



TAMPERE POLYTECHNIC

BUSINESS SCHOOL

FINAL THESIS REPORT

**HEDGING THE CURRENCY RISKS WITH
FINANCIAL DERIVATIVES AND THE IMPACT
OF EMU ON HEDGING NEEDS**

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ABSTRACT

World trade has increased significantly during the last 20 years and the financial integration of the Europe has taken a big leap. The European Monetary Union, EMU, was established in 1999 and it has impacted the 12 member countries considerable, as the currency risk between the countries has been diminished.

Every company is exposed several different risks in its daily business. Of those risks currency risk is discussed in detail in this paper. Currency risk is unpredictable fluctuations in currency exchange rates and it is an inevitable by-product in all international operations. As international business has expanded, also the importance of the currency risks has been noticed. The foreign exchange market is by far the largest and most liquid market in the world.

Even though the currency risk is inevitable in international operations, there are measures to take in order to minimize its harm on profit. A firm must carefully consider which risks it is willing to take and which are too risky. Futures contracts, forward contracts, swaps, options and different types of internal hedging methods are available to hedge the company from unwanted risks.

The purpose of this paper is to provide basic information of the risks the company faces in the international environment, concentrating on the currency risks. The aim is to outline the hedging tools available and emphasize how important it is to hedge against the unwanted risks. The changes the EMU has brought with it, is also researched and made familiar to the reader.

This research is based purely on literature, financial management books, articles in financial journals and the official website of the European Union have been the main source of information. The paper is very theoretical, but the intention has been to write it in a form that even an inexperienced reader is able to understand its contents.

The research proved that it is crucial for any company that has any operations abroad, especially outside the euro zone, to be aware of the risks it is exposed to. Some of the hedging methods are very simple, but others are very complicated and need experienced professional to make the decisions on them. The financial integration in the Europe has had an impact on companies operating in the euro zone, but has not removed all risks. Further, companies still have considerable amounts of assets and liabilities in other currencies than the euro, mainly in the US dollar. The challenge for the euro will be to overtake the US dollars place as the main currency of the world trade. This will take time, if ever possible, as the dollar has been traditionally the world currency.

Keywords: Currency risks Hedging Exchange rate risk Financial derivatives

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1. Introduction

As the world trade has increased in the last 20 years significantly, the corporations have come to face new problems. The world has gone through financial changes, which have had a global impact. One significant change has been the European financial integration, the formation of the European Monetary Union, EMU, and the adoption of single currency, the euro.

Risk management is an important part of business operations. Its importance should never be underestimated, as it is part of all business life. The corporations must always be aware which risks they are taking and how to hedge from the unwanted risks. There are several types of risk involved in business, and of those, currency risk will be examined closely in this paper. The growth in the markets for derivative instruments has provided managers with more effective tools to manage the financial risks they face. (Cusatis 2005: 1)

Hedging is an approach to risk management, which uses financial instruments to neutralize the systematic risk of price changes or cash flows. For several market participants, portfolio managers, bank managers, pension fund managers and corporate treasurers, hedging is an important tool, but they each have a different motivation for hedging. By reducing risk exposure, hedging allows companies to focus on their core business. (Cusatis 2005: 1)

Cusatis (2005:1) mentions a few examples of risks that the different parties face: multinational corporations are exposed to the fluctuations of currency markets, which may significantly increase the volatility of their cash flows. Lenders are exposed to interest rate fluctuations, because changes in interest rates affect the demand for and value of loans. Portfolio managers may hedge to eliminate risks they are not willing to take, for example price risk or default risk. No matter what the motivation is, all hedgers face the challenge of selecting a hedge that provides the best protection while causing the least amount of expense.

Every market has its own characteristics that make the risk management a challenge. In some markets, hedging is a simple task that does not need much effort and monitoring, in others, hedging is a daily activity and requires continuous follow-up. Therefore, specific tools for effective hedging differ from market to market and finding the right solution is crucial. (Cusatis 2005: 1, Pike 1999: 334)

The hedging process is closely related to the financial derivatives market. Forwards, futures, swaps and options are important tools in the process and these measures will be explained in this paper together with some natural hedging methods.

The European Monetary Union and adoption of the single currency have influenced the trade within the euro zone. The member countries are now one

big domestic market, which has eliminated the currency risks between the countries.

1.1 Purpose and Objectives

The main purpose of this paper is to provide a basic understanding of currency risks that occur in the international business market. Providing tools on how the risks can be hedged by using financial derivatives and natural hedges is the main part of the paper.

The objective is to understand currency risks, which are inevitable in international and national business. There are also other risks closely linked to currency risks, and the goal is also to understand the relation between them. The intention is to provide solutions and examples for the reader, how the currency risks can be minimized to secure the profitability of the business. The most important hedging tools are described in a form that a reader, who is not familiar with the subject can understand them, too. Lastly, the objective is to provide an understanding on how the EMU and the euro has affected the business within the euro zone.

Currency risks must be taken into consideration in all businesses that involve international counterparts and nowadays also in business that take place only in domestic markets. The adoption of the single currency, the euro, has had an impact not only on the member countries, but also on the global financial market and those effects will also be researched and discussed.

1.2 Used Methodology

The information of this paper is gathered from financial management books, written in the United States and the Europe. Recent articles in financial journals have been used as a source as well as annual financial reports of UPM-Kymmene Corporation and Stora Enso. The official website of the European Union, called Europa, Gateway to the European Union, has provided information about the European Monetary Union, the euro and its impact on the businesses.

1.3 Stages of the Paper

The paper starts with the introduction to different types of risks the company is exposed to in its every day business. The concept and vastness of risk management is explained shortly along with short descriptions of risk categories.

In the third chapter currency risks are explained and how the risks can be recognized. The hedging tools, futures and forward contracts, swaps, option and internal hedging tools are discussed in chapter four, which is the most important chapter of the paper. Advantages and disadvantages of each tool are also provided to make the comparison of the tools easier for the reader.

The chapter five describes how the European financial integration has influenced the market and the EMU member countries and what has been its impact on currency risks.

In chapter six the assumptions are outlined and the last chapter is conclusion.

2. Introduction to Risks

2.1 Risks in General

Random House Webster's Dictionary (1999: 707) defines risk as exposure to the chance of loss, a hazard or a dangerous chance.

Risks are an unavoidable part of all business operations. It is often assumed that the risk is beyond our control, but it is not the case. To some extent a manager can select which risks are acceptable and which are too risky to take. There are several measures that can be taken to minimize the risks and these will be discussed later in this paper. (Brealey 2004: 664)

Kasanen (1997: 23-24) divides the general risks in three categories: risk of accident, operational risk and economical risk.

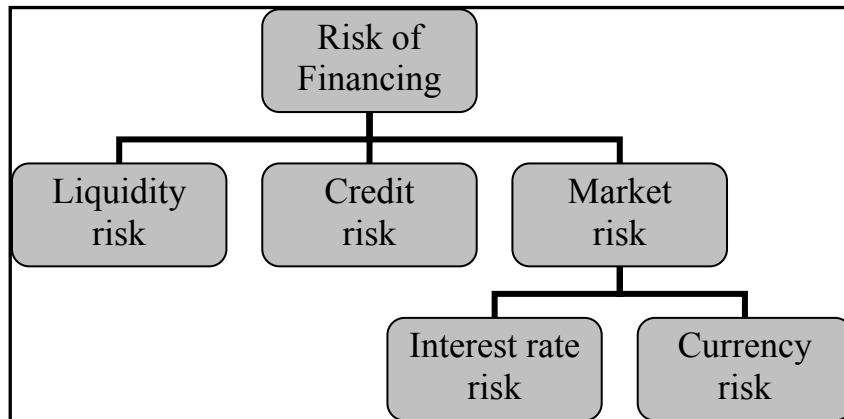
Risk of accident is present in every business, but even if it is controlled well, there is no profit making involved. Fire, break-in and water damage are examples of this risk. These can cause severe damage for the organization and the most common way of managing these risks is by taking insurance. (Kasanen 1997: 24)

Operational risk refers to the loss of profits, which is caused by the shortcomings in organizational system, mode of operation or control routines. Also the loss in currency and interest rate risk area can be caused by the lack of monitoring of operational risks. (Kasanen 1997: 24)

Economical risk includes both, profit making and profit-lost. This risk is related to business activity and its profitability. (Kasanen 1997: 25)

2.2 Risks of Financing

According to Kasanen (1997: 27) there are three types of risks involved in financing, all of which must be managed and recognized. Picture 2 clearly depicts how the risks are divided by their nature. Risks of financing are divided in three categories, liquidity risk, credit risk and market risk. Further, market risk is subdivided in interest rate risk and currency risk, which are explained later in this paper.



PICTURE 1: RISKS OF FINANCING IN AN ORGANIZATION
 SOURCE: KASANEN 1997: 27

The risk types mentioned in last paragraph and shown on the picture 2 will be next introduced shortly.

2.2.1 Liquidity Risk

The corporate has certain amount of funds available and the corporate liquidity must be managed so that the funds are in place to meet the future debt obligations as they fall due. Liquidity risk is controlled by proper attention to cash forecasting and planning. A predicted cash shortfall may require the raising of additional finance, disposal of fixed assets or tighter control over working capital requirements in order to avoid a liquidity crisis. (Pike 1999: 354 & 373)

2.2.2 Credit Risk

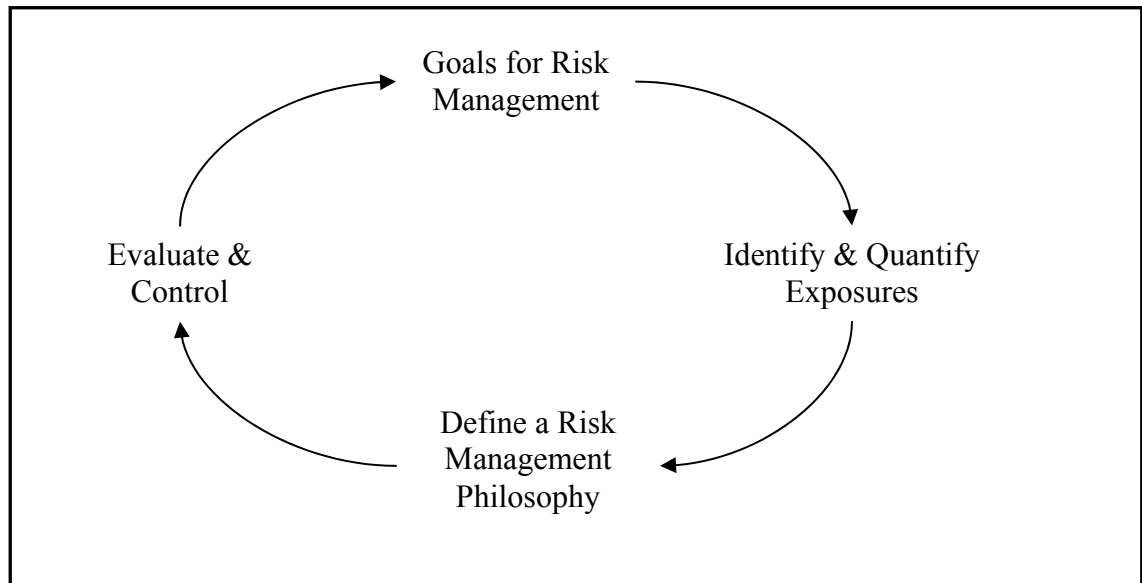
The corporation is exposed to credit risk every time it sells goods or services on credit or when it invests funds on some other company. The customers may not pay the amount that was invoiced or they pay it later than agreed. If a company has invested its money, they expect to gain some profit for that money or at least get their money back in full value. Sometimes the investment fails and causes credit loss for investors. (Kasanen 1997: 28, Pike 1999: 364 & 389)

2.2.3 Market Risk

Market risk arises from several factors. Adverse movements in market prices in interest rate, foreign exchange, equity and commodity prices are the risks that every company is exposed to. The common nominator for all these risks is that the global market is active and the fluctuation in the market prices causes uncertainty for the corporation. The foreign exchange risk, also known as currency risk, will be examined more closely in chapter 3. (Kasanen 1996: 25-26, Pike 1999:364)

2.3 Risk Management

Every business needs to expose itself to risks in order to seek out profit, but the fine line between which risks to take and which not to take is the key question. The risks of business can never be completely eliminated, but they can be managed. Pike (1999: 364) defines risk management as a process of identifying and evaluating the trade-off between risk and expected return and then choosing the appropriate course of action.



PICTURE 2: THE RISK MANAGEMENT CYCLE
SOURCE: SMITHSON 1998: 554

Picture 1 illustrates the basic cycle of risk management. There are four issues that need to be considered carefully. The process begins with specifying the goals, clarifying where the company is aiming at and what its mission is. The company must clearly define what it intends to accomplish with its risk management program. (Smithson 1998: 554)

The second step is to identify the risks it faces and estimate how severe they are, in order to be able to manage them. Consequently, the firm must implement its own system for measuring the risks. Having this done, the firm can then keep track on how massive the risks were before the risk management program was implemented and how significant they are after the program is put in place. This also enables the company to evaluate the risks later on. (Smithson 1998: 554)

Smithson (1998: 554-558) continues, in order to effectively manage the risk, the firm must have a risk management philosophy, which is then turned into an action plan. The last step is evaluation and control, which is in fact, an on-going process and must be repeated whenever changes in the environment take place, for example, fluctuations in interest or exchange rates.

3. Currency Risk Management

3.1 Introduction Currency Risks

De Santis et al (2003: 427) defines currency risk as follows: currency risk is unpredictable fluctuations in currency exchange rates. Normand (2003: 17) adds that it is an inevitable by-product in all international operations. As interest rates are closely related to currency risks, a definition for interest rate risk is also given. Cusatis (2005: 43) defines the interest rate risk as the risk that changes in market levels of interest rates will adversely affect the value of an investment, asset or liability.

The importance of exchange rate and interest rate management has increased dramatically over the last 25 years. International trade has expanded and the volatility of exchange rates has increased since the collapse of the Bretton Woods fixed exchange rate system in 1972. The collapse increased the importance of managing exchange risk, while the volatility of interest rates and the size and complexity of company borrowing have generated the need for hedging the risks. (Watson 1998: 332) Smithson (1998: 1) argues that unpredicted changes in exchange rates can create strong new competitors that can cost lost revenue for the corporation.

The foreign exchange market is by far the largest and most liquid market in the world. (Cusatis 2005: 251)

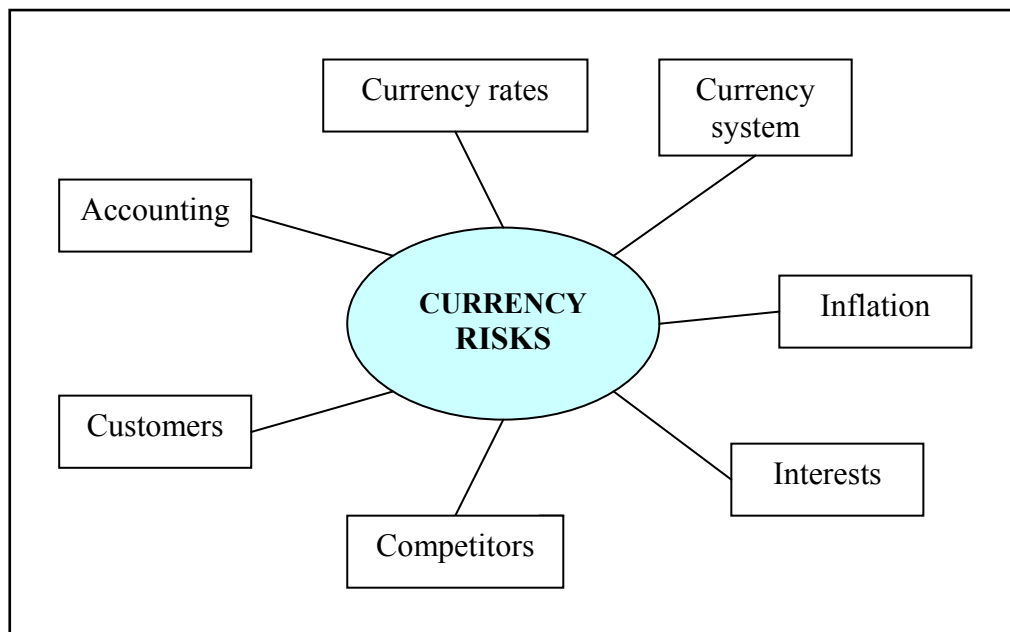
As business becomes more and more global, corporations conduct an increasing number of their transactions in foreign currencies. Many domestic companies export finished goods for sales overseas or import supplies from foreign manufacturers abroad. Multinational corporations (MNCs), which operate in foreign markets, may have sales and production inputs paid in local currencies and debt denominated in foreign currencies, which causes currency risk. (Cusatis 2005: 229)

All companies that transact in foreign markets are exposed to exchange rate risk, which is defined as the risk the company's financial performance will be affected by exchange rate fluctuations. (Cusatis 2005:229)

Reducing the total risk can also ensure that the company will not run out of cash to fund its planned investments and daily expenses. (Shapiro 1999:284)

3.2 Recognition of Currency Risks

Companies do their business in an environment, where several factors can cause risk to their business. In order to manage all possible risks, must all the risks be first recognized. Kasanen (1996: 100-101) represents a managing model for currency risks, as shown on Picture 3. Accounting, currency rates, currency system, inflation, interests, competitors and customers are all present in business environment and have its own impact in it. (Kasanen 1996: 100-101) All mentioned need to be managed, in order to avoid unwanted risk exposures.



PICTURE 3: MANAGING MODEL FOR CURRENCY RISKS
SOURCE: KASANEN 1996:101

Pike (1999:454) divides the exchange rate risk in three categories: transaction exposure, translation exposure and economic exposure.

Transaction exposure is the risk we are subjected to whenever we physically convert from one currency to another (Murray 2005), for example a British company having a contract to buy goods worth US\$10 million from a US manufacturer over certain period of time. The rate of exchange between the British pound and the US dollar is certain amount at the point of contract, but at the time of payment, it may be better or worse. Similar risks apply also to the expected cash flows, when a company is to receive payments in foreign currency. The unexpected changes in exchange rates can inflict substantial losses unless the risks are under control. (Pike 1999: 454)

Translation exposure refers to the value of the company's assets and liabilities denominated in currencies other than the home currency. In other words, translation exposure reflects the change in the value of the firm as foreign

assets are converted to home currency. This exposure is often forgotten in corporations, according to Smithson's (1998) research. Example of this risk is for example a Swedish company that purchases a Spanish hotel and finances it with euro borrowing. The hotel is likely to remain its value, but the exchange rate can fluctuate and when it is translated back to Swedish kronas for consolidation purposes, the value might have fallen or increased. (Watson 1998: 337, Smithson 1998: 8)

Translation exposure is concerned with values and transaction exposure is concerned with cash flows. In other words, the difference is that transaction exposure refers to the items set out in the Profit and Loss Account and translation exposure is in most cases concerned with items set out in the Balance Sheet. (Pike 1999: 456)

Pike (1999: 457) mentions that translation risk is sometimes argued to be purely an accounting issue, and it relates to past transactions and has an impact on the economic value of the firm and thus there is no need to hedge. However, they state that this kind of attitude overlooks the possible effects on key performance measures and ratios.

Economic exposure or economic risk refers to changes in the value of a firm's cash flows associated with an unexpected change in exchange rates. In other words, it refers to the risk of long-term movements in exchange rates and national economies undermining the international competitiveness of a company. For example, a Finnish company, solely based in Finland, buys all its raw material and sells all its finished goods in the domestic market. It does not face any transaction or translation risk, but it does face economic risk in form of foreign competitors that have similar products in the market. If the euro appreciates against the US dollar, the Finnish company will lose its competitive edge. (Watson 1998: 337)

The effect of exchange rate fluctuations may be more complex than simply the conversion of foreign currency to domestic currency or vice versa. It is more general type of risk than transaction and translation risk and is almost impossible to avoid. (Watson 1998: 337)

As managing the currency risks is crucial for companies, the available tools for hedging the risks need to be explained. In the following chapter the financial derivatives, futures contracts, forward contracts, swaps and options will be introduced and compared. Also natural hedging methods are outlined.

4. Hedging

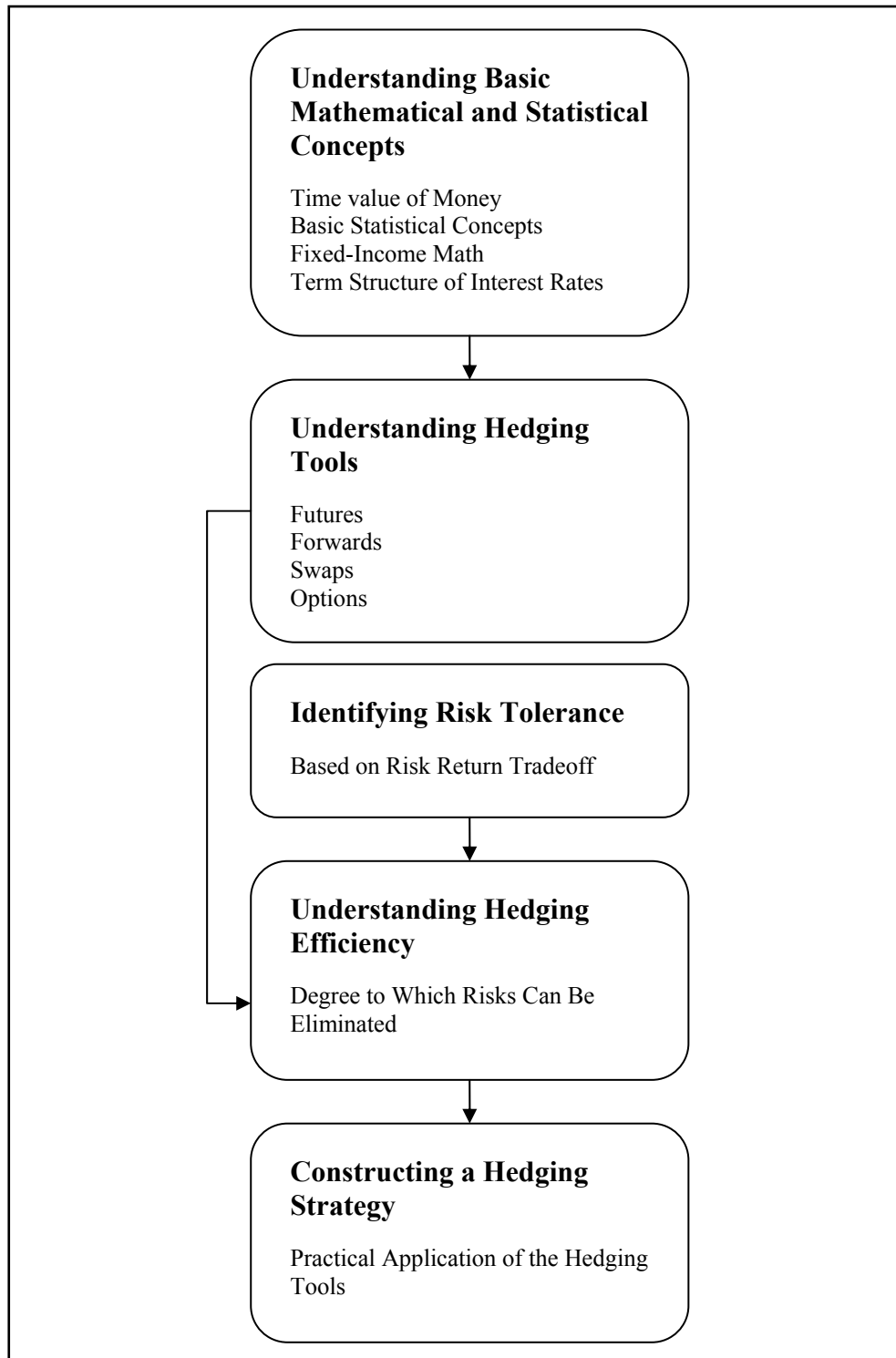
4.1 Introduction to Hedging

The purpose of hedging is not to make money, but to reduce the risk of the business. By reducing the risk, financial planning is made easier and in extreme cases hedging can even avoid bankruptcy. (Brealey 2004: 666) Most of the hedging instruments used today have been developed in the past 30 years, and according to Cusatis (2005: 2) the same trend will continue. The used concepts in hedging are mathematical and statistical and the tool used for a specific purpose depends on the prevailing market conditions and hedging objectives. (Cusatis 2005: 2)

The construction of the hedging strategy begins with identifying risk tolerance. Even though hedging is not appropriate for all market participants, it suits for most purposes. The same risk may be hedged to different degrees, depending on the choices made. After determining the level of risk tolerance, an analysis of hedging efficiency within that market must be performed. This refers to the amount of risk that can be removed with a particular hedging tool. The result may be that the risk is too expensive to remove or even impossible, although the intention has been to be able to eliminate it. (Cusatis 2005:4, Shapiro 1999: 282)

Cusatis (2005: 4) states that identifying risk tolerance is a major part of the hedging process. Every manager must consider which degree of risk they are willing to accept. The risk-return trade-off is a fundamental concept of finance, higher risk causes higher volatility and higher expected returns. Also, the probability of loss increases with higher risk. Hedgers pay for a reduction in risk by accepting a lower expected return.

Some companies decide to fully hedge currency risk, arguing that currency exposure is uncompensated volatility, while others leave exposure fully unhedged, assuming that currency movements will wash out over the long run. However, neither extreme is optimal. Full hedging can turn out to be expensive, in terms of outright costs or opportunities lost if the foreign currency appreciates. If left completely unhedged, a company is vulnerable to substantial volatility. The optimal hedge ratio lies somewhere in between and varies by company and over time. (Normand 2003: 2)



PICTURE 4: SYSTEMATIC APPROACH TO HEDGING
SOURCE: CUSATIS 2005:6

Cusatis (2005) has come up with a systematic approach to hedging, as illustrated in picture 4. The process starts with understanding basic mathematical and statistical concepts, such as time value of money and fixed-income math. These will not be discussed in this paper, as it is assumed to be

in the reader's knowledge. Second step is to understand the hedging tools that are available. Futures contracts, forward contracts, swaps and options are the common tools used to minimize the risk. These will be discussed closely on the following pages. Identifying risk tolerance and understanding the degree to which the risks can be eliminated to, is an essential part of the process. Last step is to apply the strategy. However, constant evaluation is required. Hedging is an on-going process, continuous monitoring and adjusting is a necessity as the markets can change promptly. (Cusatis 2005: 7-8)

Over the last 30 years the use of external hedging instruments has increased dramatically. Companies can choose from a number of derivative instruments, including futures contracts, forward contracts, swaps, options and natural hedgers. Derivatives can also be divided in two groups based on the way they are traded. Some are standardized traded derivatives and others are bank-created over-the-counter derivatives. (Watson 1998: 340)

4.2 Futures Contracts

A futures contract is a price-fixing mechanism that involves a legally binding commitment to buy or sell a prespecified quantity of a specified asset at a specified date in the future. Some futures contracts require physical delivery of the asset and others are cash-settled. In fact, only few futures contracts are held to the maturity and exercised, the majority are closed through a reversing trade on the futures exchange. Futures contracts are traded on organized exchanges. The oldest one is the Chicago Board of Trade (CBOT). (Smithson 1998: 89)

The term of the futures contract is most commonly from three months to a year. No money is exchanged on the trade date, but both, the seller and the buyer are obligated to fulfil their contractual agreement at the end of the contract and make mark-to-market adjustments daily. (Cusatis 2005: 97)

Futures contract market is highly standardized. They exist only for the main currencies and are for specified amounts and also the choice of delivery dates is limited. The advantage of the standardization is a very low-cost market in currency futures. Therefore, huge numbers of contracts are bought and sold daily. (Brealey 2004:618)

The buyer or owner of the futures contract takes a *long* position and can take delivery of the underlying asset at maturity for the contractual price. The seller or writer of the futures contract is said to take a *short* position. He or she must deliver the underlying asset if it is held to maturity. In practice, most buyers as well as sellers do not hold contracts until delivery of the underlying asset is required. Instead of holding it until delivery, they close out the contract by selling or buying an offsetting amount of contracts before the delivery date. This

provides an opportunity for hedgers and speculators to lock in asset prices without requiring the burden of delivery. (Cusatis 2005: 97)

The payoff profile for a futures contract at maturity is dependent on the change in value of the underlying asset. The value of a long position increases as the spot or cash price of the underlying asset increases and conversely, the value of short futures position increases as the cash price of the underlying asset decreases. Picture 5 below illustrates the payoff at maturity for a long and short futures position with same contract price, when time value of money is not considered. The payoff profiles intersect at the initial futures contract price, and the sum of the two contracts at maturity always equals zero. Cusatis (2005) provides the formulation of the payoff on long and short positions in the futures market:

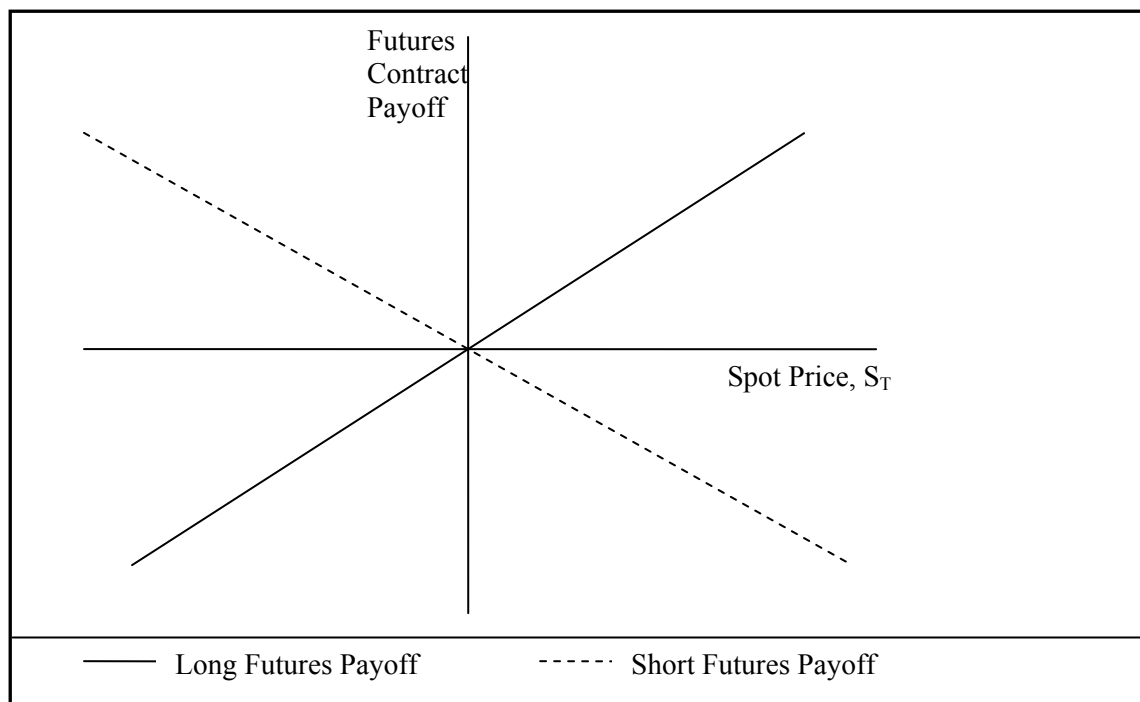
F_0 = initial futures price (at settlement)

S_n = spot asset price (at maturity)

Long Position Payoff = $S_n - F_0$

Short Position Payoff = $F_0 - S_n$

Long Position Payoff + Short Position Payoff = 0



PICTURE 5: FUTURES CONTRACT CUMULATIVE NET PAYOFF
SOURCE: CUSATIS 2005

The futures market involves two groups, hedgers and speculators. Hedgers have exposure to the price of a commodity, security or index and use futures to reduce that exposure. Speculators are risk takers, who wish to capitalize according to their belief about expected futures price changes. These two

participants complete the market and make it more efficient allowing a transfer of risk between parties. (Cusatis 2005:100)

One form of futures contracts is currency futures. Currency futures help organizations with transactions in more than one currency to establish a fixed exchange rate, and this way to reduce the risk of money loss. Shifts in exchange rates can significantly affect borrowing costs, investment income, and projected cash flows of the multinational corporation that borrow and lend in foreign currencies. By using currency futures, the corporation can lower the volatility in cash flows caused by exchange rate fluctuations. Also like many contracts, currency futures are rarely held to the delivery date. (Cusatis 2005:111)

The futures price for a currency futures contract is calculated to be a future exchange rate. The two most popular currencies for currency futures contracts are the Japanese yen and the euro. The value of currency futures is based on the concept of interest rate parity and it is assumed that exchange rates will adjust to equate differentials in interest rates between countries. Therefore, if the foreign interest rates are higher than domestic interest rates, the gain, if any, received from investing in foreign currencies will be lost when currency is exchanged back in the future. (Cusatis 2005:112)

The futures contracts have advantages and disadvantages, as every derivative instrument. One advantage is, that there is no up-front premium to be paid, unlike in options, as we will learn later. Secondly, futures are tradable and can be bought and sold on a secondary market, unlike their over-the-counter counterparts. Lastly, as the futures contracts are marked to the market, the favourable movements in interest and exchange rates are immediately credited to a company's margin account. The biggest drawback is that, because futures are standardized, it is difficult to find a perfect hedge regarding the principal to be hedged and the maturity. Even though there is no premium, there are costs involved. There is opportunity cost of the margin requirement and possibly also extra margins may be required as interest or exchange rates move adversely. (Watson 1998: 344)

4.3 Forward Contracts

Smithson (1998) defines forward contracts: "A forward contract is a contract made today for the delivery of an asset in the future". The buyer agrees to pay a predetermined amount at a specified date in the future to receive a specified amount of currency. The most notable forward market is the foreign exchange forward market, in which the current volume is in excess of two third of a trillion dollars a day in 1998. (Smithson 1998:54)

The forward contracts are very similar to futures contracts. However, there are a few significant differences between these two. Firstly, forward contracts can be

tailor made to meet the customer's need, where as futures are highly standardized contracts that trade on organized futures markets for specific delivery dates only. Forward contracts are private deals between two individuals, who can sign a forward contract for any amount to mature at any time they agree on, instead of being traded by organized exchanges only, as futures contracts are. (Shapiro 1999:157)

Forward contracts are normally available for 30-day, 60-day, 90-day, 180-day or 360-day delivery or the banks can also tailor forwards for odd maturities, if so needed to meet the needs of their customer. Longer-term contracts can be arranged for widely traded currencies, such as the pound sterling, the euro, the US dollar or Japanese Yen. The forward exchange operation carries the same credit risk as spot transactions, but it is divided on a longer period of time. (Shapiro 1999:157, 161)

The table 1 below clearly defines the differences between futures and forwards contracts.

	FUTURES CONTRACT	FORWARD CONTRACT
Trading	In a competitive arena	By telephone or fax
Regulation	By Commodity Futures Trading Commission	Self-regulating
Frequency of Delivery	Less than 1% are settled by delivery	More than 90% are settled by delivery
Size of Contract	Standardized in terms of currency amount	Individually tailored, tend to be larger than futures
Delivery Date	Only on a few specified dates a year	Delivery on any date
Settlement	Daily, gains can be withdrawn and losses collected on daily basis	On date that has been agreed on between bank and the customer
Quotes	In American terms (dollars per one foreign currency unit)	In European terms (units of local currency per US dollar)
Transaction costs	Entail brokers fees for buy and sell orders	Based on bid-ask spread
Margins	Required of all participants	Not required
Credit Risk	The Exchange's Clearing house is the opposite side, reduces credit risk	Borne by each party of the contract, credit limits are set for each customer

TABLE 1: BASIC DIFFERENCIES BETWEEN FORWARD AND FUTURES CONTRACTS SOURCE: SHAPIRO 1999

4.4 Swaps

Swaps are the newest of the risk management products, the introduction took place in the early 1980s to facilitate multinational companies' access to international capital markets. At the moment the swap market is one of the largest and fastest growing derivative markets. The growth from 2002 to 2003 was 21 %. (Watson 1998: 350, Smithson 1998: 140, Cusatis 2005: 133)

Shapiro (1999: 559) explains, currency swap is an exchange of debt-service obligations denominated in one currency for the service on pre-determined principal amount of debt denominated in another currency. In Brealey's (2004: 675) words, swap is an arrangement by two counterparts to exchange one stream of cash flows for another.

In swaps markets companies raise funds in "vehicle" currencies, which they can borrow relatively cheaply, but which is not the currency the debt is required in. Then they swap the currencies into more preferred one at a lower rate than if the funds were borrowed directly. (Watson 1998: 350)

Swaps are transactions, which are structured based on standard agreements established by the International Swaps and Derivatives Association, Inc. (ISDA). Swaps differ from exchange-traded derivatives, because there is counterparty risk involved. This risk refers to the possibility that one of the parties might fail to perform under the contract. The risk is important to keep in mind, but it can be managed through diversification of counterparties. Despite of this risk, the swap market functions efficiently. (Cusatis 2005: 133)

There are several types of swaps available, the most common ones being currency swap and interest rate swap. These two will be explained next. Other types of swaps are cross-currency swaps, equity swaps, basis swaps, credit default swaps and total rate of return swaps. (Smithson 1998:144-146, Cusatis 2005: 133)

The currency swaps were the first one to be developed, although interest rate swap followed closely on the heels. At the time when Watson et al did their investigation and writing of the book, in 1998, the interest rate swaps were larger, in terms of size and importance. (Watson 1998: 350)

Currency swap is most easily understood by comparison with an interest rate swap. An interest rate swap is a contract to exchange cash flow streams that might be associated with some fixed income obligations, for example swapping the cash flows of a fixed rate loan for those of a floating rate loan. In an interest rate swap, the cash flow streams are in the same currency. With a currency swap, they are in different currencies. (Brealey 2004: 675, Smithson 1998: 144)

Currency swaps enable companies to gain the use of funds in a foreign currency, but at the same time avoid any exchange rate risk (transaction risk) on the principal or servicing payments. Also, currency swaps can be used to

obtain a particular currency at a more favorable rate than if a company borrowed the currency itself. (Watson 1998: 352)

Interest rate swaps are used to hedge against adverse interest rate movements or to achieve a chosen blend of fixed and floating rate debt (Watson 1998: 350). The contract in interest rate swap is between two counterparts, a floating-rate payer and a fixed-rate payer. Together they agree to exchange net payments at a series of future points in time. A notional principal amount is used in calculating the amount of the net payments. This type of swap can have a maturity or tenor in excess of 30 years. (Cusatis 2005: 134) The principal is “notional” in the sense that neither party owes it to the other, as would be the case in a loan from the other party (Smithson 1998: 144).

Interest rate swaps are typically quoted in terms of the fixed swap rate and the rate is set on the pricing date of the swap. In case of floating rate, the rate is established for the first payment based on market levels on the pricing date and reset periodically based on market levels. The floating rate is based on the three-month LIBOR. (Cusatis 2005: 134)

The major advantage of the swaps over other derivatives, for example option and futures derivatives, is that swaps can be used to lock into interest and exchange rates for much longer periods of time. The arrangement fees are usually much lower than the premiums paid on options, while swaps are more flexible from the principle as well as duration point of view than in standardized derivatives. Also, swaps do not require frequent monitoring or reviewing. (Watson 1998: 350, 354)

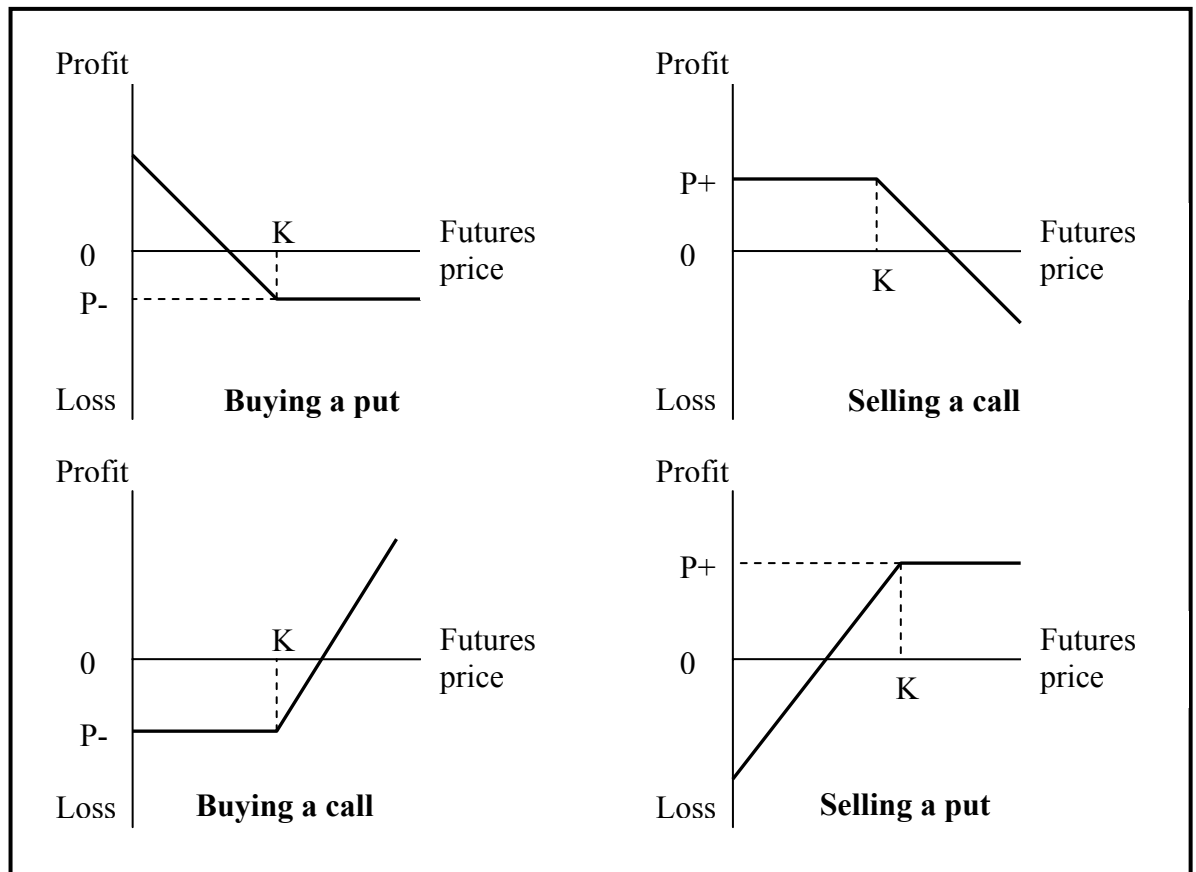
However, swaps are not entirely free of risks. A swap prevents a company from benefiting from favorable movements in exchange and interest rates, unless of course it defaults on the agreement. This risk of interest default is known as counterparty risk. Also this risk can be minimized, if the companies entering into swap agreement do business only with counterparties with an acceptable credit standing. (Watson 1998: 354)

4.5 Options

Watson (1998: 344) states that currency and interest rate options give their holders the right to borrow or lend at a specific interest rate or to buy or sell foreign currency at a specific exchange rate. This provides the opportunity to take advantage of favourable interest and exchange rate movements. Cusatis (2005: 167) explains further that a hedger, who uses options to protect against interest and exchange rate movements, is not obligated to perform at the maturity date of the option. Therefore, an option contract is more valuable than futures and swap contracts, other things being equal. Further, since options are more valuable than other hedging tools, they are also the most expensive ones.

Options are divided in call options and put options. A call options gives its holder the right to buy an underlying asset at a prespecified price, also known as strike price, on or before a specified exercise date. A put option gives the buyer the right to sell an underlying asset at the strike price. (Brealey 2004: 642) As in the futures and swaps markets, the two parties together complete the market. The options market is referred to as zero-sum game, since gains on an option position are equal to losses on the opposite option position. (Cusatis 2005: 167)

Picture 6 below shows the profit and loss associated with buying or selling put and call interest rate options. K represents the strike price at which the futures can be bought or sold and P represents the premium paid, if the option is bought or the premium received, if the option is sold. (Watson 1998: 345)



PICTURE 6: PAY-OFFS OF PURCHASING AND SELLING OF PUT AND CALL
SOURCE: WATSON: 1998

These diagrams clearly show that when selling call and put options, the downside risk, risk of loss, is unlimited. Therefore, only buying of puts and calls is recommended for hedging commercial transactions. This limits the downside risk for a company to the loss of the premium paid for the option. (Watson 1998: 345)

There are two distinct categories of options available: over-the-counter options and traded options. (Watson 1998: 344)

4.5.1 Over-the-Counter Options

Over-the-counter options (OTC) can be purchased from financial institutions such as banks and can be tailor made to meet individual company requirements. OTC options are contracts and specifications are generally negotiated as to the amount, exercise price and rights, underlying instrument and expiration. Further, the OTC options are subdivided into caps, floors and collars, specify a principal amount, a time period over which the option runs and a particular currency and interest rate. (Watson 1998: 344, Shapiro 1999: 195)

To protect against rising interest rates, the firm can choose to use interest rate cap. This is especially common way of protection if the firm is funded with floating-rate debt. If the specified interest rate rises above predetermined level, the financial institution is required to pay the excess, thereby guaranteeing or capping the maximum rate of interest the company will pay. In other words, if interest rates rise, gains on the cap would offset the increased cost of borrowing. Also, if the rates fall, the firm would still be able to take advantage of the lower borrowing cost. The price of interest rate cap is the premium paid. (Watson 1998: 344, Smithson 1998: 244)

Interest rate floors are used to hedge natural long exposures to interest rates. With an interest rate floor, if a specified interest rate falls below a certain rate, the financial institution will pay the difference to the firm. Floors allow companies that are receiving floating rate interest income to guarantee a minimum level of receipts. (Watson 1998: 344, Smithson 1998: 245)

Buying and selling caps and floors are the four basic hedging instruments for interest rate options. However, instead of using only one single instrument, most firms use combinations of these in order to achieve the maximum hedge. (Smithson 1998: 245)

A combination of a floor and cap is called a collar. A collar keeps an agreed interest rate or exchange rate between an upper and lower limit. The use of collar is cheaper for companies compared to using caps and floors on their own. If a company with floating rate income takes out a collar to keep the interest rate between six and eight per cent, it is in fact purchasing a floor of six per cent from the bank and at the same time selling the bank a cap of eight per cent. In different words, a collar for a company wanting to keep its borrowing rate between an upper and lower limit involves the combination of purchasing a floor and selling a cap. (Watson 1998: 345)

The decision whether to use a cap or collar often depends on current market conditions and company's hedging objectives. Caps tend to be more expensive as the yield curve steepens as the forward rates rise. Also, the volatility of the

underlying interest rate increases. Market conditions can lead the company to want to change the extent or structure of its hedge and options provide the flexibility for that. The hedger has the ability to modify the existing hedge with subsequent options trades. If the company originally purchased a cap for protection, they can create a collar by selling a floor sometime in the future when market conditions are more favourable. (Smithson 1998: 249)

4.5.2 Traded Options

Most options are traded on organized exchanges, this is the reason why traded options are in some texts called also exchange-traded options. Exchange traded option contracts are issued, guaranteed and cleared by the Options Clearing Corporation (OCC). The largest options market in the world is the Chicago Board Options Exchange (CBOE) which trades share, interest and currency options. The options are also traded on the American Stock Exchange (AMEX), the Pacific Exchange (PE) and the Philadelphia Stock Exchange (PHLX). (Cusatis 2005: 168, Watson 1998: 345)

Traded options are similar to over-the-counter options, except that they are standardized with respect to the principal amount and the maturity date specified in the contract. Because of their standardized nature, the traded options can be bought and sold on a secondary market. (Cusatis 2005: 168)

Traded options mature in three month cycles, March, June, September and December. There are two different types of traded options available, put and call options. Put options carry the right to sell currency or to lend it at a fixed rate and call option carry the right to buy currency or to borrow it at a fixed rate. Further, the options are also divided into American and European options. The difference is that the American options can be exercised at any time up to the expiration date, while European options are exercisable only on the maturity date. (Watson 1998: 345, Shapiro 1999: 179)

As all other hedging tools, also options have advantages and disadvantages. Using the options is not the cheapest method of hedging, due to high premiums, but the major advantage is the opportunity to benefit from favourable movements in exchange and interest rates. In addition to the high price, the use of options can make it difficult to create a hedge, which matches perfectly both the duration and size of a company's exposure, just the same problem as with futures contracts. Standardization causes problems; therefore, over-the-counter options may represent a more appropriate choice than traded options for the hedging of significant non-standard exposures. (Watson 1998: 349-350)

4.6 Summary of Derivative Hedging Instruments

Picture 2 summarizes the financial derivatives that are available in the market. Cusatis (2005: 250) represents the advantages and disadvantages of each hedging tool, which have been introduced above. There are a few things to be observed more closely.

Currency options is the only hedging tool that can benefit from favourable exchange rate movements, the other tools cannot. However, options are expensive form of hedging. Currency futures have the lowest transaction costs, due to standardized terms. Futures are also the only ones that are standardized, other tools can be customized according to customers' wishes. (Cusatis 2005: 250)

HEDGE	PROS	CONS
Currency Futures	Liquid	Standardized terms
	Low transaction costs	Daily mark-to-market
		May require rolling hedge
		Basis risk
		No benefit from favourable exchange rate movements
Currency Forwards	Customized terms	Illiquid
	No basis risk	High transactions costs
	No intermediate cash flows	No benefit from favourable exchange rate movements
Currency Swaps	Customized terms	Expensive
	Useful for recurrent cash flows	No benefit from favourable exchange rate movements
Currency Options	Benefit from favourable exchange rate fluctuations	Expensive

TABLE 2: COMPARISON OF HEDGING ALTERNATIVES
SOURCE: CUSATIS 2005

4.7 Internal Hedging Methods

All hedging tools mentioned above have been external financial derivatives. Internal currency risk management refers to the hedging of either interest or exchange rate risk by the way in which a company structures its assets and liabilities. Internal hedging tools are cheaper than external, as the use of external methods incurs a range of costs and arrangement fees. However,

companies can rarely hedge all their exposures with internal methods. (Watson 1998: 338)

There are two general methods of internal hedging that can be used to manage interest rate exposure within firm's balance sheet, smoothing and matching. Smoothing refers to maintaining a balance between fixed rate and floating rate borrowing. If interest rates rise, the advantage of the relatively cheaper fixed rate loan will be cancelled out by the relatively more expensive floating rate loan. Conversely, if interest rates fall, the advantage of the cheaper floating rate loan will be cancelled out by the more expensive fixed rate loan. (Watson 1998: 338)

Matching involves the internal matching of liabilities and assets, which both have a common interest rate. This is possible for a decentralized group, which has two or more subsidiaries. One subsidiary may be investing in the money markets at LIBOR (London Inter-Bank Offer Rate), while the other is borrowing through the same money market at LIBOR. If LIBOR rises, one subsidiary's borrowing cost increases and the other's returns increase. This matches the assets and liabilities. This method is most likely used by financial institutions, who derive a large amount of their income from interest received on advances. (Watson 1998: 338)

Also exchange rate risk can be hedged with internal methods. It is easier to hedge transaction and translation risk internally, than it is to hedge economic risk. Economic risk is harder to quantify and the risk occurs on a much longer period, which makes it difficult to hedge with internal methods. Altogether there are four different methods available: matching, netting, leading and lagging and finally invoicing in the domestic currency. (Watson 1998: 338)

Matching allows the company to reduce the amount of translation or transaction risk. In order to mitigate translation risk, a firm acquiring a foreign asset should borrow funds denominated in the home currency, in which it is purchasing the asset, matching if possible to term of the loan to the expected economic life of an asset. As the exchange rate varies, the translated values of the asset and liability will increase and decrease. To mitigate transaction risk, a company selling goods for example in the US with prices denominated in dollars could import raw materials through a supplier that invoices also in dollars. (Watson 1998: 338) Also, manufacturing in the country where the goods are sold creates a natural hedge (Millman 1990: 56).

Netting is utilized primarily by multinational companies with overseas subsidiaries or large organizations where financial transactions are made on a decentralized basis. Companies net out all their different foreign currency transactions at group office level and then hedge any net exposure. (Watson 1998: 338)

Leading and lagging of payments can be used by companies that face transactions risk due to the need to settle foreign currency denominated

overseas debtors. The method involves settling foreign currency accounts either at the beginning, leading, or after the end, lagging, of the allowed credit period. The choice of whether to lead or lag the settlement depends on the company's expectations of future exchange rate movements. (Watson 1998: 338)

The last internal hedging method is invoicing in the home currency. A company exporting goods could invoice their customer in domestic currency, instead of customer's domestic currency. The transaction risk is then transferred to the foreign company, who is buying the goods. (Smithson 1998: 559, Watson 1998: 338)

4.8 Case: *Stora Enso and UPM-Kymmene Corporation*

Stora Enso and UPM-Kymmene Corporation were selected as example companies, because of their leading roles in the paper industry world wide. Both companies have a substantial exporting network and presence in all continents.

Stora Enso Corporation is the world's oldest corporate, tracing its origins back over seven hundred years. The company is a multinational integrated paper, packaging and forest products company producing publication and fine papers, packaging boards and wood products. In these sectors Stora Enso is a global market leader. In 2004 the turnover of Stora Enso totaled 12 395 million euros. It has operations in more than 40 countries. Therefore, the corporation must think about the hedging from several currencies point of view. (Stora Enso 2005)

The main currency of Stora Enso is the euro. Equity is in euros and dividends are paid also in euros. Other main currencies are the US dollar, British sterling and Swedish krona. The euro has reduced work and risks in treasury operations during the past few years and it would benefit the company if the euro zone grew further in the Europe. (Currency issue is key for Nordic Countries 2003: 44-45)

Primarily Stora Enso uses so called natural hedges, with intention to have costs and revenues in the same currency. The part that cannot be covered with natural hedges, which is half of the net cash flow, is hedged with financial derivatives, mostly using forward contracts. (Currency issue is key for Nordic Countries 2003: 41-42)

The other paper industry company, a Finnish based UPM-Kymmene is facing similar problems in similar market as Stora Enso. UPM-Kymmene focus on magazine papers, newsprint, fine and speciality papers, converting materials and wood products. It has production in 15 countries and an extensive sales network comprising over 170 sales and distribution companies around the world. The turnover of UPM-Kymmene Corporation totaled 9 820 million euros in the year 2004. Approximately half of the net currency flow is in the US dollars

and one third in British sterling. The corporation follows a hedging strategy in which 50 per cent of the net currency flow is hedged 12 months in the future. The most used hedging tool is forward contracts. (UPM-Kymmene, UPM-Kymmene 2005: 12)

Most of UPM-Kymmene's businesses take place in the euro zone. However, a substantial percentage is outside Europe, therefore, the company is exposed to exchange rate fluctuations. Mainly the risk exposure is in export business, because the sales are in different currency than the production costs. (UPM-Kymmene 2005: 13)

5. European Monetary Union

5.1 Introduction to EMU

Pitchford (1997: 19) defined a monetary union as a group of countries or regions that use the same currency.

The European Monetary Union, EMU, was established on January 1st, 1999, as the new single currency of the EMU member countries, the euro, was quoted for the first time on the international exchange markets. The history of EMU dates back to 1950s when the Schuman Plan was introduced. In the late 1970s European monetary integration appeared to be running into the sand, when all the attention was on the European Community (EC) integration. However, the dream of EMU was still alive. The European Monetary System, EMS, started in March 1979 and its most important achievement was Exchange Rate Mechanism, ERM, which purpose was to stabilize currencies of all member countries through multilateral parity grid. Stage two was to lock the exchange rates via a progressive hardening of the ERM. Stage three was the beginning of EMU, with permanent locking of exchange rates, a fully independent European System of Central Banks in charge of a single monetary policy, the goal being a single currency. (Pitchford 1997: 19-31)

The Maastricht Treaty in December 1991 was a crucial moment in the European integration. The treaty's main economic criteria related to inflation, fiscal positions, exchange rate stability and long-term interest rates. Every country that wanted to join EMU would have to fulfill these conditions set in the Maastricht Treaty. (Pitchford 1997: 31)

The last step towards the single currency was taken on January 1st, 1999 when the euro was adopted in 11 member countries, Belgium, Germany, Spain, France, Ireland, Italy, Luxembourg, the Netherlands, Austria, Portugal and Finland. From the beginning of 1999, the euro has been used as account currency and in the beginning of 2002 the euro banknotes and coins were put in circulation. Greece joined in the EMU in the beginning of 2001, being the 12th member country. (Europa, Gateway to the European Union 2005)

The countries that joined the EU in May 2004 will join the euro area as soon as they fulfill the necessary conditions on the basis of the Maastricht convergence criteria. These countries are Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Slovenia, Slovakia. UK and Denmark have a special status allowing them to decide when, and if, they will join the euro area. (Europa, Gateway to the European Union 2005)

Twelve separate currencies are now one and the volatility that once characterized Europe's foreign exchange markets is a thing of the past. This

allows corporate treasurers to severely reduce their reliance on cross-currency hedges and making it easier for them to manage cash flows efficiently. (FX risk after EMU 1999: 18)

As Czech Republic joined the EU last year, they are now having serious debates on the advantages and disadvantages of the euro. On table 3 the benefits and costs are mentioned from the Czech point of view, but the pros and cons are the same for every country and the same discussions have taken place in all euro zone countries before the adoption of the euro. (Saroč 2005: 7)

BENEFITS

1. Decrease of transaction and administrative costs of a multicurrency environment, e.g. costs of managing interest rate and exchange rate volatility, calculations of prices in international business or decrease of the amount of forex reserve required in portfolios.
2. The single currency is stronger compared to domestic currencies of small and open economies. The single central bank is in a better position to maintain stability.
3. Trade and investment flows will increase within the monetary union.
4. The single currency can eventually become an international reserve currency, which opens a possibility to finance current account deficit of the monetary union with its own currency.
5. Single currency is a guarantee and catalyst of economic and political integration.

COSTS

1. Loss of an independent monetary policy. Base interest rates are determined by single central bank according to needs of the whole monetary area, which does not have to be necessarily optimal for the local economy.
2. Loss of an independent exchange rate as a channel of the balance of payments adjustment mechanism.
3. Decrease autonomy of fiscal policy due to a need to obey common fiscal rules of the monetary union.
4. Costs will gradually decrease as the economic cycles will harmonize and the economy will eventually catch up to the core of the monetary union.
5. Costs due to possible collapse of the monetary union.

TABLE 3: COSTS AND BENEFITS OF A SINGLE CURRENCY ADOPTION
SOURCE: SAROČ 2005

There are few things mentioned on the table that are worth highlighting. All member countries will benefit from the decrease of transaction and administrative costs. The euro is a strong currency compared to many other currencies that existed before adoption of the single currency. Also its stability

exceeds the preceding currencies. Saroch argues that these will benefit all membering countries to a great extent.

5.2 EMU's Impact on Currency Risks

A single currency is a natural complement to the European Union's single market, allowing it to function more efficiently and enabling growth, through eliminating exchange rate fluctuations. This provides a more stable environment for trade within the euro area by reducing risks and uncertainties for both importers and exporters, who in the past had to deal with currency movements on their account. (Europa, Gateway to the European Union 2005)

In practice, joining the EMU has meant that the domestic market for companies has grown significantly. This has had a great impact for small countries, which in the past have been importing and exporting goods over currency borders in large volumes. For example, Finland has benefited of this, although high volumes are still traded outside the euro zone. Small countries have had another gain as well. In the past some currencies, for example Finnish mark, were weak and interest levels were high. The euro has brought lower interest rate levels, as it is one of the main currencies in the world. Also, the euro is considered as a stable currency. (Kasanen 1997: 121)

Various transaction costs have been erased by the euro. These costs are related to the exchange and the management of different currencies due to elimination of exchange rate fluctuations. The following costs have been eliminated: the costs from foreign exchange operations, for example, buying and selling foreign currencies; hedging operations intended to protect companies from adverse exchange rate movements; cross-border payments in foreign currencies, which are typically more expensive and slower than domestic operations; and management of several currency accounts, which complicates currency management and internal accounting systems. (Europa, Gateway to the European Union 2005)

Also, companies can compare the prices of goods and services of their competitors more easily, as they are always expressed in the same currency. Easier price comparison leads to competition and hence leads to lower prices in the short run. (Europa, Gateway to the European Union 2005)

A single currency and an economic and monetary union strengthens Europe's role in international financial markets. As a world currency, the euro is taking on an important role as an international investment and reserve currency, a dollar is no longer the obvious choice. The euro has already become a major currency in which to borrow money. The use of the euro in international trade is also expanding, reflecting Europe's weight in the world economy. A single currency makes Europe a strong partner to trade with. Hopefully, the option of pricing goods and commodities in euro, such as oil and metals for example, will

become more attractive over time. (Europa, Gateway to the European Union 2005)

Although European Monetary Union has numerous positive effects on the market and its member countries, it is also pointed out that there are some pitfalls.

The existing evidence of the exposure to currency risk is mixed. The single currency was supposed to be very stable. However, in the first few years after its introduction the euro depreciated significantly, by one-third of its value, which led to raising fears about its long-term stability. This could have caused an increase in the currency risk premium investors expect from investing in the industry. This decline has been argued to be what turned the minds of the citizens of Denmark and Sweden against the euro. (Francis 2004: 1013)

As most countries, including Finland, still have big percentage of its trade, both import and export in US dollars, the currency risk has not disappeared anywhere (Kasanen 1997: 123).

6. Assumptions

Based on the above research, it is evident that the currency risks cannot be under estimated. Every company must be on top of their risks, meaning that the possible risks need to be recognized, estimated and comparison between different hedging methods must be conducted regularly, in order to fully manage the risks. If this process is neglected, the risks can cause severe losses and in the worst scenario, the result can be fatal for the company.

As there are so many details involved in risk management; exchange rates, interest levels, complicated hedging tools and quickly changing market conditions, it is important to have skilful and experienced professionals, who make the decisions regarding which risks are acceptable and which are not. The wrong decisions concerning the used hedging tool can turn out to be remarkably more expensive than leaving the risk unhedged. The currency risks are not the only risks the organizations are exposed to. The currency risks are closely related to interest rate risk, credit risk, transaction and translation risk and so on. Therefore, understanding the big picture is crucial.

There is no possibility to provide such information, as to what hedging tool to use. This depends on too many factors and varies from company to company. Some companies choose to take a bigger risk and others decide to play it safe and hedge the assets and liabilities to a great extent. However, no matter how much is hedged, there is still risk present.

Hedging with financial derivatives can be quite expensive, especially if swaps and options are used. The following questions will rise in every reader's mind. How can hedging benefit us, without creating more costs than what would be caused if no hedge has been used at all? Where is the line drawn between the risks that are acceptable and which are not? How much should a company invest on hedging? These are questions that are not answered in this paper and neither in any other texts available. The answers depend on several factors and are very case sensitive.

Based on the sources used, the only low cost hedging tools are the internal natural hedging methods. As simple as it might sound, matching the currencies of production and invoicing is not always possible. Even though large corporations have production in several countries and in several currency areas, the currencies cannot always be matched, as no company has a plant in each currency area it operates in, especially when talking about large multinational corporations.

The European Monetary Union has had a huge impact on the financial markets, especially on the European market. The domestic arena of each member country suddenly expanded and the single currency has diminished the currency risk between the euro zone countries. The US dollar has traditionally been the currency of the world trade and its position will be difficult to overtake.

The euro has done its best, but it still has a long way to go. In other words, the euro has a big challenge ahead, when it tries to conquer the world as the main currency of trade.

The euro provides a possibility for EMU countries to have risk free, or risk reduced, business worldwide, but as long as the US dollar or any other currency is used as the trading currency, all benefits are not utilized. Of course, the stability of the euro is a big benefit, but the EMU zone based companies should put a lot of effort on changing the operations to the euro worldwide. For example, a Finnish export company that has production in Finland and exports its products to India and has the invoices in US dollars, exposes itself to transaction exposure. If the exchange rate between the euro and the dollar fluctuates, the amount the Indian customer eventually pays can be a significantly lower than the Finnish company assumed at the time of selling. If the invoice was in the euros, there would be no transaction cost involved.

Already companies within the euro zone have saved a lot of hedging costs, thanks to the euro, but in the future the savings will increase as there will be new EMU members in Eastern Europe.

Without the doubt, the risk management should be an integral part of every company's operations. This is the situation now and also will be in the future. Expansion of EMU or home currency trade will not remove the risk completely.

7. Conclusion

The objectives set in the beginning were to understand basic currency risks and tools that can be used to hedge the risks. These objectives were met, as the different types of risks are specified and the financial derivative hedging tools are explained to the reader. The form of presentation is simple, even an inexperienced reader can understand the contents of the paper without prior knowledge of the subject. Detailed information provides an understanding of each tool and the differences between them. The importance of hedging is brought the readers' knowledge.

The intention was to emphasize the importance of EMU and the adoption of the euro for the companies that operate in the euro zone. Unfortunately, such information was very difficult to find, even though there is some publications written, related to changes the euro has caused in these few years it has been in use, but the publications were nowhere to be found.

If I was now beginning the process of writing this from the very early stage, I would concentrate on the practice more. I would interview a few financial managers or equivalent of international companies and find out how hedging is carried out in their company. The comparison between companies would possibly show some differences in the hedging philosophy and the tools used. Also, historical point of view would be a possibility. A close comparison between hedging in 1980s and today in the EMU area would be an interesting topic.

However, this paper was carried out as a literature research, as intended from the very beginning, and no interviews were conducted. If I were to continue this research, the practical side would be the first thing to add.

As a conclusion, the paper can almost be summarized in few sentences. The currency risks are too important to be neglected and without proper actions taken they can cause substantial losses for a company. European Monetary Union has diminished risks between the member countries, but has not erased the risks completely.

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