum of buy low – sell high. However, attempting to profit from foreign exchange forecasting is speculating rather than hedging.

Rationally, the feasibility of a hedging strategy is appraised by whether a firm could

¹⁰ Spot rate refers to the price at which foreign exchange transaction to be settled (paid for) on the second following business day.

recognize and measure the existing and potential risk, then the firm should decide such risks are material and acceptable or not. If the risk is acceptable, it should be hedged with the cheapest effective means of protection. The managers must decide the adopted policy is in an aggressive or a defensive style.

Zenoff (1978) points out the most frequently occurring objectives, explicit and implicit, in management behaviour in order as: minimizing translation exposure, earnings fluctuations owing to exchange rate fluctuations, transaction exposure, economic exposure, foreign exchange risk management cost and avoiding surprises (this objective involves preventing large foreign exchange losses). Bodnar and Glaum (1999) give some popular goals of hedging are summarized as: minimizing fluctuations in accounting earnings and in real cash flows, and protecting the appearance of the balance sheet.

Empirical research results state in many studies like Grant and Marshall (1997) who made a survey of 250 large UK companies indicate that the primary objective of their treasury department is to reduce risk and 90 percent of them do not speculate. Others did some comparisons with different countries, such as Bodnar and Glaum (1999) found that US companies focus their use of derivatives in risk management primarily on minimizing the variability in cash flow and minimizing fluctuations in accounting earnings as a second objective, while a majority (55.3 percent) of German companies chose minimizing accounting earnings as their most important objective. Also Marshall (2000) found that Asian multinationals is similar to German to focus on accounting earning. They argue that the differences may be attributed to dissimilarity in accounting regulations where accounting rules in the non-US countries made stronger links between accounting earnings and cash flows. Most large multinationals manage their foreign exchange risk by using a pre-established exposure management strategy. For example in Lewent, and Kearney (1990)'s case study of Merck, the firm used the following five steps for currency exposure management: (1) projecting exchange rate volatility, (2) assessing the impact of the 5-year strategic plan, (3) deciding whether to hedge the exposure,(4) selecting the appropriate financial instrument, (5) constructing a hedging program.

Here below please find the some representative empirical study on foreign exchange exposure in deferent countries and period in Table 2.

Table 2: Previous studies on foreign exchange exposure management

<u>Author</u>	<u>Period of data collection</u>	<u>Sample (country and size)</u>	<u>Key findings</u>
Jorion P. (1990)	1971-1987	287 U. S multinationals	<ol style="list-style-type: none"> 1. Significant cross-sectional differences in the relationship between the value of U.S. multinationals and the exchange rate. 2. This association, called exposure, was found to be positively and reliably correlated with the degree of foreign involvement. 3. Exposure without foreign operations does not appear to differ across domestic firms.
Bodnar, Hayt and Marston (1996)	1994-1995	350 U. S. nonfinancial firm	<ol style="list-style-type: none"> 1. Derivatives use increased by firms. 2. Forward / future contracts were most frequently used hedging derivatives.
Allayannis and Ofek (1997)	1993	378 S&P 500 nonfinancial firms	<ol style="list-style-type: none"> 1. Firms us currency derivative for hedging significantly reduce the exchange expose/ 2. The decision to use derivatives depends on exposure factor
Chow and Chen (1998)	1975-1992	1,110 Japanese nonfinancial firms listed on TSE	<ol style="list-style-type: none"> 1. Exchange rate exposure is the association between changes in firm value and exchange rate changes, Japanese firms are overwhelmingly negatively exposed, i.e. their equity returns decrease as yen depreciates 2. Japanese firms are more adversely affected by yen depreciation if they are in the industries with higher imports ratios and in the non-traded industries, and less detrimentally affected if they are in the industries with higher exports.

<u>Author</u>	<u>Period of data collection</u>	<u>Sample (country and size)</u>	<u>Key findings</u>
He and NG (1998)	1979-1993	171 Japanese Multinationals	<ol style="list-style-type: none"> 1. 25% of the sample firm's stock returns experienced economically significant positive exposure effects firm is exposed to exchange-rate fluctuations. 2. Highly leveraged firms, or firms with low or firms with low liquidity, tend to have smaller exposures exchange exposure is found to increase with firm size.
Bartov and Bodnar (1999)	1995-1997	197 U. S. multinationals and 126 German multinationals	<ol style="list-style-type: none"> 1. Firms in both countries primarily use derivatives to manage risks from fluctuating financial prices. While German firms are more likely to use derivatives as Germany is a smaller more open economy, leading to greater exposure of its firms to financial price risk, especially foreign exchange rates and commodity prices 2. The determinants of derivative use are primarily driven by economic considerations such as activities and firm characteristics and not the result of corporate culture or other country-specific differences.
Mallin, Ow-Yong, and Reynolds (2001)	1997	231 UK non-financial companies	<ol style="list-style-type: none"> 1. Derivatives usage to hedge financial price risk is well established amongst larger UK companies 2. Objective of using derivatives is to manage fluctuations in accounting earnings,
Pantzalis, Simkins and Laus(2001)	1989-1993	220 U. S. multinationals	<ol style="list-style-type: none"> 1. Operational hedge is a significant determinants of exchange risk as measured by 'breadth' and 'depth' dimensions

<u>Author</u>	<u>Period of data collection</u>	<u>Sample (country and size)</u>	<u>Key findings</u>
Allayannis and Weston (2001)	1996-1998	720 large U.S. nonfinancial firms	<ol style="list-style-type: none"> 1. Firm value and the use of currency derivatives has a positive relationship 2. Hedging premium is statistically and economically significant for firms with exposure to exchange rates and is on average 4.87% of firm values
Kiyamaz (2003)	1991-1998	109 Turkish listed firms	<ol style="list-style-type: none"> 1. Turkish firms are highly exposed to foreign exchange risks 2. and importing firms tend to have the highest exposure to exchange rate risk
Nguyen and Faff (2003)	1997-1999	144 Australian nonfinancial multinationals	<ol style="list-style-type: none"> 1. The used of foreign currency derivatives reduces the short-term exchange rate exposure, but it is less effective for the exposure in longer horizons (12-24 months).
ACT / Citi (2008)	2007-2008	287 nonfinancial firms (diversified industries and nations)	<ol style="list-style-type: none"> 1. Main objective of exchange risk management is for smooth earning volatility and reduce transaction risk. 2. Forward contract is most frequently used instruments and options are wildly used.

Chapter Three: Background of China

3.1 Development of Chinese foreign exchange regime

The Chinese economy is developing quickly since China opened its door to the world since 1978. The average yearly growth of GDP from 1978 to 2006 is 9.7 percent, the GDP of 2006 is USD 2,633 billion, which is 57.7 times than 1978's. The total value of import has an average growth rate of 17.21 percent during this period, in 2006, the total amount of international trade is USD17,604 billion, which is 85.3 times than 1978's. After entered the new millennium, the Chinese economy stepped on a new level. During 2003 to 2007, the rate of yearly economic growth exceeds 10 percent for the continued five years and reached a new height of 11.9 percent in 2007. China is becoming the third major exporters all over the world. From the data of published by the National Bureau of Statistics of China, the balance of the import and export is increasing, due to the fast increasing export. Therefore, the floating of exchange rate has a tremendous impact on the Chinese economy, especially for the exporting firms. Obviously, foreign exchange exposure should be paid sufficient attention.

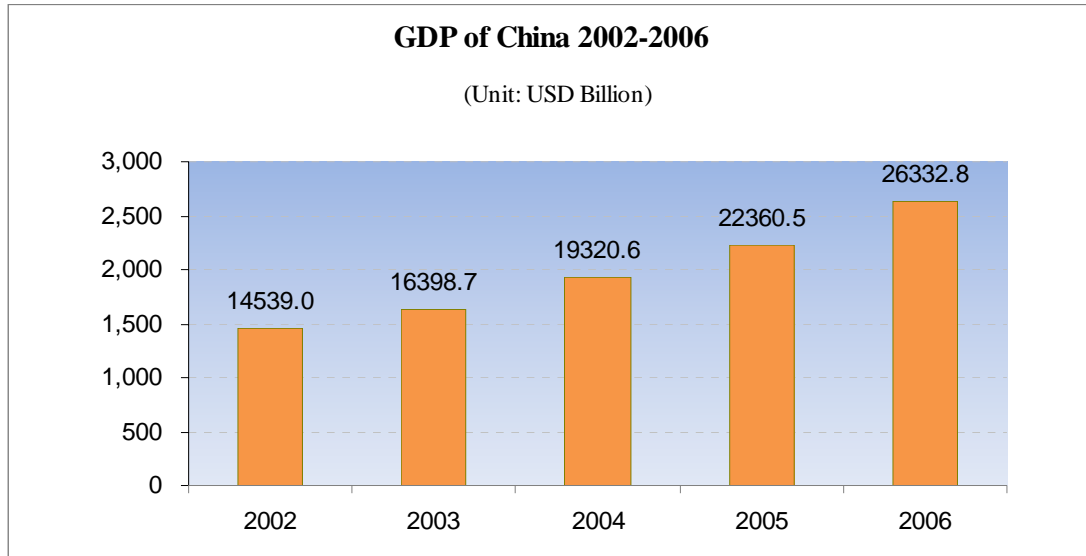
Table 3: Economic development of China in past five years

	2002	2003	2004	2005	2006
GDP	1,453.90	1,639.87	1,932.06	2,236.06	2,633.28
Total Value of Import & Export	620.77	850.99	1,154.55	1,421.91	1,760.40
Total Export	325.60	438.23	593.32	761.95	968.94
Total Import	295.17	412.76	561.23	659.95	791.46
Balance	30.43	25.47	32.09	102.00	177.48

Unit: Billion USD

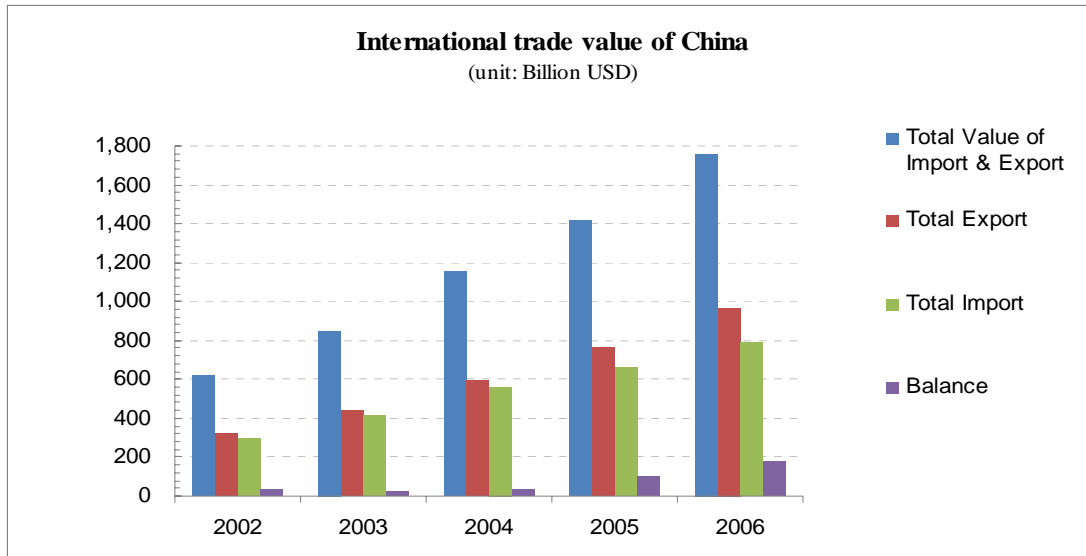
Source: data from the official website of National Bureau of Statistics of China, available at <http://www.stats.gov.cn>

Figure 3: GDP of China 2002-2006



Source: data from the official website of National Bureau of Statistics of China, available at <http://www.stats.gov.cn>

Figure 4: International trade value of China 2002-2006



Source: data from the official website of National Bureau of Statistics of China, available at <http://www.stats.gov.cn>

There are considerable of prior works contributing to describing the foreign exchange management, but few is concerned for exchange rate exposure of Chinese firms, either examining hedging practices in China One available journal is written by Patrick J.

Schena (2005), who finds that international orientated Chinese firms have experienced significant foreign exchange exposure, although no empirical evidence shows that Chinese firms are engaged in hedging activities when measured against the trade-weighted index, it is indicated that Chinese firms in particular exporters concerning with some kinds of foreign exchange risk management. It should be noted that research is undertaken in the old Chinese currency system which the Chinese yuan was pegging with U.S. dollar. Furthermore, as the foreign exchange market in China is imperfect due to the foreign exchange administration mechanism, the currency derivatives are comparatively undiversified and costly. Consistent to Patrick J. Schena points out that the peg, acts to make hedging unnecessary against the US and HK dollars and is likely sustainable only as long as currency controls remain in effect.

The exchange rate of Chinese yuan had been pegged to the U.S. dollar at Yuan8.28/\$ since early 1997. This peg has been sustained through the Asian Financial Crisis of 1997/1998, and had provided a fixed and stable currency base for the rapid development and growth of the Chinese economy into the new century. The Chinese economy continued to grow extremely rapidly – more than 10 percent in real GDP terms – and the growth rate was increasingly too large to remain a second-rate exchange rate country. More and more voices from outside China called for the Chinese yuan to be transitioned to a floating exchange rate and join the U.S. dollar, the euro, and the Japanese yen in the forefront of the global financial system. Eiteman et al. (2007, p.59) gave a case which describes a voice from U.S.: during 2004 and 2005, the U.S. government had continued to urge China to revalue the yuan from its decade-long pegging to the U. S. dollar of Yuan8.28/\$. The U.S. argued that the growing Chinese trade surplus with the U. S. indicated that the yuan was considerably overvalued.

Consequently, the Chinese foreign currency exchange regime was reformed on July 21st, 2005. On that day, the Chinese government and the People's bank of China

officially changed the value of the Chinese yuan. The People's Bank announced that the pegging of yuan to the U.S. dollar would be abandoned, and the People's Bank of China allows the value of the yuan to rise to Yuan8.11/\$ immediately, and allows the value of the yuan to fluctuate 0.3 percent per day over the previous day's closing price going forward. Such a managed floating exchange rate system is based on the market supply and demand, so the exchange rates of Chinese yuan is determined and adjusted according to "a basket of currencies" floating. Under the a new currency regime, the exchange of China is more elastic, but simultaneously it also brings higher foreign exchange exposure for Chinese firms, particularly those involved a large portion of international business and multinational companies as well.

3.2 Status quo of China derivative market

After entered 1980's, the financial derivatives markets are developing rapidly. So far, there are more than 1,200 kinds of derivatives products in the international financial market. The transaction value of derivatives all over the world in 2002 is 13.5 times higher than the value of 1986, and the market value is the 4.5 times of the total value of global GDP of that year. Back in 1991 in U.S, the derivatives market and the trading volume has reached U.S. gross domestic product of 140 percent, the development of derivatives is far exceeding the average growth rate of the national economy and other financial assets.

Although the currency derivatives in China origins in 1997, due to pegging exchange rate regime in that period, the transaction was not developed. Till the reform of the exchange rate regime on July 21st, 2005, the Chinese yuan flexible management system and the exchange rate fluctuations encourage the development of the derivative market.

In 2004, the China Banking Regulatory Commission official republic the *'Interim*

Rules on Derivative Business of Financial Institute. As stipulated in the first article, the purpose of the *'Interim Rule'* is *'regulate and supervises the financial institutions engaging in derivatives transactions and to effectively control the risks involved in derivative transaction of such financial institutions.'*

Recall development and reform of the foreign exchange regime, the currency derivatives are developing gradually in China, which could be demonstrated in the following timetable:

- On May 18th, 2005, the foreign currency trade with eight main currencies launched the inter-bank market
- On August 8th, 2005, the currency forward launches the inter-bank market
- On April 24th, 2006, Chinese yuan and foreign currency swap launched the inter-bank market, banks are allowed to use swap for hedging and position structural adjustment
- On August 1st, 2006, the pound sterling / Chinese yuan became the trade currency in China spot rate market

So far, the available currency derivatives are mainly concerning in forward contracts and swaps. With the stable developing progress, in 2006, the daily forward contract transaction national wide is about USD100 million for inter-bank section. For the nonfinancial institute's swap transaction, only principal could be swapped, but the interest could not be changed between two parties. While both of the principal and interest could be changed for inter-bank transaction.

There are three kinds of main problems in the Chinese derivative markets:

First of all is the limitation of participant and fund of the trade. For the nonfinancial institutes, the strong foreign currency administration system is imposed. In this

circumstance, all the participants are trading with the motivation of reducing the risk; no one would like to invest in such a market.

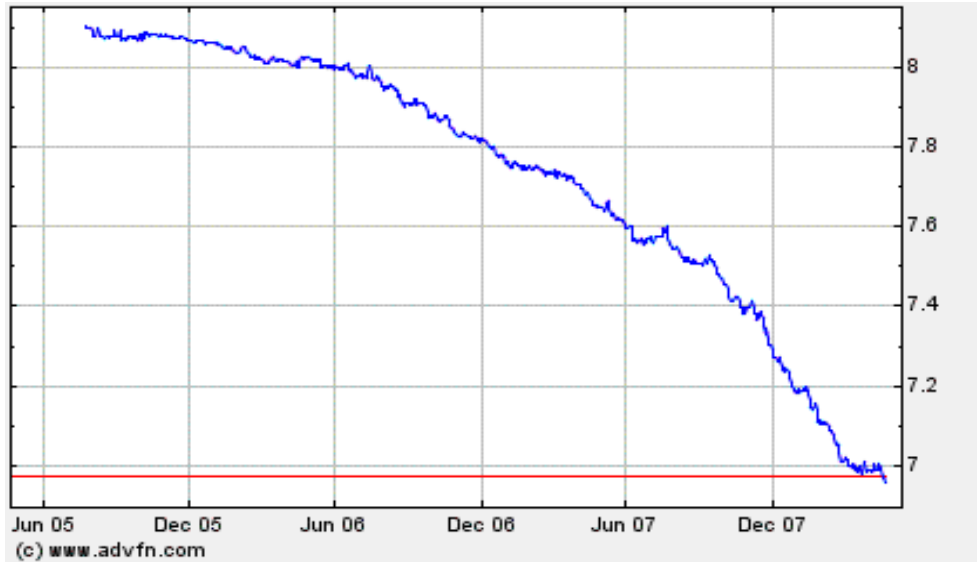
Second, the expectation of unilateral appreciation of Chinese yuan cause the most of participants would like to sell US dollar and buy Chinese yuan, therefore, the market is not active.

The third one is about the system. The derivative market is driven by the State Foreign Exchange Administration. The available products are designed by the Administration with the incentive of controlling systemic risk. Not based on customer orientation, these derivatives are not diversified. Therefore, the currency Chinese foreign currency market is a closed market.

3.3 Importance of hedging foreign exchange risk in China

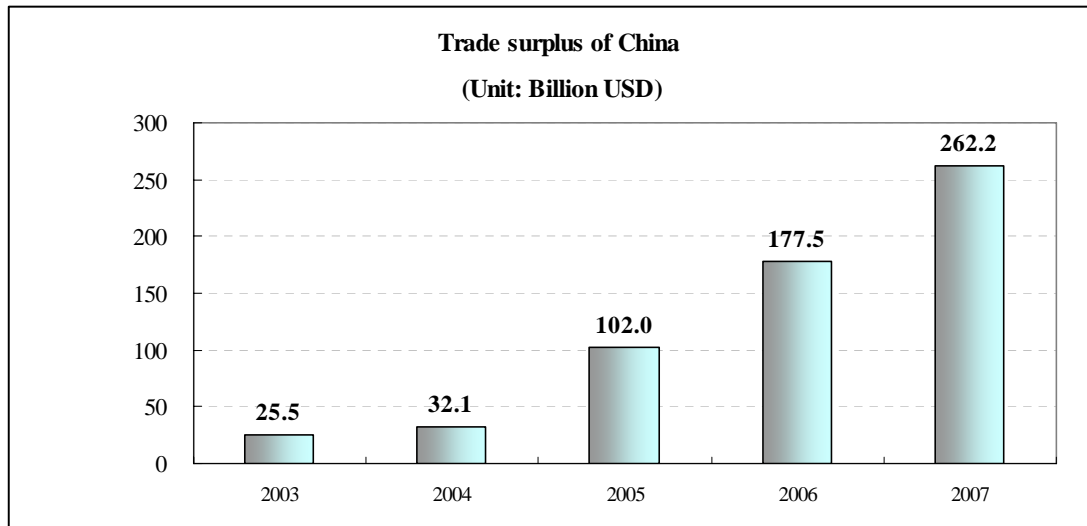
Starting from July 21, 2005, China reformed the exchange rate regime by moving into a managed floating exchange rate regime based on the market supply and demand with reference to a basket of currencies. Chinese yuan will no longer be pegged to the U.S. dollar and the exchange rate regime was improved with greater flexibility. On July 21st, 2008, the third anniversary of exchange rate regime reform, the exchange rate was Yuan6.8217/\$, the Chinese yuan appreciated more than 21% in the past three years, please see the movement of the exchange rate during the three years in the following Figure 5.

Figure 5: Exchange rate of Chinese yuan against U.S. dollar (July 2005 – July 2008)



Source from: www.advfn.com

Figure 6: Trade surplus of China 2003-2007



Source: data from the official website of National Bureau of Statistics of China, available at <http://www.stats.gov.cn>

According to the data from National Bureau of Statistics for China, the surplus of

international trade in China increases tremendously in the past five years, so the appreciation of Chinese yuan seriously impacts the profit even the survival of the enterprises, especially for the exporting firms, as the expected cash flow of export settlements will be reduced by the depreciation of U.S. dollar.

According to the report¹¹ from the People's Bank of China, a survey conducted the import and export firms, although the trade amount increased, the profit decreased obviously. 46.3% of the total earnings were reduced. 55 firms had positive profits, while 15 had negative profits (11 firms' profits turned from positive to negative), especially in the textile industry, where profits declined by 50%. The appreciation of RMB is the original factor of profit decline among Chinese trading firms, which plays a more significant role than the external environmental deterioration and tight monetary policy.

In the scenario that the Chinese yuan is appreciating against the U.S. dollar in the past three years, firms with U.S. dollar-denominated cash inflows should consider hedging the currency risk by the most available financial derivatives and other hedging approaches such as: forward contracts (to eliminate fluctuations of the foreign exchange rate affecting future cash inflows / outflows), foreign currency borrowing or money market (to profit from the appreciation of the Chinese yuan, especially for small and middle-scale firms), swaps and establishing overseas subsidiaries.

¹¹ "Financial Operation Report of Shanghai in 2005" issued by the People's Bank of China on February 13th, 2006

Chapter Four: Research Methodology

4.1 Introduction

In the previous chapter, the relative theoretical knowledge of exchange risk management has been examined in an extensive literature review. It is crucial to introduce the employed research methodology prior to the presentation of findings of this research study.. This research paper has adopted a single case study approach as its research purpose is in an attempt to carry on an in-depth analysis of exchange risk management in Sino-chem. A case study approach is appropriate to provide an analysis of the context and process which illuminates the theoretic issues being studied (Hartley, 2004). Based on the nature of this study, qualitative methodology is believed as an effective way for generating visual data that helps to identify and assess the context and process of currency risk management in Sino-chem. The principal data collection is semi-structured interview complementary with the company annual reports and documentation. This chapter intends to represent the chosen research methodology and principal data collection method that has been employed, along with description of the actual research process.

4.2 Research methodology

4.2.1 Qualitative methodology

This section is going to provide a brief discussion of qualitative methodology by quoting its theoretical underpinnings and its advantages to the understanding of exchange risk management in a particular organization. The choice of using qualitative methodology is designed according to the nature of the dissertation topic as to assess the degree of the implementation the risk management in a chosen company in depth.

It has been debated that qualitative methodology is for particular value for researches that seek to explore organisational goal, linkages and process in the organizations and to understand failures of policies and practices (Marshall and Rossman, 1999). Tesch (1990) indicates that the qualitative researcher is not concerned with objective truth, but rather with the truth as the informant perceives it. Thus, the main task of qualitative methodology is to understand and interpret human behaviour in terms of meaning but not the causal relationship of natural science. This corresponds Skinner et al (2000)'s remark that 'qualitative research focused on people's experiences and the meanings they place on the events, processes and structures of their normal social settings, which provides an holistic view, through the participants' own words and perceptions, oh how they understand, account for and act within these situations.'

Consequently, the advantages of qualitative methodology are strong supports for the adoption of qualitative methodology in this dissertation. Different from quantitative research method which predominantly focuses on factual knowledge and singular truth, qualitative research is more rich and vivid in the sense that it introduces different levels of interpretations and stresses the importance of the subject. This is extremely important in this research paper, because the exchange rate movement is difficult to predict and has the different impacts on corporate operations. In this case, qualitative methodology is appreciate in examining the theories elaborated in the literature review as well as appreciating and understanding the complexity in the corporate strategy decision. This argument is supported by Das (1983) who demonstrates that in-depth and open-end qualitative research has almost become a necessity to capture the complex and multi-dimensional behaviour patterns within organisations. Although qualitative methodology has been justified in this research paper, the methodology per se is not free freedom defection. Bryman (2004) maintained that qualitative methodology is too subjective and the interpretation will be profoundly affected by the subjective leaning of the researcher. He also raises the concerns for generalization and lack of transparency. With the awareness of these potential problems, it is argued that

qualitative methodology remains appropriate because of its relevance to the nature of research topic and questions.

4.2.2 Case study

Being a research method, case study has been taken in many researches, such as business management, education and other social works. Gerring (2006) made a comprehensive argument on the case study method. He defined that case concerns a “*spatially delimited phenomenon observed at a single point in time or over some period of time*”, therefore, case study, basically, is an approach attempt to explain some holistic behaviours in a phenomenon. Case study is more about practical issues in the real world, as Yin (1994) said it is a research strategy which involves an empirical investigation of “a particular phenomenon within its real life context using multiple sources of evidence”. According to these in-depth explanations, it is can be seen that case study is a vehicle that enables researchers to develop a deeper understanding on various particular events in managerial sectors.

4.2.3 Semi-structured interviews

This research study relies on semi-structured interviews as the main data collection method. Structured interviews are particularly useful to identify a respondent’s attitude, motives and behaviour by encouraging the person to talk freely and to express his or her ideas on the subjects matter under discussion. It has been a popular tool to measure subjects’ attitudes toward their jobs, colleagues, and work organizations (Das, 1983). In a semi-structured interview, subjects are expected to express their own opinions and feeling over the issues generated from a list of open-ended questions prepared by the interviewer. Qualitative research method not only allows flexibility in the interview and recognizes the interaction between interviewer and interviewees which might to encourage answer in depth, but also has the advantages of a structural approach which enables the relevance of the answer ease the process of data collection and transcribing.

Briefly, it is the contention that a semi-structured interview approach allows the researcher to remain flexible and adaptive to participant's view and opinions.

4.2.4 Question designing of research and interview

All interviews, adopted open question format are to encourage interviewees to express their opinions freely; meanwhile, they are still remaining linkage and focusing on a particular topic. During the interview going through, new insights may emerge in the way that the interviewee further develops the interviewers' answer of questions that were found most interesting and willing to talk about. It was of paramount importance that the order of interview questions was arranged with deliberation and skill to make response effectively. In this case, all research questions were designed to follow the theoretical structure developed in the literature review. Probes are suggested in order to follow-up responses and elicit greater detail from interviewees (King, 1994). Such a semi-structured interview question design is expected to be ideally tailored to the exploration of different levels of meanings.

The list of research questions of this dissertation are here blow:

1. Does Sinochem have foreign exchange exposure?
2. How does Sinochem manage the foreign exchange exposure?
3. What is objective of the exchange exposure management in Sinochem?

4.2.5 Participant of interview

This research paper lies on purposive sampling (Silverman, 2005) of its interview participant. As Denzin and Lincoln (2000) observed that many qualitative researchers employ purposive, not random, sampling methods in the way that individuals, groups or settings are sought out where the processes being studied are most likely to occur. As suggested in the literature review chapter, exchange risk management should be arranged in the corporate level with a specified strategy. It is a tactic in which the

“participants who are best suited to provide a full description of the research topic are intentionally selected” (Gerbert et al., 1999). This means that the researcher will pick up individual participants in order to answer research questions and achieve research objectives. On that basis, the risk controlling manager is chosen as the interviewee. Due to the limitation of time and resource, it is unrealistic for this qualitative research to include many individuals in Sinochem, the scope of this qualitative investigation is restricted.

4.2.6 Process of interview

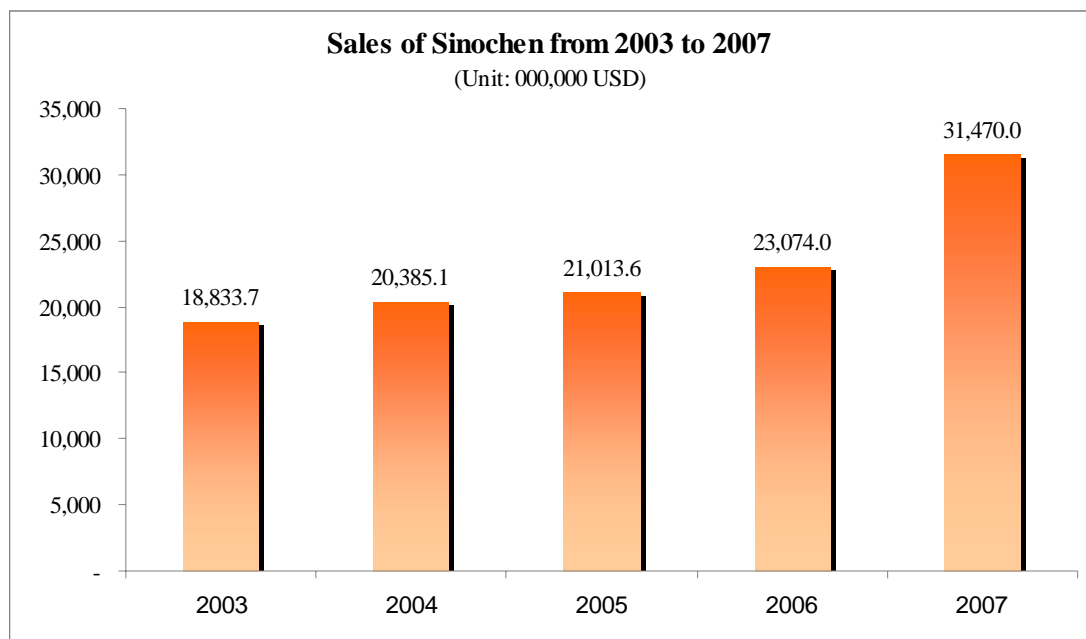
An initial contact with Sinochem regarding request for interview was made by telephone in early June. Permission was thereafter granted for allowing the author to conduct interview inside the company. After confirmation of the schedule from the interviewee, the interview was then carried on June 19th, 2008. It has been argued that the interactive nature of an interview will be seriously interrupted by the attempt to take audio record during the interview; moreover, respecting to the regulation of the observed company, only notes were taken as a record. Interview was conducted individually and lasted about 90 minutes due to the time lag of the interviewee. Further detailed data was communicated by telephone and email in July and August. Both English and Mandarin were the language in the interview, some terminologies of risk hedging techniques were used in English and the remained were communicated in Chinese. However, as the limitation of the available hedging products in the Chinese market, some terminologies of employed hedging approach were translated in to English by the author aimed for explanation.

Chapter Five: Case Study

5.1 Introduction of Sinochem International Corporation

Sinochem International Corporation, established in 1998, was derived from the business of rubber, plastics, chemical products & logistics and transportation operations, and publicly listed at Shanghai Stock Exchange (code: 600050) in 2000. The firm's development strategy is focusing on the transformation from a foreign trade agent company to an integrated solution supplier with large marketing capability and stable profitability. The business of scope of Sinochem consists of four sectors rubber, chemical engineering, metallurgy energy, and chemical logistics. The sales revenue of the firm reached USD1.9 with the customers over 100 countries and regions in the world.

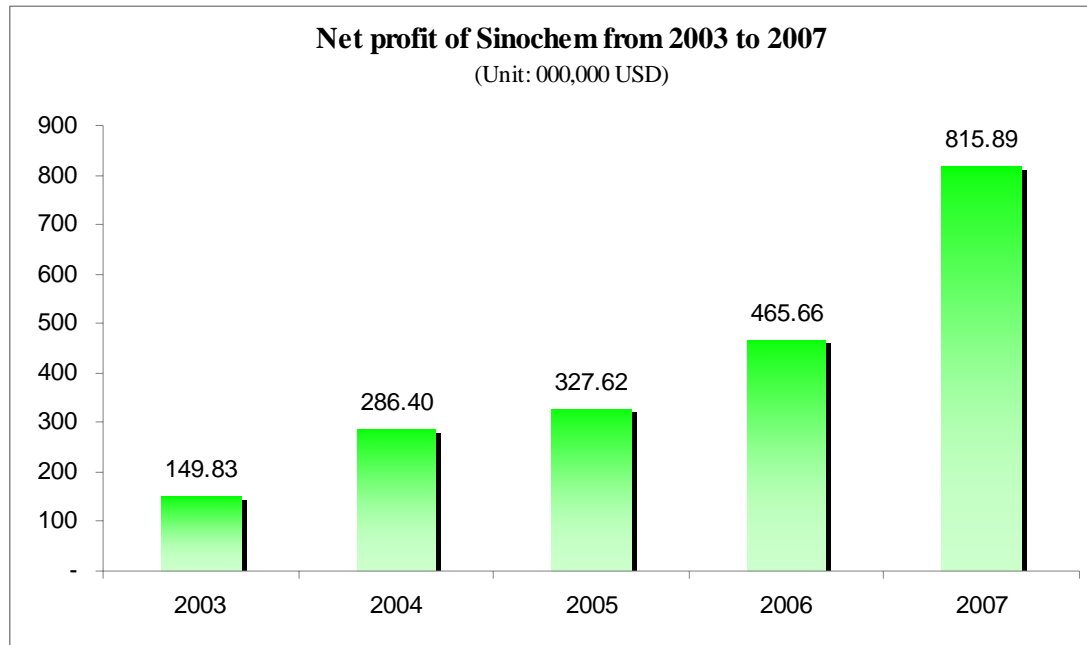
Figure 7: Sales revenue of Sinochem 2003-2007



Source: data from 2005, 2006 and 2007 annual reports of Sinochem International Corporation, available

at www.sinochemintl.com

Figure 8: Net profit of Sinochem 2003-2007



Source: data from 2005, 2006 and 2007 annual reports of Sinochem International Corporation, available at www.sinochemintl.com

Ranking the first place in domestic liquefied chemical products logistic_company, the Sinochem has a market share over 21 percent in the high-end market of internal trade shipping. In the field of rubber business, the market share of our natural rubber sales has been ranked the first place for several years. Besides the consolidation and enhancement of leading position in current trade marketing, the company established the sourcing bases in Thailand, Malaysia, Singapore and Southern China. The firm has consolidated and expanded the strategic alliances with such core suppliers as JSR, DSM, EXXONMOBIL, THAIRUBBER, etc., meanwhile, through the integration of marketing, industry, technology and brand in rubber business field, the company's customer-oriented services have been greatly promoted, with the embedding of supplier system with transnational tyre corporations, such as Michelin, Bridgestone and Goodyear, as well as domestic tyre enterprises.

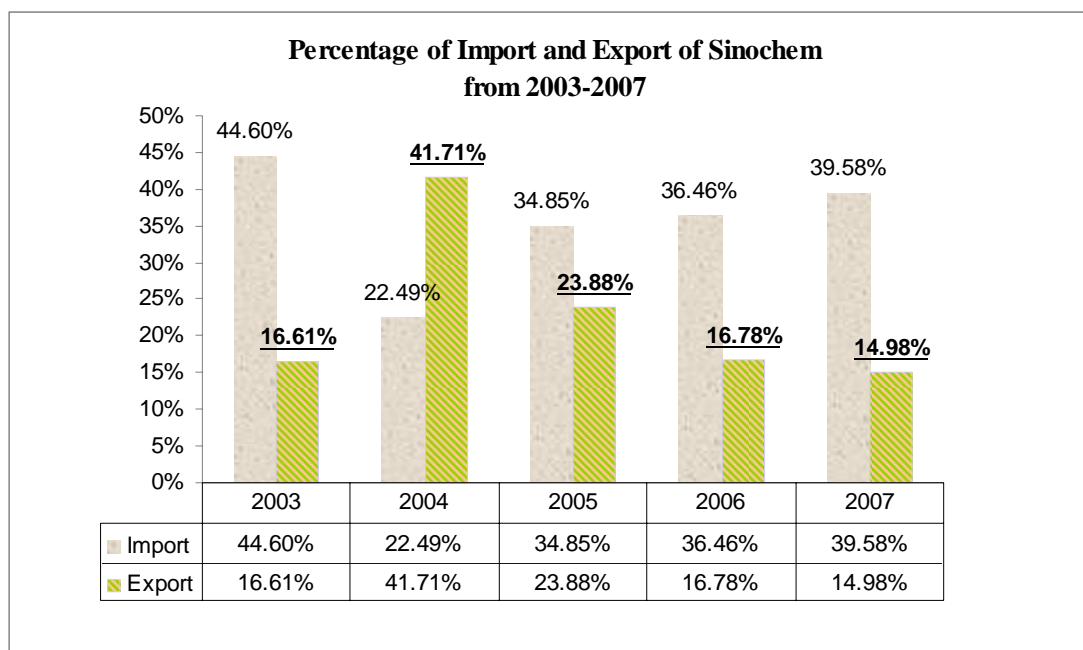
As for metallurgy & energy business unit, Sinochem, being the strongest coke exporter in China, annually exports nearly 1.5 million ton coke in recent two years, which occupies 10 percent of the total domestic export volume. Relying on its sound logistics organizing capacity and considerable services, the firm not only makes great contributions to the profits growth of the year 2004, but also wins the public trust from suppliers and customers, especially international purchasers. In the year 2005, under the market environment of coke price decline, the company, fully availing itself of its leading position in the field of coke export as well as its strategic cooperation partnership with large-scale steel companies in Asia, Europe and North America. On another, Sinochem vigorously exploits overseas new markets and customers, including India, Brazil.

As the traditional business of the company, the chemical business maintains its competitive edge in the trade distribution field, with the export volume of paraffin taking up 8 percent of the total volume nationwide, and the import volume of pesticide taking 10 percent of the total domestic import volume.

5.2 Identification and measurement of exposure

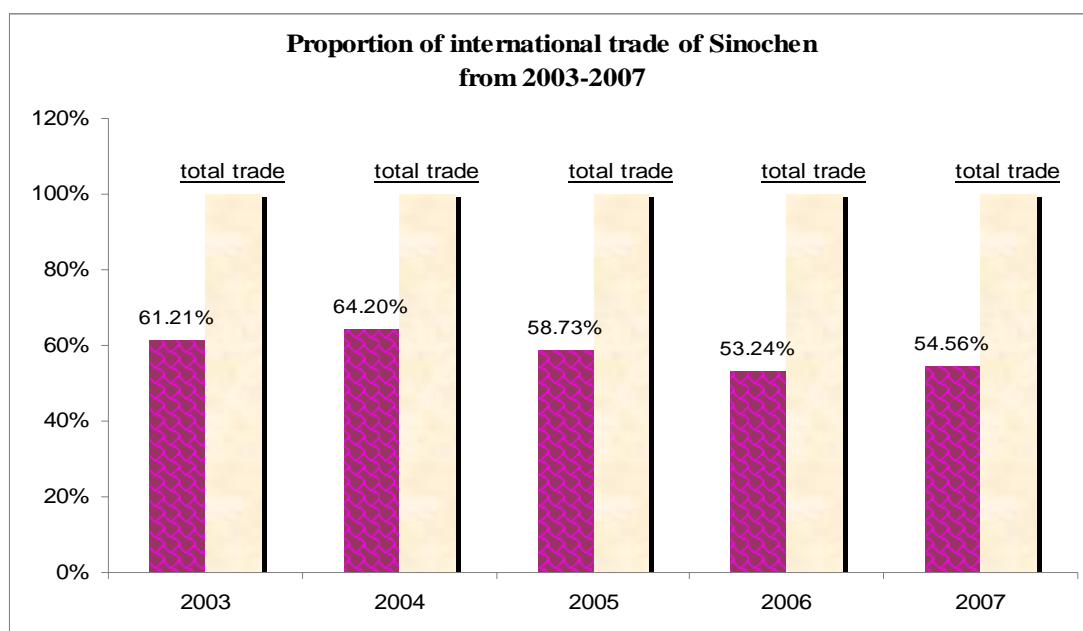
Form 2003 to 2007, Sinochem's annual foreign trade accounts for the total trade of the Sinochem about 60 percent. The proportion of import business from 2003 to 2007 is listed in the following table 2. Principally, of the value of import is larger than the export of each year, therefore, the appreciation of Chinese yuan won't reduce the company's total revenue; accordingly, the exchange profit of these years is listed in the table 3.

Figure 9: Percentage of import and export trade of Sinochem 2003-2007



Source: data from the 2005, 2006 and 2007 annual reports of Sinochem International Corporation, Available at: www.sinochemintel.com

Figure 10: Proportion of international trade of Sinochem 2003-2007



Source: data from the 2005, 2006 and 2007 annual reports of Sinochem International Corporation, Available at: www.sinochemintel.com

Table 4: Exchange profit from the appreciation of Chinese yuan of Sinochem 2003-2007

	2003	2004	2005	2006	2007
Exchange profit	15,233.27	51,083.94	64,292.64	22,909.82	27,449.32

Source: data from the 2005, 2006 and 2007 annual reports of Sinochem International Corporation, Available at: www.sinochemintel.com

Although the unilateral appreciation of Chinese yuan brings the profit to Sinochem as a whole result due to its business structure, the exchange exposures exist in the operation and development of the firm. In consistence with the theoretical study in the prior literature review, Sinochem has three kinds of foreign exchange exposures:

Translation exposure:

Sinochem has two wholly owned subsidiaries, Sinochem international FZE in U.A.E and Sinochem International (overseas) PTE. LTD based in Singapore. Among the annual sales of the whole group in the year of 2007, 7.3% came from the subsidiary in U.A.E, and 27.8% from the subsidiary in Singapore.

According to rules of ‘Accounting Standards for Enterprise No. 33 – foreign currency translation’ issued by Ministry of Finance of China, firms are required to consolidate their foreign currency denominated asset and liabilities into their balance sheets. Therefore, the translation exposure arises according to the consolidation.

Transaction exposure:

The precious data show that the foreign trade accounts for about 60 percent of the total annual trade, therefore, the anticipated cash inflow and outflow will change with the movement of the exchange rate, so both of the cost and profit is uncertain because of

the floating exchange rate.

Economic exposure:

The supply and demand requests in the market are varying with the exchange rate, although it's a long-term effect, but this exposure does change the business structure of the firm.

When the USD depreciates, firm's profit of export will be deducted as the anticipated cash inflow will decrease against the Chinese yuan. The firm naturally covers such loss by raising the sales price, but this action will also reduce the competitive advantage in the market. Even if the majority of the suppliers take the same action of raising price simultaneously, the demand of the market will be cut down which breaks market equilibrium. Thus, the market status is turning worse. In the market perspective, it is difficult to hedge the economic exposure through derivatives.

In contrast, such exchange rate movement can lead the increment of import profit. The cost decreases with the depreciation of USD, which can not only enhance the firms competitive capacity but also stimulate the market demand, therefore, Sinochem could benefit from a larger net profit or an increment of sales.

Vice versa for the appreciation of USD, economic exposure exists due to the exchange loss import and gain in the export.

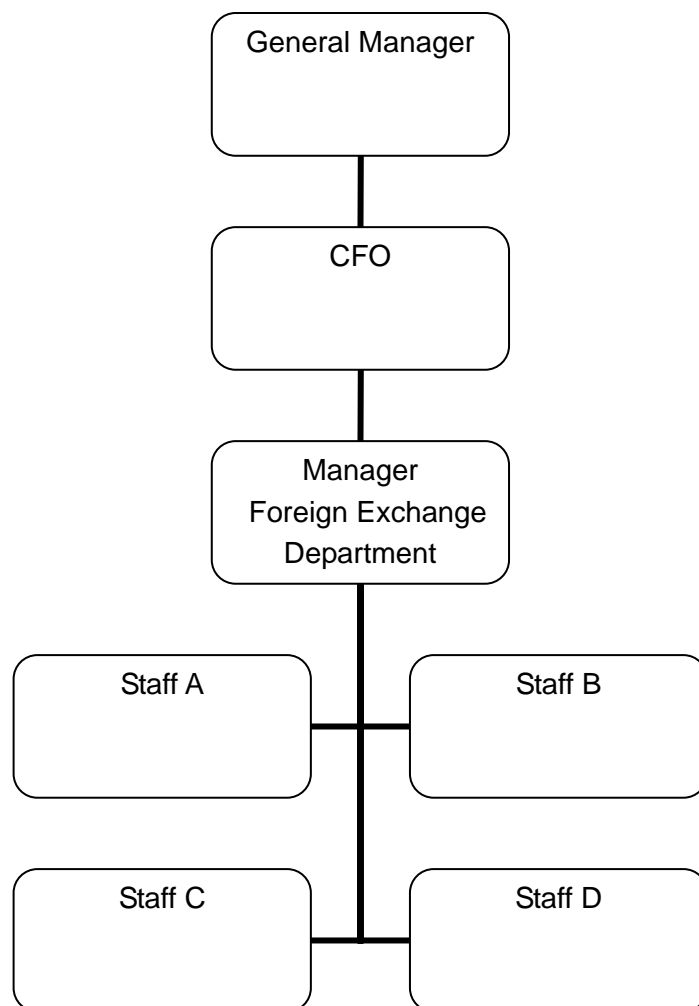
5.3 Organization of foreign exchange exposure management

The general manager takes the full responsibility of approval of Sinochem's foreign exchange exposure management strategy. Practically, the manager of Foreign Exchange Department is the authorised to executive of the strategy. His duty includes monitoring the implement of the strategy, performance review, and preparing

adjustment of the strategy application according to the market status.

The manager reports to the CFO of the firm, basically, they have meeting every two weeks which is primary for the reviewing the currently foreign exchange position, business condition and decision of the foreign exchange strategy for the next period. A team including four employees is organized as a Foreign Exchange Department. This team. Please find the organization of exchange exposure management team in the following figure 11.

Figure 11: Organization of foreign exchange exposure management in Sinochem



-5.4 Strategy and objective of foreign exchange exposure management

As the previous introduction of Sinochem' foreign trade, the firm has a natural hedge of due to its business structure. But considering the existence foreign exchange, the firm also takes the financial instruments to control the currency exposure effectively through the cooperation with the settlement bank by employing a mixture of forward contract, money markets and other techniques.

Sinochem uses foreign currency purchased forward contracts and money market to reduce the exposure due to the currency fluctuations involving actual and probable anticipated transactions with its foreign currency commitments. In view of the unexpected losses and uncontrollable factors in foreign currency derivatives, Sinochem seeks a conservative foreign risk management strategy which limits on chosen of the types, size and timing of the derivative positions. It also indentifies the detailed procedures followed by all the staff concerning the foreign exchange risk management.

The objective of Sinochem's foreign exchange management is minimizing the earnings and cost volatility, reducing the transaction risk and maintaining the competitive advantages.

To reach these targets, the firm has the following principle for the hedging the exchange exposures:

- Principally denominated in USD, adding other relative settlement currency properly if necessary and establishing a diversified currency settlement system. when choosing other currency as settlement method, it should be considered prudentially on the amount of the value, as the exchange rate fluctuation of Chinese yuan is relative to USD, and the predictability of USD's movement is

stronger than other currency

- Involving the fluctuation range of exchange rate in to the commodities' price (this principle is based on the commodities which the firm owns the pricing right in the market, e.g. if the exchange rate increase 5 percent, the price should rise 5 percent correspondingly)
- With the expectation of Chinese yuan appreciation, payment terms such as letter of credit at sight and down payment are strongly recommended; reversely, time letter of credit and deferred payment are suggested to be taken.
- Using the booking exchange rate to define the cost of the trading items, but the sales price should float with the change of currency rates
- Sharing the currency risk with counter party of the contract, both of the buyer and seller take 50 percent risk of the exchange rate volatility

5.5 Operation of foreign exchange exposure management

The annual international trade of chemical sector is about USD250 million. In 2007, Sinochem imported paraffin approximately USD 53million with the payment of 60/90 days letter of credit or telegraphic transfer. The export to Cuba is about USD160million with the general payments term of 360 days letter of credit, which is used for the principal of the foreign currency borrowing. The trade of metal is USD 22 million, and it is almost balanced for import and export; similar to the metal, chemical with a trade of USD 12.5 million also has a balance in import and export. The payment from the customer is 30-90 days letter of credit or telegraphic transfer. Although the Sinochem take the strategy of deferring the imported payment, it is required that the Sinochem should take the customer's financial cost of foreign currency borrowing of the payment, usually, the interest rate is at LIBOR¹²+150bps, which rate is higher than the Sinochem's domestic cost of borrowing, therefore, the firm is strategizing to

¹² LIBOR is the abbreviation of the London Interbank Offered Rate, which refers a daily reference rate based on the interest rates at which banks offer to lend unsecured funds to other banks in the London wholesale money market (or interbank market)

financing through foreign currency borrowing against their import contract. Meanwhile, as the expectation of USD depreciation, it is practical to increase the USD debt and reduce the Chinese yuan debt.

The annual export of coke is about 1,300,000 ton at the price between USD170 to 180 per ton. Among these contracts, the payment from Indian Steel is 180 days letter of credit, and all the financial cost of currency borrowing is bore by the customers, thus, no extra cost will occur. But for the contracts with UK and USA buyer, the majority is long-term agreements, moreover, due to the weak position of negotiation, the company cannot transfer the risk to those customer with the linkage of the exchange rate movement. This is exposure is mostly covered by the forward contracts.

The monthly import of iron sand is 200,000 ton at the unit price USD70 per ton, for those contracts, deferred payment is preferred to benefit the appreciation of Chinese yuan, meanwhile, the foreign currency borrowing with these contract is also a financing approach for the company.

Less than other commodities, the average export of steel is about, 2,000 to 3,000 tons monthly. But in the second half of 2007 high-quality steel exports reached 30,000 to 40,000 tons. The forward contracts were employed as the hedging technique for these transactions.

Financial position is the biggest problem faced by the coke business, as the purchasing of the material occupies the 5.31 percent of the total position hold by headquarters. Compared to with other hedging approach such as forward contract, USD borrowing by exports contract is advanced by saving the relative financial cost of the operation. Moreover, for the payment of imports, adoption of deferred payment (without the extra cost) and borrowing USD by imports will further reduce the financial cost.

The annual export of PVC is 30,000 tons with a total of USD 24 million. Peak season of this business is the first and the third calendar quarter, during which the export is about USD 16 million, for the remained off-season period the export is around USD 8 million. The majority of payment terms of receivable are letter of credit at sight, telegraphic transfer as well as some timing payments which are all hedged by the foreign currency borrowing while the relative financial cost is born by the buyer.

Import is mainstream of rubber business but still with a few of export orders. This business fully enjoys the benefits of the appreciation of the Chinese yuan. On the condition of no extra financial expense caused, the deferred payment is suggested to enjoy the benefit of appreciation of Chinese yuan against the USD. Therefore, the firm prefer leave these exposures in the day-to-day operation.

In 2007, the annual income of its subsidiary in U.A.E, Sinochem international FZE in U.A.E, is about USD25.81 million with the profit of USD9.75 million, among this, the main operation profit is USD 4.72 million and the balance of profit USD 5.03 million is from selling the ships (sold in February 2007). To hedge the depreciation of the USD cash flow, the holding company used the income as a part of payment for another domestic subsidiary, Hainan Shipping's ship purchasing order, which was USD4.7 million in the end of February and USD11 million. Thus, with the natural hedging technique, there's no exchange loss on the income.

Due to the depreciation of U.S. dollar, Singapore subsidiary is used for a platform of U.S. dollar financing. Its financial position could not only used for the payment for the normal trade, but also can be a natural hedging approach for the U.S. dollar assets. Because the firm believes that if the assets denominated in foreign currency increase, the foreign currency liability should also increase accordingly.

An example was given by the treasury assistant to the GM, he got a report which was a payment of USD 10 million would be received in three months, for a conservative prediction that the Chinese yuan would appreciate against USD for 4% yearly in 2007, if he took no action on that future cash in flow, the exchange loss of the payment in three months would be $(4\%/12) * 3 = 1\%$, about USD100,000. To hedge such an exposure, he took financial instruments which the cost was $(LIBOR-2.8)*3$, at that corresponding period, the one-year LIBOR was about 5.4%, thus the cost rate = $(5.4-2.7)\%/12*3 = 0.9\%$, therefore, deducted the financial cost, the company could save $USD10 \text{ million} * (1-0.9)\% = USD 10,000$.

According to the trade value and frequency with commercial banks, Sinochem has more favorable monthly rates of financing, which are $(LIBOR + 60\sim 80 \text{ bps})/12$ for USD borrowing and $(LIBOR- 2.5\sim 2.7)/12$ for forward contracts. But the risk management department also considers the spot rate before the operation of forward contracts, because the forward rate of selling USD will be probably lower than the spot rate at that time, in this point of view, the firm will bear an exchange loss. Moreover, in the process of forward contracts, if an extension of the contract is necessary, the firm can use close position or currency swap to reach the requirement. Even the forward contracts are flexible and easy to control, it won't be wildly adopted in the scenario when the firm is in tight financial position because of its large fund occupation.

The currency swaps is a solution of getting position by swapping the foreign currencies. Besides saving the short-term financing cost, it can also bring the benefit of premium of Chinese yuan against USD. The crucial factor of the swaps operation is the timing and amount of settlement. A case in the operation in Sinochem represents the advantage of the hedging approach. The firm held a cash of USD1.5 million in the end of 2006, and another some amount and currency payment was supposed to executive in

three month, meanwhile, the firm had a gap of Chinese yuan in short term. The risk management department took a three-month swap for the USD1.5 million, which was selling the USD at sight and then buying USD in three month. The whole story of the operation is on December 12, 2006, the company converted USD 1.5 million to get Chinese yuan 11.75 million (the spot rate was 7.83), on March 12, the firm used Chinese yuan 11.66 for repurchasing the USD (the forward rate was 7.7735)

Constrained by the limitation hedging approaches available in Chinese market and the regulation from the China Administration of Foreign Exchange, forward contracts is the most frequent used derivative approach for the company's risk managements. Synchronizing with other facts affected the cost of trade commodities, the cost on foreign cost should be confirmed. The main function of forward contract is locking in the cost and profit; meanwhile, it can also reduce the volatility of future cash flow.

With the consideration of the firm's financial position, foreign currency (USD) borrowing in money market is also an approach to hedge the exchange risk and financing, especially for the financial cost from the customer.

The uncertain factors such as the overdue payment from the customer will lead other problem of the financial cost and relative operations. For instance, the company has a forward contract of buying USD at a special date, as the receivable is supposed to be collect before or on that date and be used for the position of the forward contract. If the customer could not make the payment on time, the firm has to use other financial position for the performance of the underlined forward contract, otherwise, the failure executions will not only affect the firm's credit negatively, but also will cause the punishment from the State Administration of Foreign currency. Therefore, according to these conditions, hedging a quarter of the firm's total foreign trade by financial instruments is a rational strategy for the currency risk management.

The firms make a hedging plan referring to the trade monthly, in the view of financial cost, credit risk and structured natural hedging and other uncertain factors, the hedging ratio of is about 24 percent of the total foreign trade generally. Basically, this conservative hedging plan is operated every 10 days; in other words, the hedging operation is fine and could be flexibly adjusted if the trade and market status change quickly.

Currently, the company makes the hedging plan according to the total trade, but the risk management department is going to take a radical strategy, which is offering an individual financial solution for each big order with comparative higher potential risk. This plan can lead to a more effective risk management.

Besides the hedging the currency risk on existing contract, the department also cooperate with trade departments by offering a predict exchange rate in the future, which helps them to make the decision in the contract negotiation. Sinochem trends to promote a balance hedging approach to eliminate the exchange rate risk. The approach is designed as generating a reverse cash follow which is against the existing currency exposure with the same currency, amount and timing. Theoretically, this approach is advanced for the low cost and high efficiency, but it is difficult to carry as the requirement of perfect coordination and cooperation cross the departments in the firm.

Consequently, the research questions of the dissertation can be partly answered. Sinochem is exposed in the foreign exchange rate as its business and operation models. To cope with such problem which leads the economic loss by cash flow volatility and weakening the competitive capability, the firm uses financial instruments to hedge the risk it facing, such as forward contract, swaps, foreign debt borrowing, money market, as well as the money market. For the fact that some prevailing techniques cannot be found in the interview probably such as option and future didn't be found in the firm's

hedging portfolio can be probably attribute to two reason, one is the undeveloped financial derivative market status in China, the other is the potential risk will cause. As the principal objective of Sinochem's currency exposure management is to reduce the volatility of the profit, so a company level well-structured hedging strategy is tailed for all the international business involved. And Sinochem avoids speculation and high financial cost in the foreign exchange risk management. Moreover, from the data of its annual report, it is implicate although the international trade proportion of the years 2006 and 2007 are very close, the company adjust the import and export structure to enjoy the appreciation of Chinese yuan.

5.6 Summary

Since the reform of Chinese foreign exchange regime on July 21st, 2005, the Chinese yuan is confronted the mounting pressure of continues appreciation. The reform and the expected appreciation have a significant effect on the international business of Sinochem. The volatility of Chinese yuan directly influences the cost and income of the firm, one hand, the appreciation of Chinese yuan will reduce the income of export business settlement, on the other hand, it will also benefit the cost of settlement of import trade. Withal, the revenue and profit of overseas subsidiaries will also be affected negatively when consolidated into the firm's financial statements.

The fluctuation of the exchange rate has the various influences on difference business modules. The appreciation of Chinese yuan has a downside effect on the metallurgy and energy business that the majority focuses on the outbound trade, but it's a preference for import of chemical and rubber modules.

Comparatively low cost and flexible in the contract value and timing, forward contract is the most frequently used as a risk hedging technique in exporting business, particularly with the expectation of Chinese yuan appreciation. Moreover, the

forward contract also has a function of locking in the cost of commodities. Actually, when a forward contract will be conducted, it is important to aware the forward rate might lower than the spot rate when sell the USD, thus will cause the exchange loss. Meanwhile, if the firm is in tight financial status, and has already taken the financial cost of the inventory, the forward contract won't be adopted widely.

Overall, the amount of individual coke contract is large, and the timing of the receivable is relatively long and uncertain, thus increases the potential risk cause by exchange movement, so the prompt settlement and locking in the cost by forward contact are main effective approached for this kind of currency risk. On the other hand, in the view of the financial fund requirement of the forward contracts, foreign currency debt is recommended as a preferred hedging approach. In large, the risk management department arranges the forward contracts according to the actual statues of USD receivable and payable of the whole group. Meanwhile, a diversified currency on receivable and payable should be taken in the international trade contracts.

As the expectation of USD depreciation, Sinochem suggests financing with USD borrowing, in other words, this approach can hedge a part of the interest by the benefit of USD depreciation through increasing the USD debt and reducing the Chinese, so the relative financial cost could be decreased. Besides, deferred the USD payment can also reduce the cost of purchasing USD (in the scenario without extra financial expenditure).

Sinochem has an alert awareness that exchange rate movement is a fact affecting the commodity's cost, it is required to reflect the change of currency rates in the pricing on the export trades to against such exposure, consequently to keep the fixed the profit.

Based on the exchange rate moving trend, Sinochem takes yearly financing strategy which is increasing the USD debt and reducing the Chinese debt. (adding USD debt by USD borrowing, namely exchanging the USD borrowing by export contracts to Chinese yuan to reduce the cash flow loans of Chinese loans). Further more, in the settlement of international trade, the firm strategizes in paying with weak currency and receiving with the strong. The payment of imports is expected in USD due to its depreciation predictions.

Summarily, the international business of Sinochem has a trade deficit, therefore, the loss caused by the depreciation of USD is less than the gain from the appreciation of Chinese yuan, consequently, the firm benefit of exchange rate movement.

Chapter Six: Conclusion and Limitation

6.1 Conclusion

The impact of exchange rate volatility on a company depends mainly on the company's business structure, its industry profile and the nature of its competitive environment. This dissertation reviews the mainstream of the theoretical and investigates in the foreign exchange management and with a case study of the currency exposure hedging program of Sinochem, a China-base trading company. The result of the paper is as following:

Generally there are three currency exposures, translation, transaction and economic exposure, exist in the multinational enterprises due to the movement of exchange rate.. These exposures can be both long run and short run. A well- structured strategy can help the firms to hedging the exchange risk. Accurate analysis of the risk movement and choice of appropriate financial instrument can hedge the risk. However, it is

impossible to eliminate the risk absolutely.

In fact, the boundary of long term and short term currency risk is ambiguous; the notion is only from the perspective of corporate risk management. Prediction of the exchange rate movement is carried with empirical and theoretical data; therefore, it is impossible to get the accurate future exchange rate in advance. However, an expectation of future movement of the currency rate is an important fact of the strategy and operation of corporation risk management.

An effective corporate currency risk management program should be designed and implemented on a holistic level of the firm, and the feasibility, cost, timing and categories of currency and business structure are the main factor should be considered. A diversified hedging portfolio is more preferred to against the currency exposure.

Both advantage and disadvantages are associated in each hedging approach, whatever natural hedging, derivatives, financial instruments are.

Borrowing foreign currency against the document discount is a frequent effective way to hedge the risk and it is also a solution for short-run financing, however, the interest caused is relative higher than the normal financing. Therefore, this approach is not recommended if the firm with sufficient cash flow. Currency swaps can mitigate the firm's tight financing position with the reducing the short term financing cost. If swaps are traded in a proper exchange rate, the firm can also benefit from the premium. As a result they may help firms pay less interest, but could also result in them paying more. Forward contracts are recommended to hedge for known future cash flows. Their unchangeable fixed-rate provides a predetermined cash flow for firms; however, it may also cause loss. Options are suggested to hedge uncertain future money or to be used in a volatile monetary system, because holders do not have the obligation to exercise, and

if the exchange rate moves in favor of the holders, they can exercise the options and therefore take advantage of the exchange rate movements. Nevertheless, the cost of options is believed to be expensive. Some firm sell options to earn premiums in order to offset the expensive hedge cost. In this way, if the future exchange rate does not move as they predicted, they are obliged to exercise the options no matter how unfavorable the rate is.

Natural hedging is saving cost but the feasibility is due to the capital and business structure of the firm; whereas, the consolidation of financial report with overseas subsidiary's data will raise the economic exposure at the same time.

No perfect instrument can totally hedge the currency risk. The company should make the tactic decision on to their own status and risk attitude.

China has a very close link with global markets, the fast growing of GDP and foreign trade is a good demonstration. Meanwhile, due to the unbalance of its international trade structure, which is the export is higher than the import, thus the foreign currency exposure if firmly affect the economy in China. The Chinese yuan appreciates rapidly against the US dollars since its reform of foreign exchange regime in July 21st, 2005. Moreover, the biggest trade surplus partner of China is the United States. Thus, the appreciation of Chinese yuan caused a serious currency risk for the profit of Chinese enterprises.

In addition, many corporations started to broaden their business scope by setting up subsidiaries and affiliated abroad, therefore, firms based in China very are very sensitive with exchange rate movements, particularly in trade industry, as a large portion of the revenue are trade in US dollars while the firm's cost and expenditure expenses are denominated in Chinese yuan,.

Under such circumstances, firms could not be exempted from involving in exchange rate management. The case study is about Sinochem, a large trade multinational in China who has substantial exchange rate exposures. This firm takes a structured, diversified and conservative strategy for the currency risk management. The wide use of forward contracts and money market shows its main objective is the reducing the volatility of cash flow and locking the profit and cost of the trade. The 24% hedging ratio also shows that firm has an explicit financial budget on the financial cost of the hedging operation. In addition, no option is used as a currency risk hedging approach. Some given examples in the day-to-day operation show the effectiveness of the firm's currency risk management.

From the study, it is found that the appreciation of Chinese yuan against US dollar has a great impact on Chinese firms. Additionally, from the net gain of the forward contracts the firm entered, it implies that if the firm took no action on hedging practices, a likelihood of large loss from foreign currency exchange fluctuations will happen. The finding partly answers the research question, although a single case study definitely could not represent all the Chinese firms, some basic ideas relating to hedging strategies toward exchange rate movement were discovered. When firms have different risk appetites, the hedging activities will be different. An implication of this case study is if a firm is more concerned about hedging cost and focusing on reducing volatility in profits, the forward contracts and currency swaps will be more frequently used. In contrast, when an organization is more interested in improving its income, options are preferred. However, none hedging methods can guarantee a gain, and each of them carries some disadvantages. Managers should design a hedging strategy with the comprehension of all factors concerned for the best service of firm's development and value increase. Moreover, the managers should also acknowledge the risks involved with the hedge activities accordingly.

6.2 Limitation

Due to the constraints of time and information availability, this paper only focused on an individual firm. It is not a representative of all the firms in China, but it could be a comprehensive sample of managing foreign exchange exposure in a large multinational Chinese firm. Meanwhile, Sinochem is a trade deficit firm who is benefit from the appreciation of Chinese yuan, whereas most of the trading companies are more concerned in export business. In addition, Sinochem is a large listed company, it is more flexible to take various of hedging instruments, which might not available for small or medium scale firms.

Researching by case study method, this paper does not present quantitative analysis on the impact of exchange rate movement and how firm measure and review the currency risk management performance. Being a single case study, this paper does not aim to disclose the whole currency risk management level in Chinese firms, but tries to explore the internal risk management strategies to tackle exchange rate fluctuation in an objective manner, by collecting data from published reports and some internal documents. However, the usage of derivatives is a sensitive topic for the listed companies; some of the disclosure is reserved and inaccessible to the public due to the information asymmetry, even for study purposes. No detailed information about financial instruments with hedging purposes could be found in the annual reports. Only some successful example were given by the firm.. Therefore, this paper works on the limited information disclosed in the annual reports and on other resources. If a future study could be carried with more detailed data, it could be more concentrated on evaluating the effectiveness of the hedging activities in a statistical way, i.e., using optimal hedge ratios to examine whether the hedge output reaches profit maximization.

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