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# CURRENCY RISK MANAGEMENT OF FINNISH ENTERPRISES IN CHINA

China (Shanghai) Pilot Free Trade Zone

Business Economics and Tourism

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## TIIVISTELMÄ

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Tämän tutkielman ajatus perustuu siihen kuinka merkittävän tärkeä rooli Kiinan markkinat ovat suomalaisille kauppatavara ja palveluyrityksille. Yksi monista merkeistä osoittaa kuinka kiinasta on tullut yksi suomen isoimmista vienti ja tuonti kumppaneista Aasiassa ollen 1.7 miljardin kauppavajeessa kiinan kanssa. Kaikkine mahdollisuuksineen kiinassa perustetut yritykset kohtaavat monia kriittisiä riskejä, yksi huomattavammista on valuuttariski. Se vaikuttaa yritysten tulotasoon ja tekee yritysten laajentamisen ulkomaille riskialttiiksi. Tämän seurauksena, tämän tutkimuksen tarkoituksena on löytää yrityksille käytännön malli ja suuntaviiva kuinka hallita valuuttariskiä kiinassa. Lisäksi tämä tutkielma käsittelee uusia mahdollisuuksia ja riskejä valuuttariskien hallinnassa Kiina (Shanghai) Pilot Free Trade Zone perustamisen jälkeen yrityksille, näin viitaten rahoitusjohtajiin.

Teoria sisältää neljä osaa. Ensin, käsitellään valuuttariskien peruselementtien esiintymistä ja teorioita niiden vähentämiseksi. Toiseksi, valuuttariskien erikoisalojen eroja kiinassa ja mainitsen kuinka ne vaikuttavat valuuttariskienhallintaan. Kolmanneksi, perustuen kahteen edellä mainittuun, rakennetaan malli siitä kuinka vähentää valuuttariskiä kiinassa. Lopuksi, käsitellään uusia mahdollisuuksia ja Free Trade Zone:n muodostumisen tuomia riskejä riskienhallinnassa. Tutkimuksessa käytetään laadullista menetelmää ideoiden ja tietämyksen aiheesta saamiin.

Tutkimus osoitti, että kiinan markkinat ovat hyvin erilaiset verrattuna muihin maihin. Siihen vaikuttavat edelleen hyvin paljon poliittiset käytännöt ja myös nykytilanteessa kohtaa kovaa säännöstelyä. Näin ollen, CNY:n vaihtelu on paljon pienempää kuin maailman johtavilla valuutoilla. Toisaalta, se osoittaa kuinka voimakkaasti poliittiset käytännöt ja valtion päätökset vaikuttavat kiinan markkinoihin. Lopuksi tullen johtopäätökseen että, taloudellisen uudistusten ja yleisen taloustilanteen myötä, CNY tulee varmasti nousemaan tulevaisuudessa kurssin vaihtelun kera, tätä voitaisiin vähentää tutkielman luoman mallin avulla. Shanghai (Kiina) Pilot Free Trade Zone:n muodostuminen osoittaa suuria mahdollisuuksia suomalaisille yrityksille vähentämään valuuttariskejä.

## ABSTRACT

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The idea of this study is based on the significant role of the Chinese market for Finnish enterprises in merchandise and service trade. Some of the signs indicating such a role is that China has become Finland's biggest export and import partner in Asia and the 1.7 billion EUR trade deficit Finland has with China. With all the opportunities Finnish enterprises have found in China, they are facing many critical risks as well; one of the most important risks is the currency risk. It affects the profit level of enterprises and makes expanding oversea business dangerous for enterprises. Due to this situation, this study aimed to find out a practical model and guidelines for enterprises to manage the currency risks in China. Furthermore, this study discusses the new opportunities and risks in currency risk management after the forming of China (Shanghai) Pilot Free Trade Zone for enterprises and acts as a reference to financial managers.

The theory contains four parts. First, the basic elements for currency risks to occur and theories to reduce such risks were discussed. Second, the difference of the specialty of currency risks in China, and how they affect the currency risk management was briefly looked at. Third, based on the two results above, a model for reducing currency risk in China was built. Finally, the new opportunities and risks for currency risk management from the forming of Free Trade Zone. Qualitative method was used in the study.

The study revealed that the Chinese market is very different from the other parts of the world; it is still very much affected by the policies and under high regulation. On one hand, this means that fluctuation of CNY will be much lower than that at other main currencies in the world. It indicated that the market is strongly affected by policy and government opinions. In conclusion, due to the economic reform in China and the overall economic situation, CNY will most certainly raise in the future with more fluctuation. This could be reduced by applying the model that was formed in the study. The forming of Shanghai (China) Pilot Free Trade Zone seems to offer a great opportunity for Finnish enterprises to reduce their currency risks.



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## 1 INTRODUCTION

‘The reward of trade do not come without accompanying risk’, said Maurice D. Levi, the professor of the University of British Columbia and the author of a classic text book *International Finance*, ‘The most obvious additional risk of international versus domestic trade arises from uncertainty about exchange rate.’ (Levi 2009,8) As Finland’s biggest export and import partner in Asia (CIA World Fact Book), China is a country that has most possibilities and reasons for Finnish enterprises to have business in. But as Levi said, the first potential risk lying in front of these Finnish enterprises might not be the product requirements or marketing methods but the currency issue. Unlike when trading between EU countries, doing business with China, which is geographically far away on another continent, trade is more complicate. Finland and China have currency differences, financial system differences and even bank system differences, which might not even have those banks that Finnish enterprises having service contracts with. To solve such problems and overcome the differences for Finnish enterprises are the aims of this study.

In short, the aim of this thesis is to help Finnish enterprises who want to enter China or already have their business in China understand the difficulty of reducing currency risk in China and, more importantly, how to overcome such difficulties. The main objects are to find out what could be the key elements in China that reduce currency risk most and by what kind of methods can Finnish enterprises minimize such effect. Furthermore, the research will try to find a practical model which supports both theories and case examples, to reduce currency risks in China. By this way small and medium-size enterprises (SMES) that want to enter Chinese market and multinational enterprises (MNES) who are considering expanding their business into Shanghai-Free Trade Zone could both benefit.

China (Shanghai) Pilot Free Trade Zone, also known as Shanghai Free Trade zone (FTZ), is the a free trade zone set up by the Chinese government in Shanghai. It is also the first free trade zone in China. (Ministry of Commerce People’s Republic of China, 2013). State Council of the PRC officially approved Shanghai FTZ in

August 2013 for testing the further financial reform. The forming of Shanghai FTZ was highly focused by foreign investors and enterprises since the regulations of business behavior in the zone will be controlled in a minimum degree compare to the other parts of China. Furthermore, and it's relevant to this study, the Shanghai FZT will for the first time permit CNY's convertibility and allow foreign currency exchange unrestricted. (Framework Plan for the China (Shanghai) Pilot Free Trade Zone, 2013)

### **1.1 Research Problems**

The research problem is to find out a practical model for Finnish enterprises to reduce their currency risks in China, especially in China (Shanghai) Pilot Free Trade Zone. This research can be benefit both SMEs and MNEs since the Shanghai FTZ are totally new in China (Officially form at September, 2013), and this study can be one of the first on the topic.

These following research questions can be drawn from the main research problem:

- What are the key elements of currency risk reducing in China?
- What methods are the most useful for Finnish enterprises to reduce the currency risks in China?
- What benefits can Finnish enterprises have in China (Shanghai) Pilot Free Trade Zone to reduce the currency risks in the current situation?
- What could be the future of currency exchange situation in China (Shanghai) Pilot Free Trade Zone and how can Finnish enterprises be benefit from?

### **1.2 Limitation of the study**

Financial information is extremely sensitive information for every enterprise, due to this it is every hard to find someone inside the company to make comments about the methods for reducing currency risk. Instead of the people from the company's side, this study found someone work for the government, and who are fa-

miliar with regulating and auditing such company issues, to give such comments for the study. Although this interview can contribute to the reliability of the results, the interview of company's view of opinion is still missing.

Because China (Shanghai) Pilot Free Trade Zone is new formed, it's lacked situation authority study and future forecasting. This study is using the interview policy makers, the basic economic theories and finance theories to forecast the future effect of Shanghai FTZ.

### **1.3 Information Sources**

This study gains information not only from traditional resources but also from electronic resources. Books such as *Multinational Financial Management* by Alan C. Shapiro (1996), *International Finance* by Maurice D. Levi (2009) and the *International Economic: Theory and Policy* by Paul R. Krugman and Maurice Obstfeld (2000) are used to build the basic theory frame for further analysis. Magazines such as *Economist*, and *Financial Times* are used to provide the case studies and evidences for the theory. Official documents can be found at organization and government websites, official pages such as China (Shanghai) Pilot Free Trade Zone official page are used to provide authorities documents evidences. For the empirical section of this study, *Dissertation Skills: for business and Management Students* by Brian White (2007) was used as the principals.

## **2 THEORETICAL FRAMEWORK: REDUCING CURRENCY RISK**

Before talking about currency risk reduce, first what are the currency risks and how the risks formed must be discussed. Only by knowing the nature of currency risks and the forming method, particular method can be chosen to eliminate the risks accurately.

For knowing the risks of currency, what currency is must be understand. In the definition by Oxford Dictionary, currency is the systematic money that being used in a particular country or area in generally. (Oxford Dictionary) It is the most essential element in modern business life and shifts the business from the barter economy to today's market economy. In 1859, Karl Heinrich Marx wrote in his book *A Contribution to the Critique of Political Economy*, 'Gold and silver are not by nature money, but money consists by its nature of gold and silver.' (Karl Marx, 1859) and this gives us a demonstratic definition about how people viewed currency, or we can say 'money', at an early age. Without doubt, at the early history when gold standard is still the common knowledge of currency, all the currency could be viewed as a 'paper certificate' for gold. Instead of floating freely like today, notes were directly linked with USD with a particular exchange rate. But accompany with the collapse of Bretton Woods Agreements and the Smithsonian Agreement, the Jamaica Agreement in 1976 declaring that gold was abandoned as reserve assets and the floating rates were acceptable. From that moment, currency exchange rate legally started to float freely to transform the meaning to 'the value of one currency for the purpose of conversion to another' (Oxford Dictionary) of today. Such free rates not only cause bigger chances for investors and companies make bigger profits in the internationally, but also enhance the risk of losing their value without being noticing.

However why can freely floats currency exchange rates create such risks for enterprises? The answer can be found from the function of currency. As a 'Medium of Exchange' and 'Unit of Account', the most important functions for currency are to serve as the most acceptable payment method and measurement of values.

(Krugman & O Betfeld 2000, 364) In other words, currencies are the links and the measurement of business decisions in the international environment, it determined whether the merchandise is able to trade (Medium of Exchange Function) and has the same value (Unit of Account) or not. At this situation, a change of currency exchange rate, no matter how small it is, might cause a totally different result for one enterprise. For example, ABB Ltd. signed a 4 000 000€ contract with China in 01.02.2013 with credit payment, the payment date of such invoice is on 1.04.2013. At 01.03.2013, the EUR: CNY is 1:8,50570 but after two months, the EUR: CNY dropped to 1:7,96524.(XE Currency Charts) Although it looks like the dropping is as small as -0,54046, but after the calculation we found out that ABB lost 2 161 840 CNY, which converted as EUR with current exchange rate is 271 409,27€ . With just 6,35% of dropping at EUR/CNY exchange rate, ABB OY lost 271 409,27€, which is 6,79% of this contract value, of its income in just two months in a single contract with single currency convert. By this simple calculation, the risk of currency exchange is exposure and obviously it is important to find the relations between these risks and enterprises' behavior in order to cut off these unnecessary profit losses.

## **2.1 Basic Elements of Currency Exchange Rate**

Just like a payment can be made as the cash payment, which is transacted immediately, and a credit payment, which needs a certain period for settling the transaction, currency exchange rate can be divided into two kinds: Spot Rates of Exchange and Forward Rate of Exchange.

Spot Rate of Exchange is the price of a currency for immediate delivery. (Brealey, Myers and Allen, 2006, 756) It is the most common price for foreign exchange market such as Currency Exchange shop in a transportation center and the prices tags shows at a bank.

There is the other currency price of a currency for future delivery called Forward Rate of Exchange. This rate is for the spot that you know you will pay or receive

foreign currency on a future date, so that you can buy or sell the currency before that date to insure against the loss. (Brealey, Myers and Allen, 2006, 756)

For example, Marimekko Corp. is using EUR, and they need 1 million CNY for expanding their business in China one year later. In this case, Marimekko Corp. can enter the EUR/CNY one-year forward contract. As shown in Table 1.

	Spot Rate	Forward Rate		
		1 Month	3 Month	1 Year
EUR/CNY	8,3028	8,3223	8,3399	8,3884

Table 1. Spot and Forward Rate (Bid Price) of EUR/CNY at 19.12.2013 (kvbfinance.com)

In this contract, Marimekko Corp. will see that one year forward rate of EUR/CNY is 8,3884 CNY per EUR, which is higher than the current spot rate 8,3028 CNY per EUR. Such differences in EUR/CNY indicate that if Marimekko Corp. buys CNY in one year delivery, it will get more CNY than they buy them at the spot rate right now. After calculation, we can find out that they can gain 85600 CNY profit from the future contract. Therefore, Marimekko Corp. should choose forward contract for the future CNY need.

### 2.1.1 Factors of Currency Exchange Rate Determination

When trying to develop the consistent of international finance decisions, we have to identify the basic factors that decide the exchange rates. Before getting into the detail factors, first the theory about Currency Arbitrage needs to be understood.

The currency arbitrage theory is simple to explain. It indicates that if there is a possibility for investors to gain profit from buying currency in market A and selling them in market B, the investors would tend to do so. As a result of this opportunistic act, currency would tend to keep exchange rate uniform in the various markets. (Shapiro 1996,154)

In other words, the investors are always interested in increase profits from currency transaction behaviors. Every factor that leads to the imbalance gain from different currency will catch investors' attention and create a profit advantage.

The first relationship that is going to be discussed is interest rates and exchange rates. Interest rate in the currency market is the amount of currency that can be earned by individual from lending a unit of the currency for a year (Krugman & Obstfeld, 2000). For EUR, European Central Bank (EBC) is the organization that makes the decision, and the current interest rate of EUR is 0.25%(European Central Bank, Nov.13.2013). Thus, European investors can gain more interest revenue while putting their EUR in some other country's bank that has over 0,25% interest rate such as China, which now is having a 6% interest rate (PBC, 2012). This also proves that rising investment from Finland to China has solid theoretical support and bright realistic future. (Brealey, Myers and Allen, 2006, 758)

Secondly, the inflation rate will be discussed, which indicates a general increase in prices and fall in the purchasing value of money. (Oxford Dictionaries) With the decrease of purchasing power, same amount of merchandise is actually valued lower then before. In Finland, the inflation rate in November, 2013 is 1,4%(Statistics Finland) It means that the investors from America, which now has 1,2% inflation rate (US Department of Labor, Bureau of Labor Statistics), is having better purchasing power than Finnish investors. With such advantage they can gain profit from investing in Finland, if the gap of inflation does not change in the near future. With the recent economic statistic, such inflation has no sign to change in the near future. Therefore, Finland as an AAA rating country could be a perfect oversea investment place for US investors. (Brealey, Myers and Allen, 2006, 759)

Finally, the spot rate and forward rate will be discussed. (Brealey, Myers and Allen, 2006, 758) The investors can easily gain information they want today through the Internet. With a few second's gap between spot rate and forward rate, the investors are capability to buy or sell the currency they have and gain profit form it.

All the four factors discussed have ability to influent the exchange rate and furthermore, to influent the currency risk. So as a result of the discussion above, a model of tending-equal relationship between such factors is built. Figure 1 below.

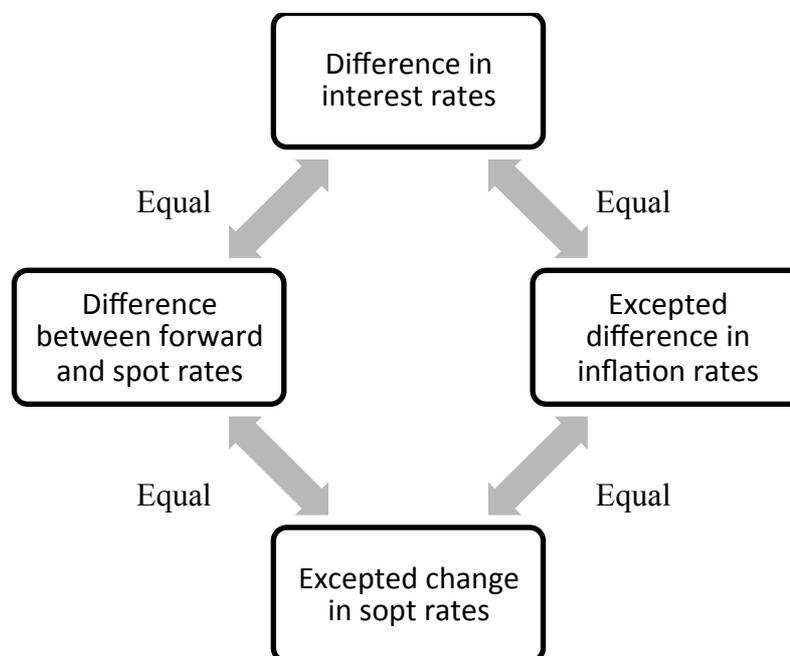


Figure 1. Equations-tending relationship model in exchange rate. (Brealey, Myers and Allen, 2006, 757)

### 2.1.2 Currency Exchange Rate Floating Theories

In real life, the exchange rate floating is not as simple as calculated in the four equation relationships above. Today, there is more than one theory about what the key factor that affects exchange rate the most is and each one of them has certain evidence to support them. Among all the theories Interest Rate Parity Theory, International Fisher Effect and Purchasing Power Parity Theory are the three most common agree theories for exchange rate floating analysis.

Interest Rate Parity Theory (IRP) can be considered as a theory leads to no-arbitrage, idealism market conditions. It says that the difference between two currency's spot rate and forward rate will equal the difference in the interest rate for equal maturity securities in two countries. (Gallagher & Andrew 2003,603) In other words, IRP theory ensures the return on a covered foreign investment is

equals the domestic interest rate on investment of the same risk (Shapiro 1996,162) and, in this way, eliminates the possibility of making money by just transacting the currency between the domestic and a foreign markets. Due to the Zero-sum Game Theory, the loss of one participator will equal the profit of the other participator. So in this situation, if there are no such equals in the market, the investors will buy in the spot market and sell in the forward market, or other way around. Such behavior will lead to the fluctuation in market and lead to balance eventually.

However, there is a problem about IRP theory as well: it basically assumes that all buyer and seller in the currency market are rational, which means they will make the best choose without the emotional affect. Theoretically, rational people exist, but in real daily trading, people can easily be affected by their emotion and make 'seems rational decisions'. Such decision might let a trader over selling/buying particular currency because he/she believes the rumor he/she had ten minutes ago without the solid analysis and prove. In such case, we can hardly think that the natural balance will automatically happen in the market, it had to depend on the quick and real information sharing, well educated rational traders and convenient trading systems.

International Fisher Effect (IFE), which is named after the great American Mathematical Economists Irving Fisher, was first used in describing the domestic market situation. Domestic Fisher Effect (also known as Fisher Effect) states that the nominal interest rate ( $r$ ) is made up by the real rate ( $a$ ) and the expected inflation rate ( $i$ ). See formula 1. Below. (Shapiro 1996,219)

$$1 + r = (1 + a)(1 + i) \quad (1)$$

$r$  = Nominal Interest Rate

$a$  = Real Interest Rate

$i$  = Inflation Rate

When Fisher Effect is used in an international environment, it states the changes in nominal rates for two countries will be offset by an equal amount, opposite di-

rection changes in the currency exchange rate. (Gallagher & Andrew 2003,602) So in this theory, currencies with low interest rate are expected to appreciate relative to currencies with high interest rates. (Shapiro 1996,228) See formula 2 below:

$$\frac{(1+r_h)^t}{(1+r_f)^t} = \frac{\bar{e}_t}{e_0} \quad (2)$$

$r_h$  = The Periodic home currency interest rate

$r_f$  = The Periodic foreign currency interest rate

t = Time period

$e_0$  = The home currency value of foreign currency at time 0

$\bar{e}_t$  = The expected home currency value of foreign currency at time t

Purchasing Power Parity Theory (PPP) is one of the earliest theories, which can trace back to 19<sup>th</sup> century (Krugman & Obstfeld 2000,396), that explains the relationships between two currency prices. It says that it is the relative prices in those two countries that determine the exchange rate of their currency. (Gallagher & Andrew 2003,602)

When talk about PPP, there are actually two versions: absolute PPP and the relative PPP. The absolute Purchasing Power Parity Theory is usually referred that the exchange rates are determined by the difference of certain commodity basket in price when there are no trade barriers. (Gallagher & Andrew 2003,602) See formula 3 below. (Krugman & Obstfeld 2000,396)

$$E_{USD/EUR} = P_{US} / P_E \quad (3)$$

$E_{USD/EUR}$  = The USD/EUR exchange rate

$P_{US}$  = The USD price of a reference commodity basket sold in US

$P_E$  = The EUR price of a reference commodity basket sold in EU

Another version for PPP is called relative Purchasing Power Parity Theory. It focuses more on the changes over time in the relative price of reference commodity basket in two countries. (Gallagher & Andrew 2003,602) Relative PPP indicates that the exchange rate of two currencies' percentage change over any period equals the national price level percentage change (Inflation rate). See formula 4 below. (Krugman & Obstfeld 2000,397)

$$(E_{USD/EUR,t} - E_{USD/EUR,t-1}) / E_{USD/EUR,t-1} = \pi_{USD,t} - \pi_{EUR,t} \quad (4)$$

$$\pi_t = (P_t - P_{t-1}) / P_{t-1}$$

$E_{USD/EUR,t}$  = The USD/EUR exchange rate at date t

$E_{USD/EUR,t-1}$  = The USD/EUR exchange rate at date t-1

$\pi_t$  = The inflation rate (Between Date t and t-1)

$\pi_{USD,t}$  = The USD inflation rate (Between Date t and t-1)

$\pi_{EUR,t}$  = The EUR inflation rate (Between Date t and t-1)

$P_t$  = The price of a reference commodity basket sold at date t

$P_{t-1}$  = The price of a reference commodity basket sold at date t-1

Relative PPP makes logical sense to compare the percentage change of exchange rate with inflation differences, therefore, even when absolute PPP is not valid due

to the difference of reference commodity basket between two countries. (Krugman & Obstfeld 2000,397)

These three theories we introduce for exchange rate analysis have internal connections between each other. According Alan C. Shapiro's opinion, the internal relationships can be shown as Figure 2 below:

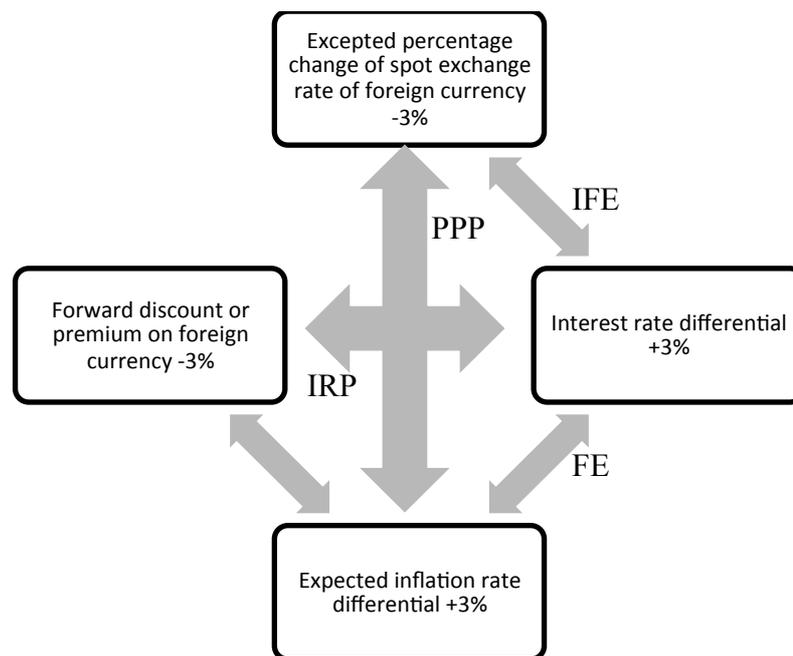


Figure 2. Key Theoretical Relationships Among Spot Rates, Forward Rates, Inflation Rates, and Interest Rates. (Shapiro 1996,207)

## 2.2 Enterprises and Currency Risk

Just like most of the today's researchers, Maurice D. Levi uses the foreign exchange exposure to define the amount of the foreign exchange risk. In his point of view, foreign exchange exposure is a certain sensitivity of changes in the real value, which evaluated by domestic currency, of assets and liabilities to the changes in foreign currency exchange rate. (Levi 2009, 286) Furthermore, foreign exchange risk (Currency Risk) can be measured by the standard deviation of attribution by domestic currency values of assets or liabilities to accident change in ex-

change rates. (Levi 2009, 299) Just like the exposure in line of fire at war, these exposures of financial assets could face high dangers and uncertainty and finally affect the maintaining of enterprise. To avoid these side-affects from currency exchange rate, we must become aware of these exposures.

According to *Multinational Financial Management*, written by Alan C. Shapiro, professor from the University of Southern California, the exposures of currency risk can be separated into three primary types: Translation Exposure, Transaction Exposure, and Operating Exposure. In these three exposures, Accounting Exposure and Operating Exposure could be combined and form Economic Exposure. (Shapiro 1996)

Three primary Exposures in Currency Risks from *Multinational Financial Management (1996)* by Alan C. Shapiro:

- Accounting Exposure (also known as Translation Exposure), is the possible extent of the gains and losses, which for the purpose of reporting and consolidation, to convert the financial statements of foreign operations from the local currencies (LC) involved to home currency (HC), results from the change of currency exchange rate.
- Transaction Exposure results from transactions that give rise to known, contractually-binding future foreign currency-denominated cash inflows or outflows.
- Operating Exposure measures the extent to which currency fluctuation can alter a company's future operating cash flows, that is, its future revenues and costs.
- Economic Exposure (Combination of Transaction and Operating Exposure) is the extent to which the value of the firm — as measure by the present value of its expected cash flows — will change when exchange rates change.

With the development of international business, the definition of currency risks has developed as well, a new definitions by Michael Melvin, professor from the Arizona State University, is an example of this improvement. He took Transaction Exposure out of Economic Exposures and re-defines the meaning of Economic Exposures.

The principal concepts of exchange risks exposure from International Money & Finance (2004) by Michael Melvin are:

- Translation Exposure (also known as Accounting exposure) is the difference between foreign-currency based assets and foreign-currency based liabilities.
- Transaction Exposure is resulting from the uncertain domestic currency value of a foreign-currency based transaction to be completed at certain future date.
- Economic exposure (also known as Operating Exposure) is the exposure of company's value to change in exchange rates.

In the study the currency exposure is mainly discussed basised on the definition from Michael Melvin due to it being up-to-date.

### **2.2.1 Impacts from Currency risks to Enterprises**

After the basic knowledge about the currency risks, now the analysis in what situations the currency exposures are going to create a loss to the enterprises can be started.

Translation Exposure (also known as Accounting Exposure). This exposure occurs at any company that has assets or liabilities valued in different currency, the more assets and liabilities the company has, the bigger the accounting exposure risk. In the financial report period, all the foreign assets and liabilities have to be transfered into home currency for further calculation. In this process of translation, the floating of foreign currency exchange rate is directly affecting the assets and

liabilities calculating results. By different results the financial report given, internal decision makers will determine their future operating strategy, which will affect the future growth of the entire company. On the other hand, external decision makers will decide their investment strategy, which will affect the performance of the company in capital market. Take Metso Oyj as an example, its revenue in 2012 is 7,504 Billion EUR and over 80% of these net sales are from outside Eurozone. (Metso Financial Statement 2012) In this situation, the company will face a high risk of Translation Exposure.

Transaction Exposure. This exposure mostly happened before the settlement of certain cross-currency transaction due to a change of currency exchange rate. Effect by the change of currency exchange rate, the value of foreign currency in related contract changes, which leads to the loss or gain profit in related companies. (Shapiro 1996) The previous example in the first section of this theory framework about ABB Ltd. can describe the effect of this risk in an appropriate way.

Operating Exposure (Also known as Economic Exposure). It maybe the most common and important currency risk for all companies not matter having business oversea or purely domestic. It happens when the currency exchange rate fluctuates, and it affects the companies' future operating cash flows, in another word, future cost and income. (Shapiro 1996) Operating exposure has tightly related with macroeconomics and it can be easily affected by government policies and economic environment. Here is an example to explain operating exposure: according to the news from The Bank of Finland Institute for Economies in Transition (BOFIT), Finland's trade deficit with China went up in 2011(BOFIT Weekly, March 2012) and this economic situation can only result more Chinese companies require converts their EUR into CNY. By the supply-demand law in economics, EUR: CNY drops from 8,82469 at 01.01.2011 to 8.15678 at 01.01.2012(XE Currency Charts). In this case, the cost of a manufacturer from China is more than before, and the demands will naturally drop. For the Chinese exporting companies, their cost goes up, and income might go down just because the exchange rate between EUR and CNY.

In conclusion, the uncertainty and fluctuation of currency exchange rate can affect almost every field of a company's daily activities. From the internal point of view, currency risk can affect the evaluations of company current and future performance. Future strategy decisions making and cash flows, which are the keys of companies operating, can and will be very much affected by currency risks. From the external point of view, currency risk can affect the evaluation of one company, which will affect the decisions of investment behavior in capital market, and even a career path decision.

### **2.2.2 Theories for currency risk reducing methods**

When 'what are the currency risks' and 'how they affect the activity of the enterprise' are explained in previous sections, our attention can be now turned to how can these risks be managed, by which we are going to discuss around one center concept – hedging.

Hedging the particular risk exposure in enterprise means to establish an offsetting currency position, in such case whatever the original currency exposure leads to a loss or gain, they are exactly offset by the corresponding foreign exchange gain or loss on this currency hedge. (Shapiro 1996,282) Alternatively in the short form, it is a financial agreement that is used to offsetting or guarding against the risk. (Gallagher & Andrew 2003,599)

How useful of particular hedging plan is determined by both the acceptability, which indicated the approval by those who will be implemented by the plan in the organization, and quality, which refers to the capability of providing better decisions. (Shapiro 1996,283) To achieve high acceptability, one hedging plan has to consist with the values of top managers and overall corporate objectives. To gain high quality, the hedging plan has to increase precisely outcome in realistic when compare with expectations. (Shapiro 1996,283-284)

The thing about currency risks which have to be remembered before making a decision is that all the risks we hedge are the unexpected currency changes, if there is expected currency changes we can know beforehand, we can offset them by set-

ting different prices. The only situation we hedge is when we feel there will be something happened out of our expectation. (Shapiro 1996,285)In another word, we only hedge when we consider there might be unexpected currency floating in the future.

Although we already have the tools to offset the risk and the objectives to do so, we still need a plan to ensure that the effect of such tool is maximized. Therefore, we need a hedging strategy. According to Alan C. Shapiro, there are seven elements, which also can be considered as steps, are the key for effective exposure-management strategy.

First, determine the type of exposure to be monitored. Second, define the objectives of enterprise and give guidance in solving potential conflicts in such objectives. Third, ensure again the objectives in enterprise do not have conflicts with maximizing the shareholder's value, and then ensure such objectives can be implemented. Fourth, point the responder for each exposure, and set up an detailed standard or even Standard Operating Procedure (SOP) for each manager to follow. Fifth, set up explicit rules for using the exposure-management techniques, such as forward contracts. Sixth, identify the channels that exchange rate considerations are incorporated into operating decisions, therefore, will affect the enterprise's currency exchange risk posture. And finally, develop a system for currency risk management activity monition and evaluation. (Shapiro 1996,283)

<b>Appreciation</b>	<b>Depreciation</b>	<b>Cost of Depreciation Hedging</b>
Sell local currency forward	Buy local currency forward	Transaction costs; Difference between forward and future spot rates
Increase LC cash level and marketable securities	Reduce LC cash level and marketable securities	Operational problems; Opportunity cost

Relax Credit	Tighten Credit	Loss sales and profits
Speed up collection of hard-currency receivables	Delay collection of hard-currency receivables	Cost of financing additional receivables
Reduce imports of hard-currency goods	Increase imports of hard-currency goods	Financing and holding costs
Reduce local Borrowing	Borrow locally	Higher interest rates
Speed up payment of accounts payable	Delay payment of accounts payable	Harm to credit reputation
Delay dividend and fee remittances to parent and other subsidiaries	Speed up dividend and fee remittances to parent and other subsidiaries	Borrowing cost if funds not available or loss of higher interest rates if LC securities must be sold
Delay payment of intersubsidiary accounts payable	Speed up payment of intersubsidiary accounts payable	Opportunity cost of money
Speed up collection of intersubsidiary accounts receivable	Delay collection of intersubsidiary accounts receivable	Opportunity cost of money
Invoice exports in local currency and imports in foreign currency	Invoice exports in foreign currency and imports in local currency	Lost export sales or lower prices; premium price for imports

Table 2. The Basic Hedging Techniques and the costs. (Shapiro 1996,286-287)

Table 2 above shows the basic techniques of hedging and the cost of them, these are the basic decisions and methods that financial managers who in charge of currency risk reducing should know. The thing we should keep in mind that an enterprise can only benefit from the situation that their forecast of future exchange rate is more accurately than the predicting of exchange rate in the general market. (Shapiro 1996,287) After having a basic idea about hedging, we can now view the detail hedging methods for each currency risk.

We can start with the Transaction Exposure Managing, the most complicated exposure to managing. As we discussed before at last section, the transaction exposure arises when an enterprise is committed to a foreign currency denominated. As a result of credit payment, the floating of home currency and foreign-currency exchange rate will certainly affect the predicting of income cash for enterprise. To avoid the unexpected exchange rate change, we have to offset certain protective hedging. Such protective method includes using forward contracts, price adjustment clause, currency options, borrowing or lending foreign currency, risk shifting and exposure netting (Shapiro 1996,287).

And there is another thing we have to keep in mind is even if you are a small enterprise that just use one currency for your business, in and other words, you can eliminate all the transaction exposure, it does not mean that you can eliminate all currency risks. The operating exposures from the international market can still very much affects the domestic market and has step-by-step effects on your business. We will discuss how to do with this exposure later in this section with operation exposure management.

Forward money hedge and money market hedge are the most used hedging methods for enterprises. Forward money hedge is the company that long the foreign currency will sell the foreign currency forward, whereas a company that is short the foreign currency will buy the currency forward. (Shapiro 1996,291) For example, Wärtsilä Oyj signed a 5 million CNY contract at 19.12.2013 with China State Shipbuilding Corporation (CSSC) for providing certain ship engine. The 5 million is a credit payment and the due date is at 19.12.1204. Since the spot price

of EUR/CNY is 8,3028 and the EUR/CNY 1Y forward price is 8,38855, then Wäertsilä Oyj will yield  $5\,000\,000/8,38855=596\,050,57$  EUR in 19.12.2014. See table 3 below.

Spot Rate	Receivable Value	Gain (Loss) from FW contract	Total Cash Flow
1 EUR=8,308 CNY	601 830 EUR	(5780 EUR)	596050 EUR
1 EUR=8,38855 CNY	596 050 EUR	0	596050 EUR
1 EUR=8,508 CNY	587 682 EUR	8 369 EUR	596050 EUR

Table 3. Possible Outcomes of FW Market Hedge at 19.12.2014

As we can see from the table, the hedge with the forward contract will successful eliminate the risk of exchange rate in unappreciated direction change but will possibly become the expense of the other direction of exchange rate floating. In this case, we can use a formula to calculate the true cost of per unit currency being hedged. See formula 5 below. (Shapiro 1996,292)

$$\frac{f_1 - e_1}{e_0} \quad (5)$$

$f_1$  = Forward rate

$e_1$  = Future spot rate on the date of settlement

$e_0$  = Current spot rate of the foreign currency

By the table and the formula above, we can actually gain following conclusion for whether to hedge or not (Shapiro 1996,293):

- If you are long a currency and the currency is at a forward premium, then hedge by selling forward is a good option; if the currency is at a forward discount, do not hedge.
- If you are short a currency and the currency is at a forward discount, then hedge by buying forward is a good option; if the currency is at a forward premium, do not hedge.

Money market hedge is an alternative method to forward market hedge. The principle of this hedge is borrowing the foreign currency and converts it into home currency. Saving the after convert money in a bank to gain interest until the payment time, and then withdraw the money and convert it to foreign currency to pay the borrowing. In this way, the company created a 'homemade' forward rate to hedge the potential currency exchange rate fluctuation and could be possible gain profit from the interest gap between two countries. (Shapiro 1996,293-294)

Exposure netting is to offset exposures in one particular currency with exposures by the same or another currency, which the exchange rates are expected to move in the way that losses or gains on the first exposures position should be offset by gains or loss on the second currency exposure. (Shapiro 1996,297-298) For example, according the historical negatively correlated between EUR/USD and USD/CHF, if one company wants to short its EUR/USD assets and liabilities, it can short the USD/CHF at the same time to hedge possible risks. In shortly, there are three possibilities for using exposure netting method: (Shapiro 1996, 298)

- Offset a long position in currency when offset the short position in same currency in the same time
- If the movement of two currency pairs is historical positively correlated, then the enterprise can long position one and short position the other.

- If the movement is negatively correlated, then shorten position can be used to each other.

Currency collar is the hedging method for enterprise that prepared to take some but not all of the risks. It is a contract with financial service provider, usually banks, to protect the exchange rate move out of certain range. (Shapiro 1996, 298) For example, Wärtsilä Oyj considers it is not safe enough to use forward rate since the future of EUR/CNY is foggy, it can sign contract with a bank to set up a currency collar. In this case, Wärtsilä Oyj accepted the offer that the currency collar (also known as range forward, RF) is between 8,2828 and 8,5828. So if at 19.12.2014 the EUR/CNY is 8,8828, which means Wärtsilä Oyj is facing a loss, the bank has to cover the loss from the 8,5828 to 8,8828. In another word, the possible maximal loss for Wärtsilä Oyj happens at a rate 8,5828, and the bank will take over the loss over this range. In the meanwhile, if the exchange rate is lower than 8,2828, which means Wärtsilä Oyj will gain from it, the bank will take over the gain over 8,2828 position as well.

Risk shifting and price decisions are other methods that could be considered by enterprise, though it is usually being consider as a pricing method rather than financial methods. Both of these methods are related to pricing strategy, one is considered which currency should it be the pricing currency for the contract, and the other one is consider what price of foreign currency should the enterprise set to ensure the profits. (Shapiro 1996,294-296) The thing we have to remember is that the risk shifting is a form of the zero-sum game, instead of disappearing, the risk just being shift to your contract partner. To reduce the risk by these two ways, you need to be good at negotiating rather than financing.

The final method we are going to discuss is foreign currency options, which had not been developed until around 1996. Although related hedging tools are well grown at that time, but before the development of foreign currency options is developed, the enterprise still has to face one problem: how to deal with the exchange rate change before known the result of contract tender. If hedging the currency risks before knowing the result, the cost will be totally wasted if the bid is

failed. However if hedging the risks when the result is known, it might be late since the exchange rate had already caused the loss during the period of waiting. With the advent of currency options, this paradox can be solved. (Shapiro 1996,304) Let's take an example to explain how the option works. Wärtsilä Oyj submitted a tender on 19.10.2013, and it wants to ensure that the floating of exchange rate will not affect its profit. It can go to Nordea bank to purchase a 100 000 EUR the right to sell Nordea 5 000 000 CNY on 19.12.2014 at the price of 8,38855 CNY per EUR. With this right, Wärtsilä Oyj ensures that its basic income 596 050 EUR will not be affected and even if Wärtsilä Oyj did not have the contract, the loss of it is limited as 100 000 EUR. Furthermore, Wärtsilä Oyj can choose to let the option contract unexercised on 19.12.2013 if the exchange rate is lower than 8,38855, which means Wärtsilä Oyj can gain profit from it.

By the example, we can know that the currency option is certain contract that give the buyer right, but not obligation, to sell (in this situation it called currency put option) or buy (in this situation it called currency call option) the agreed number of foreign currency units to the option seller at agreed price, until the expiration date of the option. (Shapiro 1996,304)

After the transaction exposure, we can now view the management of translation exposure, which is simpler than the other two exposures.

There are three general methods for reducing the translation exposure: adjusting fund flows, enter forward contracts and exposure netting. (Shapiro 1996,307)

With forward contracts and exposure netting had been discussed above in transaction selection, we are going to focus on managing translation exposure by adjusting fund flows. By the fund flow adjustment, either the amount or the currency (or sometimes, both) of the planned cash flows of the parent or its subsidiaries will be altered to reduce the firm's local currency translation exposure. If local currency (LC) devaluation is anticipated, the methods enterprise should do to reduce the risk can be found in table 2 above. Among all the methods, speeding up

the payment of inter-subsiary accounts payable and lagging the collection of inter-subsiary account receivable are the most used methods by MNEs since the forward contract market in some country might not be formal enough to hedge by forward contract. (Shapiro 1996,308)

The last exposure we are going to discuss is operation exposure, which might be the hardest one to hedge for enterprises since it is affect by multiple macroeconomic factors and needs more marketing methods than financial methods to reduce the risk. Unlike the other exposures, operating exposure is recessive and hard to estimate since it tends to react on every tiny change of economic environment, both domestic and international. However still, we have the possibilities to find this exposure.

First, check the history of profits. The operating data and exchange rate data in regression can be an evidence for calculating the sensitive of profits. But what if there is no such data since the enterprise is newly form or for some other reason? Then on another method will be helpful – interviewing knowledgeable company personnel. The interview can be started with the people who are in charge of sales and/or marketing. Related interview questions such as “How our sales would be affect if our currency were raised 5%/10%/15%?” “How about the decreasing?” Such questions about estimating sales revenue would be the evidences to judge what is the extent that the rising of currency risk could be passed the to buyer through prices. After the sales persons are interviewed, the attention can be turned to the cost related personal, especially the production and/or acquisitions people. The question would be again how the currency exchange rate affects the cost of a product, by which we can have the information about how sensitive our cost link with currency. In the end, we should put the data into a particular discount rate and arrange them with the sensitiveness with currency, by this way we can now the priority assets need to be hedge in company. (Levi 2009)

As mentioned above, most of the operating exposure raise with the changes in the macroeconomic environment. In this situation, the most effective way to reduce

the operating exposure is to change the marketing and production strategies, which have the direct links with sales revenue. See Table 4.

<b>Marketing Initiative</b>	<b>Production Initiative</b>
Marketing selections	Product sourcing
Product strategy	Input mix
Pricing strategy	Plant Location
Promotional strategy	Raising productivity

Table 4. Proactive strategies that enterprise could pursue in response to exchange rate changes. (Shapiro 1996,345)

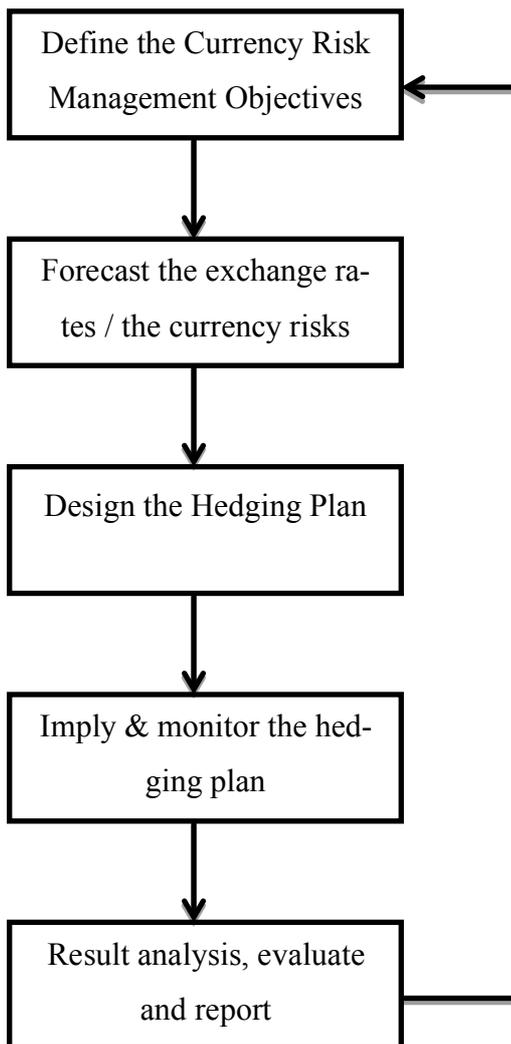
As can we seen above, every strategy in the table is important for enterprise to reduce the operating risk. But since the study is focused on financial management, we will skip the details explained on these strategies and see to what can a financial manager's can do.

Since a financial manager can not directly affect on the sales revenue, their duty in reducing operating risk is to structure the firm's liabilities in another way. Such way that, at the time all marketing and production strategy adjustment are processing, the reducing in assets earning is matching by corresponding decrees in the cost that serve these liabilities. (Shapiro 1996,360)

One of the possible actions is to finance the portion of the enterprise's assets that used to create export profits. By this act, any shortfall in operation cash flow due to exchange rates float will be offset by a reduction in debt-servicing expense. (Shapiro 1996,360)

The other action can be applied for all the enterprises financing is that the liabilities structure of MNEs should be set up in such a way that any change in the inflow on assets due to the currency change should be match by a corresponding change in the outlet on the liabilities used to fund those assets. (Shapiro 1996,360)

### 2.2.3 Basic Process for Currency Risk Reducing



By the theories and cases discussed in the last section, now we are able to create a basic model, which contains all the elements and process to manage the currency risks.

First by the factors discussed above, we can create a basic process for currency risk management. See figure 3 left.

Figure 3. Basic process of currency risk management

Step 1: Define the currency risk Management Objectives. The first thing in the currency risk management is to know that what the objectives are, in another words, what are the reasons for us to do that management and what result we want to get from such management. Usually, there will be six basic objectives for management behavior (Shapiro 1996,284):

1. Minimize Translation Exposure. This objective is focused on protecting the assets and liabilities, which valuating by foreign currency, from change in value due to exchange rate floating.

2. Minimize Transaction Exposures. This objective is focused on managing a portion of the enterprise real cash flow exposure.
3. Minimize Operation Exposure. Instead of accounting cash flows, this objective is focused on minimizing real cash flow fluctuations stemming from currency floating.
4. Minimize quarter-to-quarter earnings fluctuations owing to exchange rate changes. This objective requires enterprise to focus on both its translation exposure and its transaction exposure.
5. Minimize currency risk management costs. This objective is focused on balancing the costs and the benefit from hedging behavior. It is also an objective indicated risk naturally opinion, which means the expected revenue is the only standard they make their choice.
6. Avoid surprise. This objective is focus on preventing large foreign exchange losses.

The reason of choosing such objectives are quite different from enterprise to enterprise, by which means it does not have such common standards for enterprises to follow with. Although such standards are lacking we can still try to find some general knowledge for determining the objectives from the related research.

The most appreciated way to decide the objectives is through analyzing their related level of every enterprise's final goal, which is maxing the shareholders value. To achieve such goal, enterprise need to control the future cash flow in the company and particularly have to avoid the unexpected decreasing inflow. Therefore, they need to focus on objectives 2 and 3. For the enterprise that can be strongly affected by potential investors, customers, employees and etc, they have to focus on objectives 4 and 6. (Shapiro 1996,284-285)

Step 2: Forecasting the exchange rate/ the currency risks. From the previous selections we understand that the basic factors for exchange rate floating are Purchasing Power, Interest Rate and Inflation Rate. The entire hedging tools chosen is

linked with these three factors and all the forecasting of exchange rate fluctuation are based on these factors. To predict the future fluctuation of exchange rate, finance managers should know the local economic index first, and these in the later chapter will be discussed about the situation in the Chinese market.

Step 3: Design the hedging plan. The elements of design a hedge plan had already been discussed at pervious section, but we can still discuss the details about what hedge tool we can use in different plans.

Forward market & money market hedge is the most used tool in all plans. Usually it related with one single currency pair in a relatively grown market, in this situation, it fits most of the simple hedge requirements from both SMEs and MNEs.

Exposure netting might not fit with SMEs because it requires for multiple currency pairs. The capital requirement and currency pair requirement of exposure netting would be easier to complete if the subsidiaries of enterprise are located in more than one foreign country.

Currency collar and currency options are new tools compared with the tools we just discussed above, which means that in a developing country it might be hard to find the bank to do made such contracts.

Step 4: Imply and monitor the hedging plan. Implement of plan is critical important, not only you have to make sure that the execution is on the track, but also you have to be able to have the flexibility to make fine tuning. To achieve these goals, hedge plans have to be set in monitoring environment.

Step 5: Result analysis, evaluate and reporting. After the whole financial season, there have to be an evaluation process such as financial report. This process not just tells the internal decision makers about how do they do at previous financial season so they can improve themselves, but also tells the external investors and customers how well our performance is and what can be done to improve performance.

By all the five steps of currency risk management, we now have the basic knowledge about the whole process of currency risk reducing and gain some practical methods about how to do it in real life. After the micro-angle of observing the currency risk, it is the time to see how international financial environment can affect the currency risks.

### **3 FINANCIAL ENVIRONMENT AND CURRENCY RISKS**

As a part of international business, all MNEs and SMEs had and will be continually affect by 'The Butterfly Effect' from local financial environment and global financial environment. Therefore, any discussions without the environment conditions are both unscientific and unreliable.

After the end of Bretton Woods System, most of the countries in the world started to float their currency rate freely. Such floating found a way out of the conflicts between internal and external balance and most of people believe that the floating exchange rate system is and will be the system of the future. However, unfortunately, by the mid-1980s, the strong unpredictable currency rate fluctuations break the dreams of floating currency rate supporters. (Krugman & O Betfeld 2000, 568) Such unpredictable fluctuation is the source of this study's theme: currency risk and uncoordinated policies can cause immeasurable disasters.

Just after one decade, 1997, the financial crisis in Asia expose. The bubble of 'The Asian Miracle', which indicated average 8%-12% of GDP growth in 'Four Asian Tigers' every year from 1970, blasted in investors face from the day Thailand decaled fixed exchange rate policy. The entire macroeconomic environment thrilled finally and caused the most horrible avalanche for Asia investors and enterprises. This crisis lead to over 30% of capital loss in every stock market in Asia; over 100 billions dollar capital flee out Thailand; 4 out of 20 biggest enterprises got bankrupted in South Korea and finally the crisis become an economic depression and effect the whole world. (Kaufman, Krueger & Hunter, 1999) Although the true reason of the crisis is disputed, from 'the hot money bubble' to 'high lavage of loan' are being discuss by economist, there is one thing for sure: the failure of

Asia countries have connections with the lacking experience of health financial system and effective macro-control policy. The enterprises lacking the sensitive of incoming exchange rate fluctuation and experiences of hedging such risks are considered as the biggest reasons of this total collapsing. Georg Hegel, the great Germany philosophy once said “We learn from history that we do not learn from history.” Just like he said, financial crisis of 2007-08 happened just a few years before and what we discover from it is that a health financial system is built but not followed, and the marco-control policy sometimes being abused.

So how can we survive from the unexpected crisis again? What is the role of financial system in every reign for currency risks? And how macroeconomic policies affect currency exchange risks? These problems in this chapter will be duscussed.

### **3.1 Financial System and Currency Risk**

Financial system is the institutions in the economy that help to match one person’s saving to the other person’s investment. (Mankiw 2011,556) According to the United Stated professors, who write most of the economic textbooks, the capital source of the company are mostly come from public bond markets. However actually in some of the countries are depending more on the bank industry since their capital market is stunted. (Brealey, Myers and Allen, 2006,931)

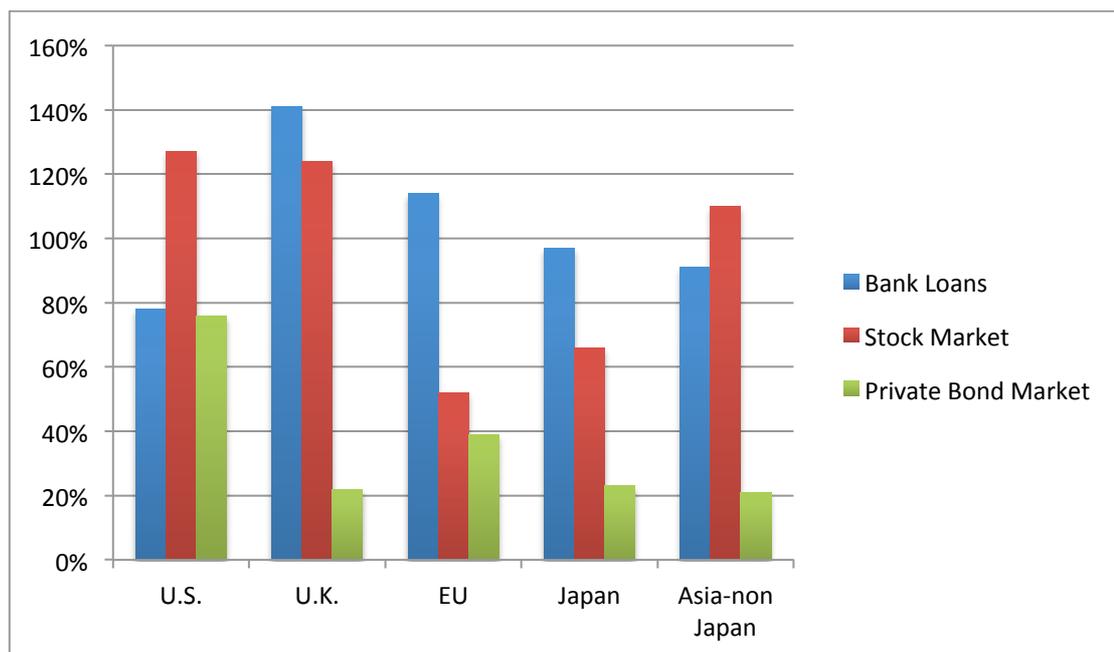


Figure 4. Value of financial claims 2003, % of GDP (Brealey, Myers and Allen, 2006,932)

Figure 4 above, shows that in all the countries and regions Richard A. Brealey and other professors discover in their book, two typical types of the financial systems can be found. One is market-based financial system and a typical country is the United States. From the figure we can see that US does not just have a remarkable amount of stock market, but also a big amount of bank loans and outstanding private bond market. The other one is bank-based financial system. As can we seen the bank financing in EU and Japan is totally over the small amount of stock and private bond financing. (Brealey, Myers and Allen, 2006,932)

According to the research of Ross Levine, the countries that have a market based economy tend more to have developed financial system, or the countries that has a marketed-based financial system tend to have more developed economics. (Levine, 1999)

As can be seen from the Ross Levine's research, in the bank-based financial system, a bank is in the leader role of most financial activities such as allocating capital, mobilizing savings and providing risk management vehicles. (Levine,1999) In this financial system, the government policies and bank policies will strongly af-

fect the currency exchange rates and such impacts are hard to digest by the market itself. Therefore, the currency in a country that has a bank-based financial system tends to have more sensitive reaction to the government policies such as supplements of money and interest rate change.

On the other hand, the market-based financial system security markets and bank shares the center position in terms of getting society's saving to firms, easing risk management and so on. (Levine, 1999) In this case, the currencies from these countries tend to be less sensitive to policies but more by the market responds. For example, in Subprime Mortgage Crisis, even though the American government had showed some supportive attitude and made some policies to save Lehman Brothers, Freddie Mac, Fannie Mae and other enterprises but the market just simply lost faith and kept selling their stocks, therefore, this lead to the bankruptcy of these enterprises.

### **3.2 Monetary Policy and Currency Risk**

If there is an economy which uses a system of note based on trust and government economic performance, there must be an institution to regulate such a system, this kind of institution is called central bank: an institution designed to regulate the banking system and the quantity of money in economy. In the definition, we can see that the central banks usually have two jobs: one is to regulate banks and ensures a healthy banking system, the other on is to control the quantity of money in the economy, which is called money supply. (Mankiw 2013,625-626)

Bank Regulations is usually run as maintaining job, central bank usually monitors each bank's financial condition and lend banks the money they want.

Money supply is more important that the last one, and such policies that affect the money supply are called monetary policies. In the US, the FOMC (Federal Open Market Committee) is the one who make the monetary policies, in China it is the PBC (People's Bank of China) and in Finland the monetary policy is made by ECB (European Central Bank) since Finland is an EU country. (Bank of Finland)

But there is one main function PBC is different from the other two central banks mentioned, it is PBC's monetary policy includes with maintaining the CNY exchange rate at adaptive and equilibrium level. By the work of both the PBC and the State Administration of Foreign Exchange, CNY's exchange rate will be determined. (PBC, about us) Therefore, in Chinese market the exchange rate is strongly tied to the policies but less affected by the market itself.

#### **4 EMPIRICAL STUDY**

This study started with gaining basic knowledge about currency risks management and related theories. After the basic knowledge, the basic rules of managing currency risks are cleared and the elements that affect the management behavior is viewed, the empirical study about the Chinese market can start. The research problem was picked and defined by the observation of current news and the needs of enterprises.

During the study, there are two things that becoming evident. One is that the currency risk management was a popular topic around 1990s, since most of the articles and research are published at that time. After the 1990s the articles are more likely to focus on the exchange risk from the macroeconomic point of view but seldom with the angle of enterprise financial management. The second thing is the currency financing is tending to be more quantitative than before. With the contribution of Maurice D. Levis and other finance expertises, we can calculate the currency risks more precisely with advance mathematic tools.

#### **4.1 Research Methodology**

As a limitation of study mentioned before, financial data and strategy are usually seen as confidential information in every enterprise so it is nearly impossible for this study to get information from the enterprises. However, there are some people who work in Department of Foreign Trade and Economic Cooperation of Guangdong Province, China who are willing to give an interview from the government's point of view. The interview was conducted by email since the six hour time zone difference and the material he provided is easier to examine by email. Because of the sensitive of the information and work position, even though the source is willing to conduct such an interview, but advises that the identity of the source should be confidential. Following his requirement, he will stay on anonymous source in this study. With the interview this study wants to find out the newest government opinions about exchange rate policies and what specialty of Chinese financial market should the foreign enterprise focus on. More than the general opinions, this study also allows to find out that what the practical movements of China's Foreign Exchange Reforms are and what is the interviewee's own opinion about such a reform: how it's going to be, what will be the effects of it and etc. The final result this study tries to gain from the interview is the information, practical policies and the personal opinions about China (Shanghai) Pilot Free Trade Zone.

The Second area of the study is to analyze the financial reports of some Finnish enterprises that have a business relationship in China. Such Finnish enterprises are chosen by the size of their business in China and the period they entered Chinese market. The aim of this process is to find out how the MNEs from Finland do their currency risks management and how well they are doing that. Based on the results, we will be able to get a guide for other MNEs or even SMEs to carry on their financial risk management when they enter China.

## **4.2 Introduction of Department of Foreign Trade and Economic Cooperation of Guangdong Province, China**

The GDDFTEC (Department of Foreign Trade and Economic Cooperation of Guangdong Province of Guangdong Province) is the department that formulates the foreign economic policy, which includes foreign trade, foreign investment, foreign business cooperation and port management, in GD province and execute such policies and the policies from the MOFCOM (Ministry of Commerce of the People's Republic of China).

Guangdong Province is located in southern China and bordering with Hong Kong and Macau. Such geography advantage makes it the biggest GDP contributors in China. GD province's GDP in 2012 is 904 billions USD, which is 10,99% of the whole GDP in China. (National Bureau of Statistics of the PRC) Furthermore, the GDP of GD province 2012 is even over than the combination of whole 2012 GDP of Finland and Sweden, which is 250 billions USD and 525,7 billions USD, and equals 56,9% of whole Nordic Country's GDP in 2012 (Google Data)

## **5 RESULTS: CURRENCY RISK MANAGEMENT IN CHINA**

This chapter will summarize the result of this study. The study started with gain some basic ideas about the environment in Chinese financial system and market. After that, the interview result from DGGFTEC will be analyzed and separately organized into each section. Finally, the basic model of currency risk management in China will be worked out and the effects of Shanghai PTZ to currency risk management will be sorted out.

### **5.1 Model for currency risk management in China**

By all the knowledge gained from the previous studies, we know that the currency risk management will conduct hedging behavior when the enterprise feels the exchange rate will be changing out of their expectation. (Shapiro 1996,285) In other words, when the sensitive of such currency is high, the level of currency risk management activities will rise all along.

At Lujiazui Forum 2013, Feng Gao, the President and Chief Country Officer of Deutsche Bank (China) CO., Ltd gives a speech and mentioned that the CNY has probably the lowest currency fluctuation in the world. “In this situation,” he also said, “CNY becomes the best arbitrage currency.” Not did he just mention the currency fluctuation, Feng Gao also commented on the pricing strategy of exporters in China that they did not consider the incoming fluctuation because the regulator is sending a wrong signal, which is ‘we are going to control the price’. By this signal the regulator sends, he added, the exporter will control the price in such a low situation but give too little consideration for unexpected currency risks. (Feng Gao 2013)

Such a speech made by the president of Deutsche Bank (China) CO., Ltd, reflects such an opinion that though the CNY has a low fluctuation and the currency risk management behavior is not focused, the income of Economic System Reform and the Exchange System Reform will activate the CNY’s free floating by market need and, therefore, leads to more uncertainty of exchange rate fluctuation.

To prevent the profit loss from the uncertainty CNY exchange rate fluctuation, the particular currency risk manage methods in China should be found. The first step of it is to understand what the differences between currency risk in China and the other markets are.

### **5.1.1 Specialty of Currency Risk in Chinese Market Environment**

Every country’s market is built based on the economic system which set up by the laws. Therefore, the reason China seems to be a special market for most of the enterprise is because its economic system is neither Socialism Planned Economic nor Capitalism Market Economy. Based on the latest official statement, China is a country that has an economic system called ‘Socialist Market Economy with Chinese Characteristics’. Not like the classical socialist economy, China advocated private ownerships and admits the decisive role of market. In such a situation, the national capital and privately owned capital can exist in the same market, following the market rules and the regulations of the Chinese government. (18<sup>th</sup> National Congress of the Communist Party of China)

From this statement we can see that though the official concept of the Chinese economic system is based on the market and private ownership is admitted, but in fact due to the government regulations and nature of socialist economy, the policy of the government still take the leading position in the market. In this situation, monetary policy can be easily cause currency exchange rate floatation and such an economic system will limit the activation of economy and lead to future economic depression.

With all worry, the 3<sup>rd</sup> Plenary Session of 18<sup>th</sup> CPC Central Committee proposed a reform plan that set the economic system reform as the major issue concerning comprehensively deep reforms. The plan also enhances that the major issue of reforming economic system is to handle the relationship between the market and the government. (3<sup>rd</sup> Plenary Session of 18<sup>th</sup> CPC Central Committee)

There is a long chapter later in the plan mentioning the Exchange Rates System reform and it will lead the major RMB exchange rate to float in the future foreign markets.

### **RMB Exchange Rate Formation Mechanism**

The differences of economic system lead to the most basic difference about Chinese RMB exchange rate: it is forming and floating. In 2013, the Deepen Economic Reform Conference shows a signal that the RMB exchange rate formation mechanism will be reformed to be more market based. (Deepen Economic System Reform Conference, 2013) The RMB exchange rate formation mechanism source from 2005, is the time China gave up the fixed-pegged rate with USD and started the floating exchange rate system. Today, the basic RMB exchange rate forming is based on the foreign exchange supply and demand, floating between the certain ranges around the benchmark exchange rate. The benchmark exchange rate is set by ‘The trade and investing relationship with China’ and ‘Some main currencies as a basket of currencies.’ Based on the ratio of relevant relationship, certain benchmark and its floating ranges will be set in the currency basket. Therefore, the RMB exchange rate will float among the floating ranges. (Chong Li, 2013) At 2005, the President of The People’s Bank of China (PBC) Xiaochuan Zhou re-

leased the currencies that in the currencies basket: USD, EUR, JPY, KRW are the main currencies. (Xiaochuan Zhou, 2005) Although some of the currency pairs were released, but the amount and the ratio of them still remained as national secret of monetary strategy. Due to the sensitivity of such information, even my anonymous source cannot give a correct number to describe the currency basket in more detail. According to his own word, 'There are maybe just ten people in China who know the correct ratio and I'm obviously not at that level.'(Interview)

Figure 5 shows that it is clear how currency rate forms will very much affect how it floats. From the year 2005 China decal the floating exchange rate system, the CNY/USD dropped immediately due to the imbalance of trade. From this point of view, the market basic reform of RMB exchange rate formation mechanism would give a bigger floating rage to RMB. But unlike the other currencies, RMB will still be under high government regulation for at least the next decade due to the cautious currency policy as tradition of PBC. (Interview)

### CNY per 1 USD

25 Dec 2003 00:00 UTC - 21 Dec 2013 15:26 UTC  
USD/CNY close:6.07240, low:6.06715, high:8.39905



Figure 5. CNY/USD currency history exchange rate (2004-13). (XE Currency Charts)

### Financial Market

The second difference which will be discussed is the financial market in China. Due to the economic system discussed above, China has a highly regulated market-direct financial market. In such a situation, though the decision makers know the possible risks and try to shift them by deregulating the other financial markets, a bank loan is and will be still the most popular financing tool in China's near future. (Money Week, 2013)

Bank industry in China now is highly regulated. Most of the banks are just allow to provide traditional bank business services but not the advanced business such as capital investment, global business and etc. Only the 'Big 5' commercial banks, which National Holdings has the absolute advantage against other capitals, (Industrial & Commercial Bank of China; China Construction Bank; Agricultural Bank of China; Bank of China; Bank of Communications) are capable and allowed to provide such advance financial business services.

**Chart 1: World's largest banks by market capitalisation (USD billion) as of 14 September 2012**



Source: KPMG China Analysis

Figure 6. World's Largest Bank by the market capitalization. (KPMG's Mainland China Banking Survey 2012)

According to the KPMG's Mainland China Banking Survey 2012, China had four out of top ten largest banks in the world and all of these four banks are members of 'Big 5' commercial bank in China. (Figure 6 ) Linking the situation of China's GDP, it not hard to draw a conclusion that the banks hold more capital in China than the other financial institutions and the biggest banks are under strict regulation by government.

In 2011, the total balance income in the whole bank market in Mainland China grew by 18,85% and set a new history high at 110 680 billions RMB. Among all of the assets, large commercial banks take nearly half of the whole market share; Foreign banks take just 2 154 billions RMB, which is 1,94% of the whole market share. Such imbalance of the market share indicated that even after a few times of economic reform and deregulation, the foreign banks are still under strict regulation and hard to expand their investment business in China. (Table 5)

Table 1: Total assets of banking institutions (RMB billion)									
Institutions/Year	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total banking institutions	26,749	30,726	36,454	42,891	52,144	61,208	77,254	93,125	110,680
Policy banks & CBD	2,125	2,412	2,928	3,473	4,278	5,645	6,946	7,652	9,313
Large commercial banks	16,051	17,982	21,005	24,236	28,500	31,836	40,089	46,804	53,634
Joint-stock commercial banks	2,960	3,648	4,466	5,445	7,274	8,809	11,785	14,904	18,379
City commercial banks	1,462	1,706	2,037	2,594	3,341	4,132	5,680	7,853	9,985
Rural commercial banks	39	57	303	504	610	929	1,866	2,767	4,253
Rural cooperative banks	n/a	n/a	275	465	646	1,003	1,279	1,500	1,403
Urban credit cooperatives	147	179	203	183	131	80	27	2	3
Rural credit cooperatives	2,651	3,077	3,143	3,450	4,343	5,211	5,493	6,391	7,205
Foreign banks	416	582	716	928	1,253	1,345	1,349	1,742	2,154
New-type rural financial institutions & Postal Savings Bank	898	1,085	1,379	1,612	1,769	2,216	2,741	3,510	4,354

Source: CBRC Annual Report 2011

Table 5. Total Assets of banking institution in Mainland China, 2011. (KPMG's Mainland China Banking Survey 2012)

The profit of Chinese Banks had grown by 39,3% in 2011 and in the profit, compare to the foreign banks and the big five commercial banks, the other banks' interest rate income, which come from the loans, stayed the major part of the income percentage. The non-interest income takes 19,6% of the total income of

2012, such a situation indicates that the traditional business, such as saving and loans, are still the major source of revenue for most of the Chinese Banks. (Money Week, 2013) And though the average Non-Interest income for Chinese Banks is 15,4%, the ‘Big 5’ stays the percentage 23,6%. Such imbalance indicated that the major commercial banks are the leaders of non-interest income. In all the bank sectors, foreign banks have the highest non-interest income, it shows that the source of revenue in foreign banks is not through traditional service but more likely through the capital management and other add-value services. (Table 6 )

Type of Banking institution	Non-interest income as a percentage of total revenue
City commercial banks	14.3%
Rural banks	19.4%
Joint stock banks	16.4%
Policy banks	1.10%
Big five commercial banks	23.6%
Foreign banks	23.8%

Source: KPMG research

Table 6. Ratio of non-interest income to total revenues by institutions. (KPMG’s Mainland China Banking Survey 2012)

According to the 18<sup>th</sup> National Congress of the Communist Party of China, the interest rate marketization will be on the agenda. Such marketization of interest rate, by the information the anonymous provides, is aimed to stimulate the competition among the banks in China. (Interview)

On 20.07.2013, a fully liberalization the loan interest rate control in market was decaded. (Xinhua News, 2013) This act cancelled the 70% loan interest rate bottom line for financial institutions and let the institutions decide the rates independently. By this act, the competition of loan business in China will be more intense, furthermore, it will lead the banking industry into bigger risks. But see from the other side, such liberalization will expand the negotiation room between enterprises and the financial institutions, therefore, it is a good news for the enterprises.

In 2012, the total number of foreign banks in China was 323 and the total assets were 2154 billions RMB, which grew 24% compares with 2011. The deposit pressure, which occurs due to the unfamiliar by customers and enterprises, had been

easing with total deposits increasing 24% in 2010-11, although it was down from the 2009-10 figures, which is 44%. The net profit growth is demonstrated strong performance with an increase of double and the main reason for such an increase is from the improvement in global markets and treasury business lines as well as increased activities in bond and foreign exchange trading. (KPMG's Mainland China Banking Survey 2012) (Table 7)

<b>Bank type</b>	<b>Number of institutions</b>	<b>Number of branches</b>	<b>With a RMB license</b>	<b>With a derivatives licence</b>	<b>Licensed to issue RMB financial bonds</b>
Locally incorporated foreign banks	37	245	35	25	5
Branch status banks	77	94	45	25	0
Representative offices	209	n/a	n/a	n/a	n/a

Source: CBRC 2011 Annual Report

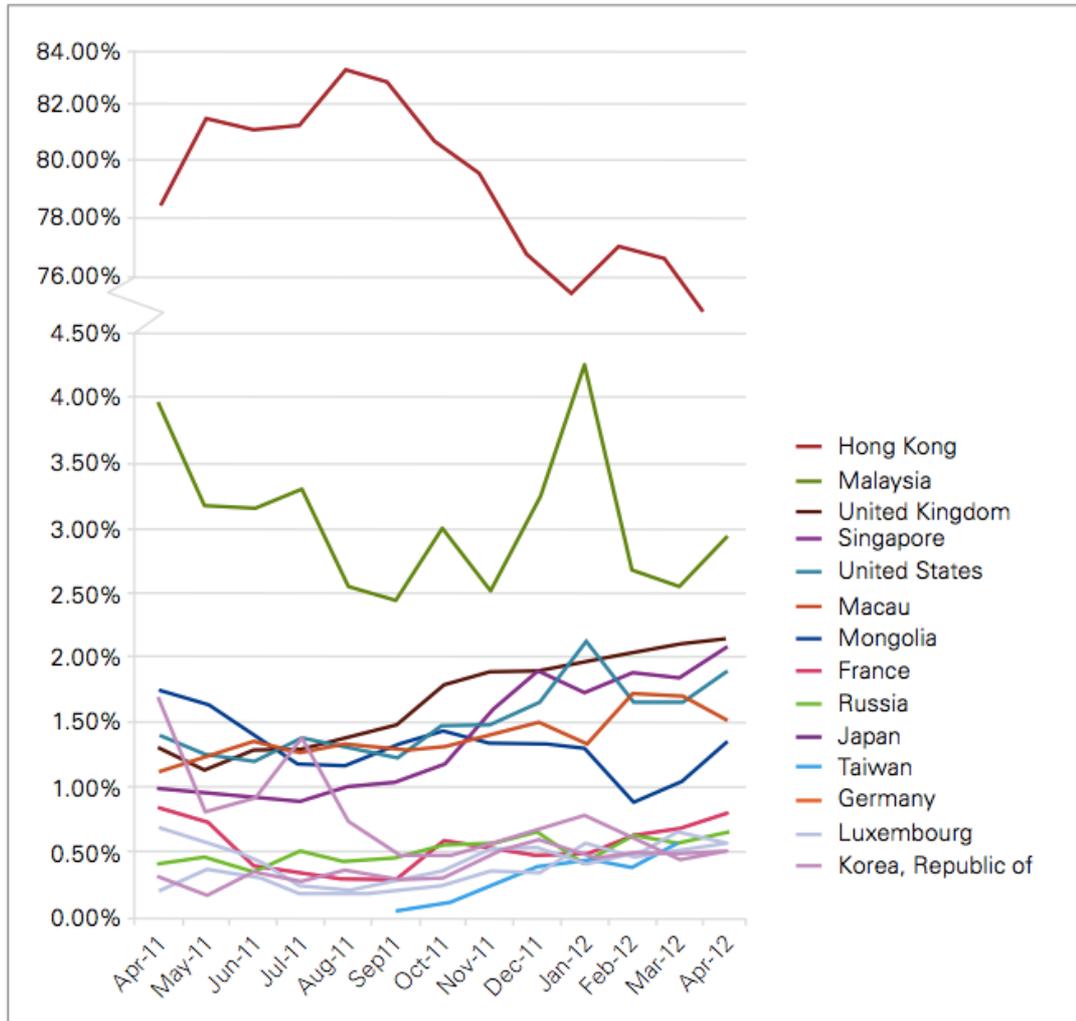
Table 7. Foreign Banking establishments in China (KPMG's Mainland China Banking Survey 2012)

RMB Trade settlement is an important step for RMB internationalization, the amount of RMB used as a settlement currency indicated how Chinese economic being trusted and the role of RMB in international trading (Yi Cai Daily, 2013) At the end of 2011, the globally settlement conducted and reach RMB 2,58 trillion, which is more that 400% of grew when compared with 2010. In all the settlement trading, the key hub of RMB trading is Hong Kong, which valued RMB1,9 trillion and takes more than 73% of the global trading amount. (KPMG's Mainland China Banking Survey 2012) At the Table 7 below, we can see that at the current situation, the effect of RMB is strong in Asia but still have a long way to go in the international market. At generally, market shows a positive attitude for RMB internationalization. Through a RMB offshore business survey face global enterprises conducted by HSBC Holdings plc, there are nearly half of the enterprise said that they know well enough about the internationalization about RMB. Among the enterprise that had used RMB as settlement currency, 73% said that they would increase the using in near five year, and over 30% of the enterprise that had used RMB as settlement currency said that the RMB business increase of them would over quarter. By this survey, the General Manager of HSBC (China) Commercial

Banking Service Department Shunhua He forecast that in 2015 RMB will become one of the top 3 international trade settlement currencies. (Shunhua He, 2013)

The private bonds are growing in a fast speed, which was up about 60% by the volume and reach 134 billions USD in 2012's first half from a year earlier. This amount of private bond is the highest in the history record and it is closed to 30% of the value of loans that enterprises gain from banks. (Financial Time, 2012) By the survey of Bank of China, in 2013 the total amount of Social Financial (Loan, Stock market, private bonds and etc.) will be RMB 1,6 billions and in which the non-loan capital will be a half of the total amount. (China Economy and Finance Forecast Survey, 2013)

**Chart 3: Country breakdown of SWIFT cross-border payment messages in off-shore RMB**



Source: SWIFT

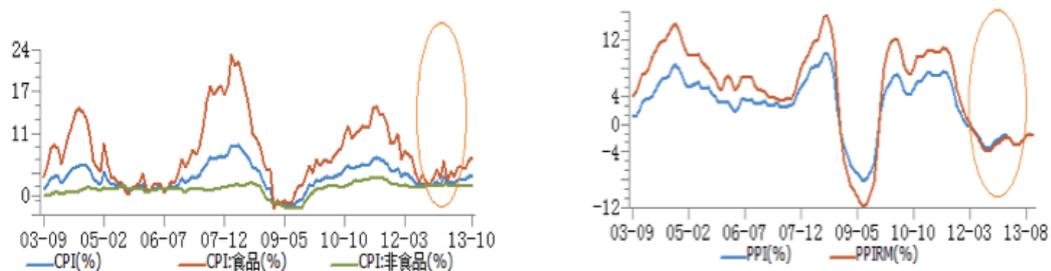
Figure 7. Country break down of SWIFT cross-border payment messages in off-shore RMB (KPMG’s Mainland China Banking Survey 2012)

### **Inflation**

In the official record, China’s inflation rate in 2013 is 3,2%, which is lower than the prediction of 3,5% at the begging of the year. (China Financial Stability Report, 2013) But according to the anonymous, there are two different voices of China’s inflation between the professors and the government think-tank. (Interview)

One opinion is optimist. They believe just like the official record, now there is no inflation in China and all the CPI grows are result from the nature growth of market, economy and currency.

The other opinion believes that the China is now having a stagflation, which refers to a period of falling output and rising prices. (Mankiw 2010, 749) There might be two different reasons that why such stagflation is not so obvious. One reason is that such stagflation is covered with low prices, which caused by overcapacity. The huge amount of manpower successfully reduces the cost of products and therefore creates a low price that can cover the stagflation. One other reason is that the stagflation is covered with the RMB supply and basic on the supply and demand principle, the prices keep at the low range and covered the stagflation. (Interview)



资料来源: Wind, 中国银行国际金融研究所

Figure 8. CPI changing percentage and PPI percentage. (China Economy and Finance Forecast Survey, 2013)

See Figure 8 above. By the survey of Bank of China, we can see that the CPI in 2013 is assumed to rise 2,6%. The left figure shows how CPI (Food, red line) affects the whole CPI (Blue line). The right side shows that PPI stayed at minus situation for over 20 months and stays at around -4%. (China Economy and Finance Forecast Survey, 2013)

In sum, there might be certain potential inflation risks, but it's not obvious from the data. Inflation situation in China might rise steadily without large fluctuations.

### **Monetary Policy**

At the end of 11.2013, the M2 (M1+ Civilian Deposit + Time Deposits from enterprises) had already reached 107,93 trillion RMB, which rise 14,3% compare to the last year. Such situation is already over the 13% rising annual goal set by PBC. At October and November, the growing rate of M1(Cash Flow in the Market + Demand Deposits from enterprises) are 8,9% and 9,4% , in the meanwhile, M2 has a 14,3% and 14,2%'s growth. (China Monetary Policy Report Quarter Three, 2013)The price scissors between M1 and M2 indicates the tend growth of time deposits and the tend decrees of currency activation. (China Economy and Finance Forecast Survey, 2013)

### **Macroeconomics Environment**

As we mention in Chapter 2, how strong the currency is determined by the interest rate, inflation and purchase power and so on. Therefore, we can say that the entire element of currency is the reflation of macroeconomics of certain country. If we have the intention to discuss the currency performance of China, we can not avoid the macroeconomics environment of it.

According to the official data from National Bureau of Statistics of China, the GDP in 2012 is 8 229 229 USD, which keeps a 12,3% of growth compare with 2011. (National Bureau of Statistics of the PRC) In the meanwhile, EU is struggling in the economic depression and having a -0,2% of GDP growth. US is not doing any better than it, 2,8% of growth is already the highest among all 4 years. (CIA Fact Book) With the amazing economic growth, the market certainly has all the right to trust CNY's bright future and stock more now before its price rising in the future. With the strong performance of economy and boost of market trust, we have the reason to believe that CNY will rise in the near future.

### 5.1.2 Currency Risk Management Model in China

By the information gained above, the analysis of currency risk management models in China become possible. The analysis will first try to forecast the fluctuation of CNY by each data elements, and then continues with discussing on specific hedge tools to deal with the situation.

Interest rate. By full liberalizing the loan interest rate, the range of the loan interest rate will be staying at a sensitive fluctuation. The banks that have enough capital to support low loan interest rate level might try to hold the rate lower than average market situation to attract more loan contracts. According to IRP theory, such a market situation will easily cause arbitrage behavior and leads to the fluctuation of currency. Therefore, it will be a risk for currency risk management. In this case, hot money from overseas might cause massive demand for CNY and lead to CNY increase. In this situation and by the dominance of CNY in CNY/EUR currency pair, CNY/EUR might drop and the Finnish enterprises will have less EUR at the end of the financial period. Translation and transaction exposure are the key exposures in it and, forward market hedge maybe a good idea.

Inflation rate. There are some opinions which suggest that China may have a stagflation. But according to the official data, even if the stagflation might happen, it will not happen in the recent years due to the stable increase of the money supply and stable capability of manpower to cover such stagflation. The inflation in the near future might not be serious but will still keep rise due to two reasons: the rising food price and the rising pressure of public utility products. (China Economy and Finance Forecast Survey, 2013) Since the EU inflation rate in the the current situation is 0,7% and have the possibility to remain steady, (Eurostat, 10.2013) according to the PPP theory the CNY/EUR will drop. The operation exposure will be the main exposure in this situation.

The currency fluctuation is caused by macroeconomic. On one hand, the inner pressure is causing more rising and uncertainly fluctuation. First, the economic growth in China is slower than before and the structure it is more balance than before, the large amount of trade surpluses will seldom occur. Such trading situation

of China will lower the market expectation of CNY. With the deregulation of currency market by PBC, the market itself will enhance its effect to the forming of CNY exchange rate, therefore, the amplitude and frequency of CNY fluctuation will rise.

On the other hand, if US quit QE, then the international capital might flow from developing countries to developed countries in a short period. With fewer capital inflows or even capital outflows, CNY is facing pressure of large fluctuation. The operation exposure and transaction exposure will be the main exposures in this case.

As a result gained from all the data and opinions, the price of CNY will be slightly higher and face bigger fluctuation than before. (Interview) (China Economy and Finance Forecast Survey, 2013) In this case, the EUR/CNY will face dropping pressure and have to prepare for the unexpected exchange float.

#### **5.1.2.1 Basic Model**

The previous currency risk theories and the future exchange rate prediction gave the study a solid base to create a basic model for currency risk management. Such a model cannot be granted forever useful because China's market is still being affected by policy very much, at least for the near future such as 2014-16, this model can be seen as a reference for the Finnish enterprises to reduce their currency risks.

Finland is having an explicit trade deficit amount of 1,7billion EUR with China. With such trade deficit, international merchandise trading creates most of the deficit and the Finnish service trade balance with China has typical been in surplus. (BOFIT Weekly, March 2012)

Finnish enterprises in the Chinese market, should pay more attention on the price setting. Due to the dropping of EUR/CNY, the cost of a parent company to invest in a Chinese subsidiary is going to rise. If the price of a product stays the same, it will strongly decrease the income and lead to a loss. Rather than that, such a thing

as changing the promotion strategy and production strategy, shifting production plants, raising productivity should also be considered in advance. Such behavior will minimize the sensitive of enterprise's assets and liabilities to exchange rate fluctuation and leave more room for financial managers to conducted hedging behavior.

To deal with the translation exposure and operation exposure, Forward contract is not a useful tool in the near future, the EUR/CNY 1Y FWR is 8,3884, which is 0,08 higher than the current spot rate. When consider CNY's raising pressure is going to cause EUR/CNY to drop, Finnish enterprises should consider purchasing CNY before-hand without FRW but in current spot rate. By the meaning of purchase CNY before-hand, it also means increasing the level of CNY cash and liquid securities such as treasury bills, bonds and etc. Reducing the local borrowing is another point Finnish enterprises should consider following. As the free floating of loan interest, there will be a group of banks that try to make the loan business by giving a low rate. Although it might sound good to have a lower borrowing rate from a bank, it should be kept in mind that the EUR/CNY is estimated to drop, which means that the same amount of CNY you borrow today you have to pay much more EUR to fill the hole. If an enterprise really needs some liquid cash flow, as the bond market and stock market are blooming in China, it might be a good choice for a Finnish enterprise to go public in the future. The stock market in China now is forbidden for foreign enterprises, but by the signal of Shanghai FTZ is that such regulation might be canceled in the near future. (Interview) By the same reason as not borrowing CNY now, speed up the payment of accounts payable and collecting the account reviewable from a subsidiary in China should be done by Finnish enterprises. Furthermore, not only the delay dividend and fee remittances to parent company and other subsidiaries but also delay the payment of subsidiary accounts receivable can be the methods to reduce potential currency risks. At last, trying to export in CNY and imports in other foreign currency will be a good idea in price setting and risk shifting.

Transaction exposure might be most inconvenient for a foreign company to conduct in China since most of the local banks, even the big 5 commercial banks, do

not provide hedge service. Even if they provide such service, the hedge tools are highly regulated. In this situation, money market hedge and exposure netting hedge will be the best choice for the Finnish enterprises. In money market hedge, USD and GBP will be two currencies to consider due to three reasons: high liquidation, low inflation rate and relative low loan interest rate. In the exposure hedge, its hard to say what currency pair obviously has correlation with CNY due to CNY being still on the process of becoming an international currency. But correlation of USD/EUR can be used as a cross currency to hedge EUR/CNY. The currency pair such as USD/CHF in long-term (1week to 1 year) and EUR/CNF (1 day to 6 months) can be considered as the currency pairs have negative correction with EUR/USD; the currency pair such as GBP/USD in long-term (1 week to 1 year) and EUR/JPY in long term (1 month to 1 year) can be considered as the currency pairs have positive correction with EUR/USD. (Oanda Forex)With the forming of Shanghai FTZ, the future of financial institution is bright, and the future of hedging transaction risk with more tools will be possible.

#### **5.1.2.2 Case Enterprise**

The case enterprise of this study is Metso Oy, the global supplier of technology and service for customers in the process industries, which includes mining, construction, recycling, pulp and paper, power, and oil and gas. With 30,000 employees based in over 50 countries, Metso certainly has experience with dealing the exchange rate risk. By 2012, there are over 80% of the net sales are from outside EU with the main currency such as USD, EUR, BRL, CNY, SEK and AUD. (Metso Financial Statements, 2012)(Figure 9)

## Metso's businesses

### Mining and Construction

- Technology, processes, machinery and services for aggregates production, construction, mining and minerals processing and recycling.

46% of Metso's net sales

### Automation

- Process industry flow control solutions, automation and information management systems as well as applications and services.

11% of Metso's net sales

### Pulp, Paper and Power

- Processes, machinery, equipment, services, paper machine clothing and filter fabrics for the pulp, paper and power industries.

40% of Metso's net sales

### Separate entity

- Valmet Automotive

3% of Metso's net sales

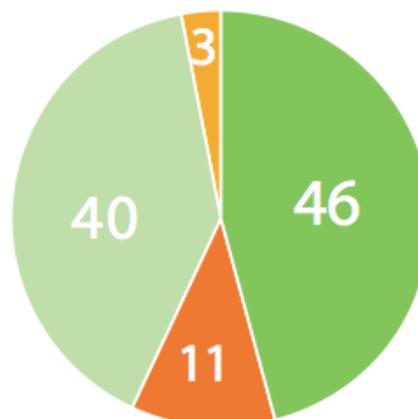


Figure 9. Business area percentage of Metso Oy. (Metso Financial Statements, 2012)

To deal with the transaction exposure, Metso Oy set up a Treasury Policy that operating units are required to hedge in full the foreign currency exposure on balance sheet and other firm commitments. To execute such a policy, a group treasury of Metso Oy has been found a long time ago. (Metso Financial Statements, 2012)

With this policy the future cash flow denominated in currency other than the functional currency of certain unit will hedge with 'internal foreign exchange contracts' with the Group Treasury. For the operating units that internal cross-border contract are not allowed, they will do hedging directly with the local banks in that country. (Metso Financial Statements, 2012)

Metso Group Treasury is the execute department of all the currency risk management. It monitors the position of each currency and makes the decisions about when to closed a currency position. Another mission of Metso Group Treasury is

to enter all the external forward transaction from all operating units by using forward exchange contracts and foreign exchange options. In 2012, there are totally 682 items are facing transaction exposure, among those there are 110 items which are protected by financial behavior and 531 items are protect by hedging behavior, leaving 41 items in transaction exposure. See table 8 below. (Metso Financial Statements, 2012)

EUR million	2011	2012
Operational items	804	682
Financial items	-365	-110
Hedges	-479	-531
<b>Total exposure</b>	<b>-40</b>	<b>41</b>

Table 8. Total amount of foreign currency exposure of Metso Oy in 2012. (Metso Financial Statements, 2012)

To deal with operational exposure, Metso Group Treasury conducted a sensitive survey in 2012 and by this way they found out that how sensitive in their income statement and equity would be affected by the flotation exchange rate. Through the survey we found that compared with 2011, the overall of financial sensitivity at Metso has decreased. In 2012, the USD/EUR exchange rate gives most of the risk on income statement and SEK/EUR give most of the risk on equity. See table 9 below.

EUR million	2011 Total	USD	SEK	2012 others	Total
Effects in					
• income statement	+/-18.2	+/- 6.4	+/- 2.3	+/- 0.8	+/- 9.5
• equity	+/-29.3	+/- 5.8	+/- 9.2	+/- 3.3	+/- 18.3

Table 9. The effect of +/- 10% change in EUR foreign exchange rate on Metso's income statement and equity.(Metso Financial Statements, 2012)

About the translation exposure, Metso consider the CNY, BRL and USD will comprise over 60% of translation exposure to them but they did not mention about how they do with it. (Metso Financial Statements, 2012)

If there is anything the study can learn from Metso, it will be that conducting the enterprise's currency risk with centralization is a good idea. Such centralization makes sure that some individual hedge from local financial manager who can't see the bigger picture will not affected the overall benefits of the shareholders. By centralization, the enterprise act as a whole to negotiation business hedge contracts, therefore, might be more benefit from financial institution than negotiation separately. (Shapiro 1996,289) Of course, there are down side as well. The centralization usually means that the specific environment of each subsidiary might not be considered, in such situation, some subsidiaries might take side-affect from the same hedging plan.

## **5.2 Shanghai (China) Pilot Free Trade Zone**

Shanghai (China) Pilot Free Trade Zone, as called Shanghai FTZ (Free Trade Zone), is the first free trade zone in China. To be considered as the most important experimental zone in the newest economic system reform, Shanghai FTZ got lots of interest from both China and abroad. In the eyes of some people who work in related government department, the meaning of Shanghai FTZ is not less than the forming of Shenzhen Special Economic Zone, the earliest special economic zone that contributes the 4<sup>th</sup> most GDP in China. (Interview)

As the interview processing, the anonymous interviewee told me that though they already have a basic idea about what they want from the Shanghai FTZ, the specific embodiments are still in discussion. When I told him that this feels like the trial operation period, he decaled opposition: "It is just like the Reform and Opening up old time " he said, "We have no idea what is heading us and what is going to hit us, we can just cross the river by feeling the stones. It is not a trail operation, this is it, and we are running it officially already. Both the foreign investors and us do not have a clue about this whole new system, we are exploring them together and hope to maximize its value. " (Interview)

From the latest news and publications we can find out the two most differences between this FTZ and the experimental zone before are ‘it only has a negative list’ and ‘it provides the investors national treatment on investment permission’. (Framework Plan for the China (Shanghai) Pilot FTZ, 2013)

Not like the common situation and in the other parts of China, this time Shanghai FTZ decide not to release a positive list, which refers the list of businesses and services and will be welcomed, but to release a negative list, which in Shanghai FTZ refers to the business which will not be granted and receive the national treatment. (The Negative List, 2013) ‘Opening the garden gate, closing the front door’ is what I heard from the anonymous interviewee about describing the positive list policy. It just likes opening the garden gate to let everybody in the garden but in the meanwhile releasing who are the most welcomed ones by the host and opening the door to let them in the house. For those people who are not in the most welcomed listed, they just have to pray that they did not waste all the time waiting and the front door will not close on their face. The positive list policy is usually vague about areas that are not mentioned on the list and therefore wasting investor’s time and money on guessing if they are qualified enough to gain the policy benefits. ‘Just like stepping in a landmine field and you can see the safe sign far away, you know the direction but you don’t know what is going to happen to you at your next step.’ said the anonymous interviewee. The negative list in Shanghai FTZ, on the other hand, makes a clear position that certain businesses will not be granted and have the ‘National Treatment’. (Interview) In this way the enterprises no longer need to predict and try, they just need to make sure they do not touch the red line of banning. What is more, by the negative list policy, enterprises no longer need to get the approval from authorities to register their business if their business is not shown on the negative list. (Special Administrative Measures (Negative List) on Foreign Investment Access to the China (Shanghai) Pilot Free Trade Zone (2013))

National Treatment on investment permission is the extent principle of national treatment, it extent the national treatment from after the investment to the time investment is permission. According to the WTO (World Trade Organization)’s

definition, the national treatment means that the import and locally produced goods should be treated equally at least after the foreign goods have entered the market. It applies to the foreign and domestic services, trademarks, copyrights and patents. (WTO: Principles of the trading system) This extent minimizes the potential cost of all the foreign investors and gives more benefits as well. For example, if Nordea Bank wants to set up a subsidiary in most parts of China, it has to admitted the request first and wait until it is granted, then move on a further step such as renting an office and recruiting employees. With all the investments are made and Nordea Bank is ready to start its business, the national treatment is officially validated. Such principle drags down the speed and leads to translation and transaction risk. Furthermore, the investment Nordea Bank made might be cost less if it has a national treatment. In this case, national treatment on investment permission actually minimizes the time and money cost of enterprises and accelerates the investment process.

### **5.2.1 Affects of the enterprise**

As mentioned above, both government and the enterprises are conducting the exploring of Shanghai FTZ. For both the regulator and the one being regulated, it is still too soon to say what exactly they can get from FTZ. However since the Shanghai FTZ is not the first FTZ in the world and there are theories to support the study, we can try to analysis such effects on the enterprise from benefit point of view and risk point of view.

For an enterprise that joins Shanghai FTZ, there will be at least these five benefits in short-run (Framework Plan for the China (Shanghai) Pilot FTZ, 2013):

- Tax reductions. In the framework plan of FTZ, there is a section about implementing tax policies, such benefits as longer tax payment period, lower VAT, refund of tax and etc. By the interview, I've learned that tax policies, such as free tax in certain industry and free tax for certain enterprise that conducted a large amount investment, is under discussion and still trying to draw out the details. Such free tax time will usually be around 5-10 years.

- RMB capital account convertibility. In Shanghai FTZ, the RMB now can be converted by capital investment aim. The common situation in China is that the RMB cannot be converted to another currency if the aim of such conversion is investment. By this benefit, foreign banks and financial service providers are able to officially conduct their investment business with international companies.
- Finance lease. It is a new way of getting the equipment for enterprise. For example, if ABB Ltd. wants to purchase a Business Aircraft, which prices as 53 million USD, outside the FTZ ABB Ltd. have to pay 5% tariffs and 17% VAT at once. It will cost ABB Ltd. around 76.3 million CNY. However with the finance lease in FTZ, they can rent the aircraft for eight years with 3.9 million CNY down payment. Such policy will ease ABB Ltd.'s cash flow pressure in a great way.
- Offshore Finance. For this policy, by the anonymous interviewee, there are three laws related with foreign capital and investment had been paused in FTZ area. (Interview) In FTZ now the financial institution can freely absorb enterprise's capital and conduct financial activities.
- Expanding of services liberalization. In FTZ, the service industry had been deregulated in the maximum level compare to before. The service such as tourism agent, law service, capital managing and so on is now able to get permission to run within the FTZ, which leads to more business chances for foreign enterprises.

The long-run benefit to enterprises in China might be simply: they might be able to enjoy the same policy as the previous enterprises that joined the FTZ in the first place. One of the aims of Shanghai FTZ is to explore such a model that 'Can be copied' and 'Can be extended', which means that in the near future (2014-2016) the experience Shanghai FTZ gains will be extended to the whole country after the approval of government.

There are some risks for the enterprise from FTZ as well. First risk is experience. Due to lacking experience in FTZ by both government and the enterprises, there must be certain behavior that leads to market fluctuation and makes the government raise regulation level. Second is the competitive risk. Not like in some other business zone, FTZ is trying to make a fully competitive market environment. In that situation, foreign enterprise will not only compete with other local enterprises but also much foreign enterprise like never before in China. The final risk might occur in FTZ is the imbalance within FTZ and outside FTZ. For enterprise that already had a subsidiary in China, it will be hard to manage the subsidiary outside and inside FTZ under the same policy. The imbalance of policy, marketing, financial behavior methods and so on, will lead the difficulties of the management on China area.

### **5.2.2 Affects on the currency risk management**

On the bright side, FTZ gives enterprises more choices to conduct the currency risk management. With the deregulation, there will be a large number of financial institution from both local and foreign countries to start business. In these financial institutions, there will be more financial services to choose from than in the current situation. In this case, an enterprise located in FTZ will have more tools such as forward exchange options and swaps to hedge their currency risks.

The disadvantages of currency risk management are consisted in FTZ as well. One thing of such disadvantage is the management mentioned in section 5.2.1. The imbalance of financial environment leads to the different management situation, it will be hard to management the inside subsidiary and outside subsidiary with the same strategy. Another disadvantage will be the uncertainty. Shanghai FTZ is an experimental zone, which leaves highly certainty on both trading and finance impacts to overall economic environment in China. If the trading of CNY in China is much more than the perdition of government, the policy will once again cause large fluctuation of the CNY exchange rate and, therefore, more unexpected changes in currency risks

## **6 CONCLUSION**

Currency risk is a risk that every enterprise will face in their business endeavours, and such risk will cause revenue in a more recessive way.

There are some situations in China that are not the as same as the other parts of the world. One is that the exchange rate forming is highly under policy pressure, therefore, the announcement from PBC will very much affect the CNY exchange rate. The other one is the underdeveloped financial market. Such a market environment will be another barrier for finical managers to manage their business and currency risks since all the financial institutions are under highly regulated, therefore, they might not be able to provide the hedging tool financial managers need. (See section 5.1.1)

A model of currency risk management in China can be found after the current data and interview this study conducted. The future situation of CNY will be fluctuation but remains in a low level due to the reform of the economic system and the basic economic environment. To deal with that situation, financial managers would do better to hold more CNY in their hand and conduct money market hedge and the exposure netting hedge to minimize the currency risks.(See section 5.1.2)

About Shanghai (China) Pilot Free Trade Zone, it was found that there will certainly be great benefits for enterprises in it. Such a barrier we mentioned above can be possibly solved by market competition and deregulation of market. (See section 5.2) The uncertainty of FTZ exists as well. Due to lacking experience, the uncertain change of policy is likely happen in the future. Overall, Shanghai FTZ is a great opportunity for both government and the enterprises.

### **6.1 Ethical questions, reliabilities and validity of the results**

Knowledge and theoretical study in the thesis about currency risks is reliable due to two reasons: different source and different time periods. Different sources mean that in the study more than one source of knowledge is referred and such sources are from different countries as well. Different periods mean that unlike many re-

search studies which just use a certain time period of knowledge and opinions, this study referred to different ideas of different times and, therefore, it's more reliable.

The survey in the study is mostly done by an authority individual in an organization such as one of the largest professional auditors KPMG or one of 'Big 5' commercial banks in China, Bank of China. In this case, the reliability can be trust.

At the result of above, such result in concluded with all the data and interview results. Therefore, the neutrality can be trusted.

## **6.2 Further research possibility**

The Shanghai FTZ will be an important topic to continue studying in the future years. Due to the politic sensitive and the economic sensitivity, such experimental economic behavior will create a significant change in China's economy. Furthermore, due to the FTZ causing the exchange rate fluctuation and the financial market reform, new way of currency risk management in China can be continuously set as a research direction.

In this case, business students can help local SMEs set up a guide to set up a business in Shanghai FTZ or try to find out how FTZ changes the currency management in China or what the real effect of FTZ have on enterprises after a few years.

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## **APPENDIX: INTERVIEW SUMMARY**

### **Currency:**

Q: Will CNY exchange rate keep pegged to USD?

A: No anymore, we are now setting the CNY exchange rate by a basket of currencies. In the future, we will only head further in that direction with more marketization.

Q: Will China have major policy change on currency in 2014-2016?

A: That will not be any policy change in the calendar, only some minor changes for further marketization. CNY will rise slightly.

Q: How much pressure is now on CNY of rising value?

A: Same as recent years. No evidence shows major fluctuation. If US quits QE, the pressure will be even less.

Q: Will there be deregulations on CNY?

A: Will be, but not gonna be free trading at once. It will take long period.

Q: Will there be deregulations on Banking, Finance market, Stock market?

A: Will be deregulate and reform, detail situation depends on the policy from the top.

Q: Will national holding banks (Big 5) keep their leading position in 2014-2016?

A: It seems so. However by the reforming of interest rate maceration, there will be more private capital enter market and, setting up small/medium-sized banks, more foreign banks will enter the market, with all these factors, the competition will be more intense.

Q: How new policies affect CNY?

A: Purchase Power is and will be steady, not much affect on the rising value, but will more affect by market than before. Settlement currency tends to be more choices than before the demand of currency such as EUR, JPY will rise.

### **International Trade:**

Q: How is the situation of international trade? Will it keep growing?

A: In 2014, estimated GDP grows will be 7,5%, adding the situation that the speed of US/European economic recovery is accelerating, the international trade in 2014 will certainly grow. Especially the import will grow with the policy impact, particularly at mechanical/electrical products and high-tech products.

Q: What will be the detail incentives for particular industry and country?

A: High-tech industry will have more tax refund and tax cut. Service industry from Hongkong and Macau will have priority on new policies. Different policies will be set for different countries base on the Cooperation Agreement. US and European countries have the priority on new policies.

### **Macroeconomic and Free Trade Zone:**

Q: What might be trend of future Macroeconomic policy and the policy related with Shanghai (China) pilot Free Trade Zone

A: Personal investor will be deregulated for oversea investment, along with enterprise and companies. However not the National-owned enterprises. National-owned enterprises will be exist in the future with certain reform such as private capital investment, national holding, etc.

About Shanghai (China) pilot Free Trade Zone, the '30 Finance Rule' was just set without detail operational policy. From the perspective of preferential, the policies will mostly at the managing mode of negative-list and release bones benefits by new system. It will be minority tax cut and related preferential policy.