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Hedging with currency derivatives

- A useful strategy for smaller companies?

Abstract

This is a Bachelor Thesis in Finance that aims to clarify the use and needs of currency options, future and forward contracts for smaller companies in Sweden.

Method and Purpose

A qualitative method is used, where I am conducting interviews with a bank and three smaller and medium sized companies in the Umeå region, to determine what the market has to offer today, and what kind of products the companies ask for from the banks. Theories are based on the theoretical framework and are then generated from the empirical findings. The study is conducted with a hermeneutic scientific ideal, where I seek understanding for how the financial tools and strategies can be applied in practice.

The study aims to answer the following problem formulation:
How do smaller and medium sized local companies hedge against currency fluctuations?

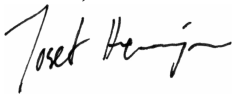
Empirical Findings

All three companies I interviewed had policies and strategies for reducing their exchange rate exposure, and the finance managers are risk averse in the sense that they believe risks should be controlled and reduced as much as is practically possible. The strategies and policies are developed by the company, with help from their banks. The banks do however not write the policies; rather they help and support the finance managers and other key personnel in the process.

Conclusions

Forward contracts are the most commonly used financial tool for the companies when hedging against currency fluctuations. Medium sized companies tend to use forward contracts in their hedge strategies, whilst the smaller company uses foreign loans and checking accounts nominated in foreign currencies as their hedging strategy. Alternative strategies are used when forwards are not suitable, for such reasons as when a discontinuous order flow implies obstacles to make predictions of the cash flow.

Umeå, November 2004



Josef Hemmingsson

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1. INTRODUCTION

In the first chapter of the thesis I present the ideas and thoughts I had before beginning the study, and how the subject was chosen.

1.1. Choice of Subject

One of the first ideas I had before writing this thesis was to do a project related to insurance. I had ideas in the area of insurance mathematics, since I am very interested in mathematics from before. But the ideas I had in this area were too specific to mathematics and were not applicable in finance. So I decided to modify my ideas and look closer on financial instruments for a business. There are many ways a business can handle their risks. Traditional insurance is one tool. But there are alternatives.

1.2. Problem Background

During the years between 1944 and 1971 currencies were extensively controlled by the governments. A system had been established where currencies could only fluctuate within a 1 percent boundary. This implied that some currencies became highly overvalued while others where undervalued. At the end of this era the USD was highly overvalued, i.e. its value was only maintained because of government interventions. Therefore a new agreement was entered, letting the currencies be traded within a 2 ¼ percentage boundary. But in 1973 these boundaries were eliminated and all the major currencies could now be traded freely.[1]

With the introduction of the euro currency (EUR), whereas 12 countries over a night could trade using the same currency, the question was raised in Sweden whether or not to adopt the euro. In a referendum in September 2003, the Swedish people voted "NO" to adopt the euro, and thereby to keep the Swedish national currency (SEK).[2]

The right wing parties, who wanted to adopt the EUR, frequently argued that introducing the EUR in Sweden would stabilize the business environment, especially for smaller companies[3]. When using the EUR the companies would always know what to earn and what to pay when exporting or importing products from other EUR countries.[4]

Insurance can be used to protect the company's buildings, plant and employees. It is a necessary tool to protect the company from catastrophes like fire, flooding, earth quakes or theft. But it can not be used to protect the company from financial impacts such as currency fluctuations. And that is something I found interesting, how a company can use alternative forms of insurance to protect the company's financial income and expenses.

Exporting companies entering a contract today will not deliver the goods for another week, month or an even longer period of time. And since the payment is being made at the time of delivery, the company can not be sure how much they will be paid since the

[1] Madura, Jeff, *Financial Markets and Institutions*, p 403.
[2] *Result of the referendum,* Valmyndigheten.
[3] *The euro is all about peace, jobs, and the welfare system,* Kristdemokraterna.
[4] *Vote yes to the Euro*, Folkpartiet.

foreign currency may, and most certainly will, fluctuate to the local currency. The exchange rates may in a worst case scenario move to such an extent that the company's profit will be wiped out.

To increase stability in the cash flows, and to avoid all unnecessary risks, a company should fix their payments in such a way that they can be certain how much they will be paid in the future for the goods they produce today. Many different strategies can be used to fix the amounts receivable. Agreements with the customers to use our local currency could be one way, but often the buying company sets the standard for what currency is to be used. Therefore the exporting company will be exposed to the fluctuations of the foreign currencies.

A very common strategy amongst larger companies is to use currency derivatives to hedge against currency fluctuations. Larger companies have departments or financial directors managing the hedged positions, and can on a day to day basis update prognoses, trends and positions. Smaller and medium sized companies don't have the same resources, but may still have the same proportional or sometimes even worse exposures. Therefore it is interesting to study how these companies handle the risks involved in international trading, and especially look closer on how exchange rate fluctuations affect the companies' operations.

1.3. Problem Description

How do smaller and medium sized local companies hedge against currency fluctuations?

1.4. Purpose

The purpose of this study is to find a deeper understanding to how well informed the finance directors at smaller and medium sized companies are, as they are to protect the companies' incomes and expenses that are exposed to exchange rate fluctuations.

Another secondary purpose is to see how the relationship with the banks works and what needs to be developed in the business relationship. I will look closer on how alternative strategies can be used when derivatives are not applicable, and study what differences we can see in the strategies depending on the companies' size and operations.

1.5. Delimitations

A selective delimitation is that I will only interview companies in the Umeå and Härnösand regions. This delimitation is made since there are many interesting companies in the area, and I wanted to be able to get in touch with key personnel in the companies, and still have a local view of the problem. Since the companies have their main offices in this region, it is interesting to see if the physical distance to the world market affects the companies, or if they still have the possibilities of getting good service from banks and other global institutions.

This study is limited to smaller and medium sized companies. The derivatives available on the market today are best suited for larger companies such as Ericsson and Volvo. These companies also always have finance directors working full time with cash

management and currency issues. Therefore I would find it more interesting to look closer on how exposed smaller and medium sized companies are to currency fluctuations and how they handle this exposure.

When operating on the world market you will be exposed to exchange rate risks, but also to price risks since prices may vary and fluctuate differently on other markets than your local market.[5] This thesis will however not look at price risks, but focus only on the currency risks involved in international trading.

I choose to study only companies that produce goods for exports, since I during the course of the study learned that it is often the buyer who decides what currency is to be used in the transaction. Hence importing companies can avoid the exchange rate exposure by deciding to always trade in their local currency.

1.6. Definitions, Terminology and Abbreviations

I will in this section define the most basic forms of financial instruments that are useful in the study.

This study is limited to local companies, and by local I mean companies with their main office and administration located in the Umeå region.
Smaller companies are in this study defined as companies with less than 50 employees. Medium sized companies may have more employees, but will in this thesis be defined as companies that have a production of such a kind that it can be monitored by a single finance manager and there is hence no separate finance division in the company administration.

The expression *Ceteris Paribus* will be used in the theoretical chapter in this thesis. *Ceteris Paribus* means *All Other Things Being Equal*[6] and refers to the approach of separating individual factors from a cause, and analyzing how each factors causes changes in a system, disregarding the other factors.

Some abbreviations will be used in this thesis for the currencies. These abbreviations for the currencies are commonly used on the currency market.

SEK - Swedish Krona
EUR - Euro
USD - United States Dollar
CAD - Canadian Dollar
GBP - British Pound
JPY - Japanese Yen
NOK - Norwegian Krona
DKK - Danish Krona
ZAR - South African Rand

[5] Lagerstam, Catharina, *Hedging of Contracts, Anticipated Positions, and Tender Offers - a Study of Corporate Foreign Exchange Rate Risk and / or Price Risk*, p 25-26, 45.
[6] Earman, John; Glymour, Clark; Mitchell, Sandra, *Ceteris Paribus Laws*, p 351 [75].

1.7. Thesis Disposition

After introducing the reader to the problem formulation and purpose in this chapter we will now move on to the theoretical and practical frameworks of the thesis.

Chapter 2 presents the framework for the methodology.

Chapter 3 lays the grounds for the theoretical framework for the study, where we look closer on what financial tools the market provides and how they in practice can be applied for hedging purposes.

Chapter 4 returns to the methodology, this time to set the practical standards for the study that will be performed for this thesis. The interviews will be performed according to the practical framework presented in chapter 4.

Chapter 5 presents the results of the interviews as raw material and the information provided by the respondents lays the ground for upcoming analyses and conclusions.

In Chapter 6 the findings are analyzed and the empirical findings are compared to the theoretical framework.

Chapter 7 presents the conclusions of the study.

Chapter 8 questions if the study has fulfilled its original purpose and idea, and whether it has fulfilled the standards of validity and ethics.

A few suggestions to further studies are finally presented in chapter 9.

1.8. Acknowledgements

First and foremost I want to express my gratitude to Burhan Kawosa for introducing me to international financial management and thank him for awakening my interest in the field of foreign exchange.

I want to thank Umeå School of Business and Economics, the Department of Business Administration and Stellan Nilsson for guidance and help during the course of the work in this study.

I would especially like to thank the four respondents; Mattias Byström, Maria Palmgren, Björn Lenman and Åke Karlsson, for taking their valuable time and sharing important information with me for this study.

2. THEORETICAL METHOD

In this chapter I present the essential theories of methodology. This chapter lays the ground for chapter 4, where I will present the methodological choices that best will suit the study in this thesis. Therefore this chapter is to seen only as a theoretical framework for the methodology and the applications of the methods can be found later in chapter 4.

2.1. Preconceptions

In all studies, the researchers previous experience and views of the matter in the area that is to be studied will affect the approach and in some ways the outcome of the study. If the researcher has a great deal of experience in the area, he will be able to quicker go deeper in to the area. But at the same time his previous experience also may lead to subjective conclusions. Even if the researcher is aware of his preconceptions it is difficult for him to not let it affect the outcome of the study.[7]

Personal experience can work to your advantage, but may also cause problems when performing a research. It is therefore important that the researcher presents his previous experience for the readers in such a way that they can determine if the study is biased or affected by the researcher's personal perspectives in a significant way.[8]

Our preconceptions and previous personal experience can affect the research in different ways. It can for example lead to premature closure, meaning that the researcher believes he has enough information to come to a conclusion, whilst he yet only scratched the surface of the problem. A researcher's previous experience in the subject field may also lead to an asymmetric knowledge base. If the researcher previously focused on specific parts of the area, he may be biased in such a way that he by prejudice puts more trust into certain sources while others are disregarded. This halo effect affects the choice of sources, and thereby leads to a risk that the result of the study becomes biased.[9]

2.2. Scientific Ideal

In methodology there are different ways of viewing underlying information for the study. Positivism states that there is a fundamental truth that can be found when studying a problem. The data that has been collected can be statistically and logically summarized and a conclusion will derive from the information received in the study. Positivism also suggests that there is little or no room for personal interpretations of the data.[10] In paper and pencil surveys there is little room for interpretations for the researcher. He may use statistical models and in the result of the survey see patterns and trends. But from statistical data it is very hard to find explanations to why these trends and patterns occur.

Hermeneutics is the opposite of positivism. In hermeneutics, the researcher is striving for understanding trends and patterns in a society. This can be done by analyzing and

[7] Söderlund, Magnus; Vilgon, Mats, *Studenters Förförståelse av ett Akademiskt Ämne och Förhållandet till Inlärning - en Studie av en Kurs i Marknadsföring*, p 2.
[8] Neuman, W. Lawrence, *Social Research Methods - Qualitative and Quantitative approaches*, p 4-5.
[9] Ibid, p 5.
[10] Ibid, p 80.

describing cultural phenomena, differences or similarities between groups of people. In hermeneutics, there is no fundamental truth, there is rather a view that things can be described from different points of view and problems in society can be explained and described in different ways depending on the researcher's conclusions and understanding. Hermeneutics can be applied in international management, as the researcher want to reveal differences and similarities in cultures, and how businessmen from different origins can work together if only they know about and understand each other.[11]

In science, the quantitative method is closely linked to the positivistic scientific ideal, as the researcher aims for statistical data and trends that can be proved true or false. On the other hand, the qualitative method is related to hermeneutics, since the researcher strives to show trends and phenomena and a deeper understanding surrounding them. The quantitative and qualitative methods will be presented in section 2.5 and 2.6 later in this thesis.

2.3. Focus and Perspective

When the researcher begins working on the study, he will most likely have a very wide and comprehensive question that he wants to answer. But as he enters the field or as he begins the research process he will come across topics that are more interesting than others. This might lead the researcher to follow new paths and trails which might cause the study to be too extensive and thereby both hard to handle and hard to finish in time. In the beginning of the study, everything may seem relevant, but as the study goes along, the researcher needs to focus on the topics and perspectives that are relevant for the very purpose of the study that was decided before entering the field. In this process the researcher is limiting himself to a few paths and perspectives, and thereby narrows down the study to focus on the topics that can fulfill the purpose of the study.[12]

2.4. Selection

The delimitations and the purpose of the study very much affects what population the researcher should turn to for interviews or observations. And in the population the researcher will select a target group, a few individuals to approach, and this group needs to be representative for the population as a whole to make the study valid. Selecting possible respondents to approach can be done by various sampling techniques. In a quantitative study, a random sampling technique is useful since the researcher want to find a rather large group of respondents. By randomly picking a large number of respondents he will have a probability sample, meaning that the target group statistically represents a larger population.[13]

But the way we select the respondents may cause the target group not to be representative for the population. When performing a convenience sample you turn to the respondents who are closest to you, and available for the study. This can cause trouble as the researcher may get a target group that is not representative for the population, since coincidental factors may severely affect the selection. On the positive side, the researcher

[11] Noorderhaven, Niels, *Hermeneutic Methodology and International Management Research*, p 7.
[12] Neuman, W. Lawrence, *Social Research Methods - Qualitative and Quantitative approaches*, p 369-370.
[13] Berg, Bruce L., *Qualitative Research Methods for the Social Sciences*, p 34-35.

will save time searching for respondents, and with the right selection criteria he may still reach a representative target group.[14]

If the researcher already has experience and knowledge in the subject area, he may already know who to turn to in the study. This is called a purposive sample selection. Also, if the researcher does not have any previous experience in the field, he may perform a limited study to get an overview and thereby know which respondents that will fulfill the purpose of the real study.[15]

As the researcher performs the study, he may meet respondents with special characteristics and thereby fulfills the selection criteria. And as the study comes along, these respondents may lead the researcher to new respondents, such as their colleagues, friends and other relatives. Thereby the researcher can extend the target group as the study evolves, and reach more and more respondents. This selection approach is called snowball sampling, and is often useful in qualitative studies.[16]

Finally a selection called Quota Sampling may be used. It is a nonprobability strategy based on a matrix model, where the researcher sets up criterion in each position in the matrix. Thereafter he fills the matrix with respondents fitting the criterion, and thereby obtains a representative selection of the population. Since some respondents may represent a larger section of the population than others, the researcher should either turn to more respondents with the same profile or weigh their answers more than respondents representing a minor section of the population.[17]

2.5. Qualitative Method

In some classic system theories, it is assumed that the researcher may approach the problem by first looking at the whole problem and dividing it into smaller segments, or the researcher may begin by looking at smaller segments and add them up to an overview of the problem. One of these systems is mechanism, well known from the field of physics as an example.[18] But this approach is not useful in social science. In social science it is crucial to approach the problem according to a certain schedule. And one of the first steps in the schedule is to decide if a quantitative or qualitative method is suitable for the study.

A study using a qualitative method is based on holism. The researcher interacts with the respondent in the study, and aims to uncover similarities between the respondents and the way they answer the questions. The researcher is looking for trends and seeks understanding in the area, rather than looking for exact data that may be measured. A holistic view is used, meaning that the aim is to give answers to the problem from a broader perspective, and does not focus on details or smaller factors of the problem.[19]

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[14] Berg, Bruce L., *Qualitative Research Methods for the Social Sciences*, p 35-36.
[15] Ibid, p 36.
[16] Ibid, p 36.
[17] Ibid, p 36-37.
[18] Arbnor, Ingeman; Bjerke, Björn, *Företagsekonomisk Metodlära*, p 96.
[19] Ibid, p 96.

The qualitative way of performing research aims to answer questions beginning with "Why", "What", "When" and such, to describe the meaning of things.[20]

2.6. Quantitative Method

The quantitative method is based in atomism. This means that the method gives a wider view in the study by approaching the problem from smaller segments. A quantitative method aims to explain the whole problem and give general answers in the study, based on a number of rather detailed observations.

In a quantitative study, the researcher aims to measure the characteristics of a selected group. The result is often presented in numbers and statistical data, and from the data the researcher comes to a conclusion based on how the selected group has responded in a wide perspective. Hence, in a quantitative study the result will give answers to how a population as a whole responded when answering questions from the researcher. Thus a single participant in the study will not affect the result of the study. Only if a number of respondents replied similarly it can be accepted as a conclusion in the study.[21]

2.7. Approach

When approaching the problem, you may have a theory you want to test against empirical data, or you may have a very wide problem you want to narrow down to a theory by field studies. These two ways of conducting the study is called a deductive or an inductive approach, and the main difference is if the researcher already in the beginning of the study has an idea of what the end result of the study will be, or if he with an open mind will be open to follow new paths and discover new perspectives of the problem.

In a deductive approach, the researcher begins the study with a theory or a hypothesis, and aims with the study to prove, refute or modify the assumptions.[22] He begins with an theoretical framework with a an abstract, logic relationship among concepts, and seeks proof in the empirical findings.[23] By approaching the problem this way, the researcher already knows what he is looking for in the field study, and therefore he has to be very strict when he use find and use the hard data. Thereby there will be less room for personal interpretations compared to when using an inductive approach and he may only change approach and assumptions if the assumed theories are proved to be wrong. [24]

When using an inductive approach you begin in the field, and find your way back to the theoretical framework. At the beginning of the study you have the problem formulation based on vague and wide assumptions and only a few ideas of what the conclusions of the study may turn out to be.[25] Thereby the researcher has to be open minded to new paths and perspectives that may appear as conducting the study. This is not to be confused with having a vague purpose for the study. Having a vague problem formulation is only

[20] Berg, Bruce L., *Qualitative Research Methods for the Social Sciences*, p 2-3.
[21] Ibid, p 2-4.
[22] Neuman, W. Lawrence, *Social Research Methods - Qualitative and Quantitative approaches*, p 60.
[23] Ibid, p 50.
[24] Ibid, p 49.
[25] Ibid, p 49.

chosen so that you leave room for interpretations and improvisations during the course of the study. You must even with a vague problem formulation have the subject and purpose defined in such a way that the end result of the study is useful for the reader. The inductive approach is often used in qualitative studies, since you are seeking understanding and new perspectives on the problem, rather than try to prove existing theories and hypothesis[26].

The pros of using a deductive approach are mainly that the theoretical framework will be set from the beginning of the research process, and the researcher will have the ideas and concepts strictly defined as the study begins. It will however leave little or no room for interpretations and adjustments as the study goes along, and may thereby loose out on meaningful new perspectives that could have been used in the field.

The inductive approach on the other hand gives the researcher the possibilities of adjustments and improvisations as the study goes along. There are no set frames for what is to be concluded, as long as the conclusions are based on actual empirical findings and not only vague ideas the researchers get in the field. The main profit of using an inductive approach is that the researcher generates theories and conclusions that are very closely linked to the problem formulation. In a deductive approach the researcher will have his hands tied to the assumptions made in the beginning of the study, while when using an inductive approach there will be room for adjusting the ideas and basic conceptions to fit the actual study. Hereby the theories that are generated will very much suit the actual study that is performed, and will thereby be more useful for the purpose of the study.

2.8. Performing an Interview

"Interviewing may be defined simply as a conversation with purpose".[27]
This sentence very much captures the essence of a qualitative methodology where the interview is the main tool for gathering information. As stated in a previous section (2.6) the aim for the researcher is to seek understanding through presenting an overview in the study. And when performing an interview the researcher gets the opportunity to interact with the respondent. This opportunity is not given when performing a quantitative interview where a standardized survey is sent to hundreds of respondents.
The interview has more purposes than just to be information gathering, since it also gives the researcher a chance the questions depending on the received answers as the interview goes along.[28]

The structure of the interview is essential to reach the wanted result of the interview. If the interviewer is prepared when the interview is to be performed, he will increase his chances to gather the wanted information. And when performing an interview the interview may use an interview manual, where he as gathered his main questions for the interview.

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[26] York, Reginald O., *Conducting Social Work Research - an Experiential Approach*, p 23.
[27] Berg, Bruce L., *Qualitative Research Methods for the Social Sciences*, p 75.
[28] Ibid, p 75.

2.8.1. Interview Manual and Schedule

In this section I will present two categories of interviews, based on how closely the interviewer follows the interview manual. Depending on the chosen subject and the purpose of the research, the researcher needs to position himself on a scale of structure before performing the interview. This position is taken, so that the researcher either gets the possibilities of improvising during the interview, or makes sure that all respondents are approached with the same questions. I will in this section briefly explain two extreme positions on this scale, two categories of interviews. These two categories can be combined and altered, but have each characteristics that separates them from each other. A combination of the two interview types will also be given, to extend the understanding of interviews.

2.8.1.1. Standardized Interview

In a standardized interview the structure of the questions are set in advance, and the researcher knows very well the goal the study. He follows a manual, and make sure the wordings of the questions are identical in every interview such that each respondent understands and interprets the question equally. The researcher may not change the wordings of the questions during the interview, not even to make the question clearer for the respondent. He may not alter the wordings since then the question will have a different meaning or purpose than in earlier interviews. [29]

In standardized interviews, the researcher also asks no follow up questions that are dependent on the information received during the interview, since the researcher already from before the interview knows what the goal of the interview is and what questions that needs to be answered. Standardized interviews are very close to pen and paper surveys, since then all the questions are set in advance and the researcher already know what he want to ask the respondent. [30]

2.8.1.2. Unstandardized Interview

Obviously unstandardized interviews are the very opposite of standardized interviews. The researcher still has a goal and purpose of the interview, but he does not in advance know exactly what to ask or how to ask it. Also, questions can be altered such that they have different meanings depending on the respondent's interpretations and understanding of the wording.

The main advantage of performing an unstandardized interview is the opportunities to ask follow up questions depending on the answers received from the respondent. The interviewer is free to alter, change, substitute, add remove questions that he asked in previous interviews and adjust the interview in each case.[31]

2.8.1.3. Semi-Standardized Interview

[29] Berg, Bruce L., *Qualitative Research Methods for the Social Sciences*, p 78-79.
[30] Ibid, p 79.
[31] Ibid, p 80.

Obviously, a semi-standardized interview is a combination of a standardized and an unstandardized interview. Before the interview, the researcher prepares certain questions that will be asked to all respondents. After to that, he may add questions depending on his knowledge, or lack of knowledge, about the respondent for each specific interview. During the interview, follow up questions can be added depending on the answers received from the respondent.
In this kind of interview the researcher also gets the opportunity to adjust the wordings of the questions depending on who the respondent is. For some respondents, it may be necessary to explain certain expressions and definitions in the interview material. Also, if a question is formulated in such way that the respondent does not understand it, or if the interviewer realizes that the respondent interpreted the wrong meaning of the question, it the question can be altered or explained further so that the interview fulfills its purpose.[32]

2.9. Access, Data Gathering and Data Processing

When approaching the issue and when interviewing respondents who can provide the information you need for the study there is a process in many steps that will lead you to the information you demand. First the researcher is an independent observer who from the outside will study the field. Thereafter he enters the field and begins to study the operations on a closer range. Entry is to be done in more than one step also, as the researcher goes deeper into the problem and finds new areas in the field to study. When in the field the researcher will overview the problem and then start the interaction with the respondents. The level of interaction is also important to determine in advance, since a deeper level of interaction will imply deeper understanding but may also affect how the respondents reply or act on questions.[33]

In the process of gathering data there are several sources the researcher may use. He can either gather data that has been collected in previous studies and projects or he can make observations and gather new data that will be exclusive for his study. When gathering data from previous researches the data will be more reliable since the source can be verified and the reliability thereby will be higher. On the other hand there is little interest to only repeat what has been determined in earlier studies. Recycling information is will not lead to any new conclusions or discoveries. Thereby it is crucial to the researcher to find new areas to research and new perspectives to use for good results in the study.[34]

When processing the data new ideas and problems may come up to the surface. When using a systematic approach the researcher will be given chances to go back and modify the data gathering process, or even choose to find different respondents that will suit the new problems better. This can be done in a qualitative study, since one strives for understanding and explanations to the problem. Thereby you may modify your approach during the course of the study if new needs occur. In an analytic approach you will not have the same opportunities to modify the approach once the process has started. If for

[32] Berg, Bruce L., *Qualitative Research Methods for the Social Sciences*, p 80-82.
[33] Neuman, W. Lawrence, *Social Research Methods - Qualitative and Quantitative approaches*, p 353-358.
[34] Arbnor, Ingeman; Bjerke, Björn, *Företagsekonomisk Metodlära*, p 180-182.

example performing a survey, it is not suitable to change the questions or layout of the questionnaire since respondents then will percept the questions differently.35

2.10. Source Critics

Depending on the type of study different kinds of sources will be used. In historical studies the researcher relies heavily on primary sources, i.e. letters, diaries, newspapers, novels, old artifacts etc. The respondents a researcher meet or interview during the study are also categorized as primary sources. In social science a combination of primary and secondary sources are used. The secondary sources are sources in a field, which can be previous studies or material based on observations and theories in the subject area. Books, articles and encyclopedias are typical examples of secondary sources[36] [37].

Sources may be critically viewed in two ways. External criticism turns to how reliable the source is by questioning the source with such questions as; "Is the author or respondent who he claims to be?" or "Can we be sure that this is not a counterfeit document?".[38] Internal criticism on the other hand questions the contents of the sources. It does not question the meaning of the statements in the source; rather it refers to if the content is genuine or if the information is accurate.[39]

Both the primary and secondary sources should be criticized by the researcher. He should ask himself if the primary sources are reliable and if the respondents are telling the truth. The respondents may also be dependent on a third party, such as company directors or lobbyists, and thereby share information that in many ways may be propaganda for a company or a political group. Thereby it is important to determine if the respondent is independent of other parties. Secondary sources may also be biased, since the writer may have had a self interest when writing it. Reducing the amount of biased information can be done by using several sources in the same field. By using a comparison method, the researcher would notice indifferences in the material that he comes across. Thereby he will be alerted to flaws and biased information, and hence by awareness be able to avoid using wrongful information.[40]

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[35] Arbnor, Ingeman; Bjerke, Björn, *Företagsekonomisk Metodlära*, p 186.
[36] Berg, Bruce L., *Qualitative Research Methods for the Social Sciences*, p 237-238.
[37] Neuman, W. Lawrence, *Social Research Methods - Qualitative and Quantitative approaches*, p 395-401.
[38] Berg, Bruce L., *Qualitative Research Methods for the Social Sciences*, p 240-241.
[39] Ibid, p 242.
[40] Neuman, W. Lawrence, *Social Research Methods - Qualitative and Quantitative approaches*, p 401.

3. THEORY

In this chapter, the theoretical framework will be presented. I will begin the chapter by introducing some of the factors that cause the currencies to fluctuate, and will then present the financial tools that may be used when hedging against the currency fluctuations.

3.1. Factors Causing Exchange Rate Fluctuations

The exchange rates of free floating currencies are adjusted to changes in supply and demand for the currency. And the supply and demand for the goods from a certain country will affect the supply and demand of the country's currency. An increased demand for goods from a country will increase the demand for the country's currency and consequently the increased demand for the currency causes the currency to appreciate.[41]

3.1.1. Specific Causes

In this section we will look closer to some of the major causes for the change in supply and demand of currencies. These factors can be caused both by individual investors or speculators, but may also be causes of government interventions. Even on an open market with free floating currencies, the governments have objectives and will intervene in the market for their specific interests.[42]

The demand for goods and products from a country will affect the country's currency. But also, as businesses plan their investments, the location of the loans and investments will affect the demand for different currencies, and hence will affect the exchange rates.

3.1.1.1. Inflation Rates

Let us consider the case when two countries, for example Sweden and the United States, have the same inflation rate, interest rate and the exchange rates are in equilibrium. Let us then consider, ceteris paribus, that the inflation in Sweden increases. This will cause the SEK to depreciate, since in a while you will get less goods for the same amount of money in Sweden. If the inflation rate in the United States at the same time remains constant, investors will invest more money in the United States and less in Sweden, which of course implies a lower demand for SEK. This causes a downward pressure on the SEK, and the SEK will depreciate compared to the USD.[43]

3.1.1.2. Interest Rates

The same principles can be applied when analyzing the differences in interest rates. Let us assume that the inflation rate and interest rates in Sweden are the same as in the United States. Let us also assume that the exchange rates are at equilibrium and there is no governmental interference affecting the exchange rates. Assume the interest rates in Sweden increase, ceteris paribus. Investors will then demand SEK since they will get

[41] Madura, Jeff, *Financial Markets and Institutions*, p 407.
[42] Ibid, p 409.
[43] Ibid, p 407-408.

higher returns if investing their money in Sweden. As well, the supply of SEK will decrease since Swedish banks rather keep the money in Sweden than let it be transferred abroad. Both the increase in demand the decrease in supply will cause an upward pressure on the SEK and the SEK will appreciate.[44]

3.1.1.3. Interventions

A country's government can affect the exchange rate via their Federal Reserve Bank, the Fed. Since all countries have currency reserves, the government can directly intervene on the currency market by selling or buying their own currency. If the US Fed wants to support the US exports, they may supply more USD on the world market by selling some of the country's reserves of USD for other currencies. This will cause an excess supply of the USD, and the USD will then depreciate, making the US goods cheaper to foreign goods. The imports will then decrease in the US and the exports will increase. [45]

The Fed may also indirectly affect the exchange rates when changing the supply of the currency. If the US Fed increases the supply of USD the interest rates in the United States will decrease. This will as well be a way to decrease the demand for the USD, and thereby cause the USD to depreciate.[46]

3.1.2. Forecasts and Speculation

If the Federal Reserve Bank announces updated prognoses for interest and inflation rates in a country, it will soon lead to investors and speculators taking position according to their expectations of future movements on the exchange market. They will use a fundamental analysis as they with mathematical models try to predict how much the change in inflation and interest rates will affect the exchange rates.

Historical data may also be used when predicting exchange rate movements. If a currency often has been found to depreciate after a few days of appreciation and the speculators or investors find this pattern repetitive, they may use this as an assumption of future movements of the currency. The expectations will hence lead the investors and speculators to take position according to assumed movements and their positions will affect the value of the currency.[47]

3.2. Derivatives

3.2.1. Options

Options are the most commonly used derivative in the market. Stock options were introduced to the open market in 1973, and since then many different kinds of options have developed. Today options can be traded with underlying assets such as stocks, stock market indexes and foreign currencies.[48]

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[44] Madura, Jeff, *Financial Markets and Institutions*, p 408-409.
[45] Ibid, p 409-410.
[46] Ibid, p 410.
[47] Ibid, p 412-413.
[48] Hull, John C., *Options, Futures and Other Derivatives*, p 6.

3.2.1.1. Characteristics

Since options are standardized and will be traded on the open market, all options need to have the following characteristics defined.[49]

- Transaction type - put or call option
- Underlying asset: the commodity, stock or currency
- Quantity per option contract
- Strike price
- Expiration date
- Premium[50]

An option is a financial contract between the seller and the buyer. The buyer of the contract has the right to exercise the option, meaning he has the right to buy the underlying asset for a certain exercise price. The seller on the other hand is obligated to sell the underlying asset in case the buyer chooses to exercise his right. Thereby the buyer has the right, and the seller only has obligations towards the buyer. One may wonder what the seller gains from this transaction, but in fact there is a possible financial gain for the seller as well. When the option at first is sold, there is a difference between the underlying stock price and the exercise price plus option price;

option price + option exercise price - stock price on the open market = option premium[51]

This difference is the option premium. When the buyer expects the asset appreciate, he wants to buy an option to be able to buy the asset later for a price that is lower than the market price. But if the asset depreciates, there is no use for the buyer to exercise his rights, since he then can buy the asset for a lower price on spot at the open market. The seller can keep the premium, without any obligation to deliver the asset.

As the price of the underlying asset fluctuates, the option price fluctuates[52]. If a stock increases in value, its options will as well increase or decrease as much in nominal values. But since the option is traded for a lower price than the underlying stock, the proportional change in value will be larger for the option than for the stock. Therefore buying an option implies a larger risk than buying the underlying asset.

3.2.1.2. Call and Put Options

There are two types of options. A currency *call* option gives the buyer the right, but not the obligation, to *buy* a certain amount of the currency to a specified price. On the other hand, a currency *put* option, gives the buyer the right to *sell* a certain amount of the currency to a specified price.[53]

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[49] Ljungström, Fredrik; Rothfeldt, Marc, *Optioner & Terminer*, p 33-34.
[50] Clark, Ephraim; Marois, Bernard, *Managing Risk in International Business – Techniques and Applications*, p 292.
[51] Madura, Jeff, *International Financial Management*, p 141-142.
[52] Ibid, p 1.
[53] Ibid, p 141, 146.

If an investor, or speculator, expects the asset to increase in value, he should purchase a call option since he in case of an appreciation of the asset can buy it for a lower price than the market price by exercising his right in the option contract[54]. Also, if the investor expects the asset to depreciate, he should buy a put option, so that he can sell his asset at a price higher than the market price when exercising his right.[55]

3.2.1.3. American and European Options

When it comes to the exercise right there are two types of options. The so-called American Options give the owner of the option the right to exercise the option at any time up until the expiration date. On the other hand, if investing in so-called European options you may only exercise the option at the expiration date.
If the investor buys a European option, and for some reason wants to get out of the investment, he may sell the option and thereby close out his position. So, even when buying a European option you may regret the investment before the expiration date.
Since the European options give the buyer fewer alternatives when it comes to exercising, these options are traded with a slightly lower premium than the American options. Therefore investors may prefer European options if the expiration date is the same as when they anyway planned to exercise the option.[56]

3.2.2. Future Contract

On the open market there are also derivatives that include obligations for both the buyer and the seller. Futures are a standardized form of contract and that can be used as a financial tool to hedge against price fluctuations.[57] When buying a future contract, you agree to buy a certain amount of an asset when the future matures. This means, that at a defined date, you are obligated to meet with the seller of the future and purchase the defined amount of the asset defined in the contract.

Future contracts are standardized and contain the following parameters:[58]

1. Asset, what is to be traded and how is the asset defined. This is very important for commodities such as farmer's products, but not as important for currencies. For example in euro currency futures, you need only to define that the asset is the euro currency. But if the asset is corn, you need to define quality and type to make sure that both the buyer and seller know what to expect when the asset is to be delivered.
2. Contract size, i.e. how many units of the asset that will be delivered in one contract. If the contract size is too large, it might not be applicable for the trader. And if the contract size is too small, the trading costs will increase for the investor since there is always a commission cost involved in the trade.
3. How prices will be quoted, i.e. how small movements can be in the asset price to affect the price of the future price. This means that if a future has a price quote

[54] Madura, Jeff, *International Financial Management*, p 141.
[55] Ibid, p 146-147.
[56] Ibid, p 154.
[57] Ibid, p 133.
[58] Hull, John C., *Options, Futures and Other Derivatives*, p 20-23.

based on 32nds of a dollar, a movement of 1 cent of the asset price will not affect the future price.

4. Place of delivery. If the future is not closed before it matures, a delivery and a payment have to be made. Therefore it is crucial to have a well defined delivery arrangement in the future contract if for example farmer products are to be delivered. But this parameter does not play such a big role if it is a currency future, since most banks have access to most money markets. Therefore it is, when it comes to currency futures, important to know that your broker has access to the delivery market, unless you know you will close the future position before maturity.
5. Date of delivery. When the future matures a delivery is to be made, and this does not necessarily have to be done on a specific date, rather during a specified period of time. The reason why a time period is given, rather than a certain date, is to give the buyer and seller a chance to arrange for a delivery that in practice works for both parties.
6. How price will be paid. Finally the payment is to be made, and the transaction procedure has to be defined in the future contract.

There are no such things as call or put futures. Instead the investor has the opportunity to long or short the derivative. Taking a long position means that you are the buyer of the future, while taking a short position means that you are the seller of the future.[59]

3.2.3. Forward Contract

A forward contract is similar to the future contract. It also obligates both parties to meet up at the expiry date to perform the trade. In both future contracts and forward contracts both parties have obligations. The buyer of the contract is obligated to buy the asset, and the seller of the contract is obligated to deliver the asset.[60]

The main difference between futures and forwards is that the forward contracts are not standardized. A forward contract is written between a bank and a corporation, and can be modified to meet the needs of the corporation or the requests from the bank. Forward contracts are usually written with a maturity of 30, 60, 90, 180 or 360 days, but since it is a non standardized contract between two negotiating parties these time periods can be extended or shortened.[61] And since the contract is not standardized it can be modified such to the needs of the buyer.

3.2.3.1. Pricing a Forward Contract

This section will not be used in the analysis of how companies use forward contracts to hedge against currency fluctuations. It is however interesting to know how banks set the prices on the forwards since this directly affects the forward rate for the company. Therefore I chose to include this section in the theoretical framework.

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[59] Hull, John C., *Options, Futures and Other Derivatives*, p 1, 666, 669.
[60] Ibid, p 4.
[61] Madura, Jeff, *International Financial Management*, p 130.

The pricing strategies for Forwards differ depending on the type of underlying asset the contract is derived from. Some assets pay an annual dividend that then must be taken in to account when pricing the forward. Such forwards are for example money market instruments and equity indexes. Also some assets pay a lump sum at the date of maturity, for example bonds and equities. But when pricing currency forwards these factors need not to be taken into consideration, and therefore the pricing calculation is very straight forward.[62]

Equation 1, Pricing a forward contract

$$F_t = S_t (1 + r * dd / 360)$$

F_t the forward price
S_t the spot rate as of today on the underlying asset
r the annualized risk free coupon rate
dd days to maturity

This pricing model implies that the longer time we are to maturity; the larger the difference there will be between the spot rate and the forward price. But it also implies that the only cost, disregarding a possible commission cost, will be cost equivalent to a low coupon rate, i.e. interest rate. With this model, any time period can be used for the forward contracts. As stated earlier, forwards are not standardized, so its characteristics allow the supplier to set the maturity to match the needs of the buyer. The banks do however normally supply forwards with maturities on 30, 60, 90 or 180 days.[63]

Arbitrage is a concept based on creating value out of nothing. By setting different values to the very same asset in a trading process, you may create value by demanding, buying, supplying and selling the very same asset on different price levels. Still, you have not increased the actual value of the asset in the process.[64] Arbitrage is used when setting the spot rates for currencies. The banks and brokers pay less for the currency when they buy from you, than they charge you when they sell the currency to you. This is called the "bid / ask spread", and is used to create profit for the bank in the exchange profit. And since the forward rate is based on the spot rate, there will also be a bid / ask spread for the forward rates.

There are other factors, not mentioned in this model that can affect the pricing of a forward contract. Expectations on exchange rate movements may affect the pricing, since if there is a common opinion that a currency will depreciate, the demand for forward contracts will increase. This will however lead the bank to lower the forward rates. If the forward rate is lower than the spot rate, the forward is said to sell with a forward discount and if the forward rate is higher than the spot rate, it is said to be sold with a forward

[62] Penza, Pietro; Bansal, Vipul K., *Measuring Market Risk with Value at Risk*, p 220.
[63] Clark, Ephraim; Marois, Bernard, *Managing Risk in International Business – Techniques and Applications*, p 277.
[64] Nielsen, Lars Tyge, *Pricing Hedging of Derivative Securities*, p 117.

premium.[65] This implies that the more a currency fluctuates, the larger the discounts and premiums will be on the forwards.[66]

3.2.4. Hedging Payables and Receivables

In this section I will compare the characteristics of the three types of derivatives defined in this chapter. I will also in this section evaluate how the different characteristics of the derivatives make them suitable in different situations for the investor.

3.2.4.1. Hedging Payables

When hedging payables we will use the same arguments as when hedging receivables. But we have to reverse the transactions. If we are to pay a certain amount of USD in the future, we want to buy a USD call option since that will give us the right to buy the USD on a fixed exchange rate. [67]

However, if we want to avoid the option premium, we may choose to buy a USD future contract. If the USD appreciates we will have to pay more for the USD when we are to make the transaction. But also, our future contracts will appreciate, and therefore we gain the same amount in the contract as we loose on the exchange. And therefore we can be certain that to only pay what we expected to pay when signing the business contract. [68]

In the same way, we may choose to buy a forward contract from our bank. This will give us the flexibility to define the contract to a specified amount, but on the other hand we will have to pay an extra premium to the bank.[69]

3.2.4.2. Hedging Receivables

Let us consider the case where a company is to export goods for a certain amount of USD and the export contract has specified date of delivery, date for payment and how many units of the good that is to be delivered. The contract is signed on the first of September 2004, and the delivery is agreed to be made three months later, on November 30.

As the exporter we now know that we have to deliver in three months, and that we will receive the USD. At the time when the contract is signed, we know that 1 USD is traded for 7.50 SEK.[70] But at this time we don't know what the USD will be traded for three months later when it is time to deliver and receive the payment. Therefore we would like to hedge the receivables and avoid any risk of currency fluctuations.

3.2.4.3. Choosing the Right Derivative for our Purpose

We have three derivatives to choose between, and there are both pros and cons with all three of them.

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[65] Van Horne, James C.; Wachowicz, John M. Jr, *Fundamentals of Financial Management*, p 755.
[66] Ibid, p 756.
[67] Madura, Jeff, *International Financial Management*, p 141.
[68] Ibid, p 135.
[69] Ibid, p 135.
[70] *FXConverter - 164 Currency Converter*, Oanda.com.

We could choose to buy a USD put option that gives us the right to sell the USD when we receive them from our customer. The pros of choosing options is that if the custom decides to cancel the contract or files for bankruptcy and therefore can't deliver the money as agreed upon in late November, we can sell the option and not loose any money in the transaction, more than commission costs. One of the cons of choosing option is that we have to pay an option premium when buying this derivative. This premium is not refundable when we exercise our rights in the premium contract.[71]

Out second possible derivative is a future contract. By selling a USD future contract we agree to deliver USD in exchange of SEK when the future matures. And the future locks in the exchange rate of today, without adding any premium to the exchange rate. Thereby future contracts are better suited for us in this case.
A reason why not to choose future contracts is that if the customer can't deliver the USD as agreed, we are forced to buy back the future contract since we don't have any USD to exchange. We are then taking the risk that the USD has appreciated, and thereby the future contract price has increased. This means that we have to buy back a more expensive contract than we earlier sold, and thereby we will have a loss after the transactions we are forced to do. Also, futures are standardized in the contract size and may then not be appropriate to the amount we need to hedge. [72]

The third and final derivative we are to consider here is forward contracts. Since the forward contract is an unstandardized contract, it can be adjusted to for example cover the exact amount we want to hedge. And also, it can be adjusted such that the expiration date of the contract is the exact same as the date to when the transaction in our business contract is defined. On the other hand, we would have to pay a premium to get the forwards contract from the bank. Therefore future contracts are to be preferred to forward contracts if we can cover the exact amount to hedge with futures.[73]

3.3. Exposures

It must however be noted that some offsetting effects can reduce the exposures of a firm. If we for example both import and export, some offsetting effects may occur since it is only the difference in our imports and exports that will be exposed.

3.3.1. Economic Exposure

When operation on an open world market and trading over borders with many currencies involved, there is always an economic exposure for the companies. If the local currency appreciates or depreciates against foreign currencies, it will affect both export- and import prices. Say that our local currency appreciates against a foreign currency. Then it will be cheaper for us to import, but also our exports will meet harder competition on the world market. Our suppliers may want to sell even more goods to us, but it will be harder for us to export since the world market prices have depreciated. When this occurs, trading

[71] Madura, Jeff, *International Financial Management*, p 141.
[72] Ibid, p 135.
[73] Ibid, p 135.

patterns in the market may change, and this will affect our company. The more imports and exports we have, the higher our economic exposure is.[74]

3.3.2. Transaction Exposure

Transaction exposures occur when the company is paying or receiving money in a foreign currency. In the time between entering an agreement and actually transferring the money, the local currency may fluctuate against the foreign currency. This may be to our advantage, but might as well be to our disadvantage, and it is hard to predict how much or in what direction the currencies will fluctuate in the upcoming time period.[75]

3.3.3. Translation Exposure

The translation exposure affects the company's income statements, when investments and profits are to be converted into the local currency for the company's annual report. If a company for example has a subsidiary that operates with another currency than the local, the profit or loss from the subsidiary will be converted in to the local currency at the end of the fiscal year. This conversion is affected by the exchange rate on that very day, and hence there is a translation exposure against the company.[76] This is however mainly an accounting exposure, and not a cash flow exposure, since an actual transaction and conversion of money does not need to be made.[77]

3.4. Exchange Rate Exposure

A company can be exposed to all three of the previously mentioned exposures. And all three exposures are dependent on how the exchange rates fluctuate. The more the foreign currency fluctuates, the higher will the risk be when we operate on the world market. The fluctuations will affect both the result in subsidiaries as well as the result for our own operations on foreign markets.

The exchange rate exposure also affects the value of the company. According to Nydahl, a company's value can in theory not be increased by hedging its exchange rate exposure. However, in theory it is assumed that the company operates on a perfect market and in practice there is no perfect market. In practice financial distress such as low liquidity, or even bankruptcy, can be very costly for the owners of the company. And companies that hedge the exchange rate exposure they will secure a steadier cash flow and thereby reduce the risk of financial distress.[78]

After the bidding process is over and the price is set, an exchange rate change will not have any competitive effect for the exporting company. It may however have a

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[74] Rugman, Alan M.; Hodgetts, Richard M., *International Business – a Strategic Management Approach*, p 403.
[75] Ibid, p 403.
[76] Ibid, p 403-404.
[77] Davis, Edward; Coates, Jeff; Collier, Paul; Longden, Steven, *Currency Risk Management in Multinational Companies*, p 12-13.
[78] Nydahl, Stefan, *Sveriges Riksbank Working Paper Series; Exchange Rate Exposure, Foreign Involvement and Currency Hedging of Firms – some Swedish Evidence*, p 7.

conversion effect. This conversion effect implies a translation exposure, and this is where hedging strategies comes in handy for the company.[79]

3.4.1. Reducing the Exposure

A multinational corporation often imports raw material, sub-assemblies and spare parts from suppliers or subsidiaries in other countries. As it is the buyer who often sets the standard to what currency is to be used in the trade, the price lists for the exported goods might very well be set in a foreign currency. The corporation may then use a financial strategy called netting, to reduce the net flow of foreign currencies[80]. Such a strategy can both be performed internally and externally. When netting internally the company picks their suppliers, or sets up agreements with the existing suppliers, in such a way that they outflow of currencies in the company will match the outflow of currencies. The external way is to set up a netting centre, which gives service to the corporation, suppliers and subsidiaries. The netting centre manages the cash flows in between the group and adjusts the balances between the parties on a periodical basis. Thereby can the companies involved focus on the production and spend less time and resources on hedging. The more companies and currencies involved, the more useful the netting centre will be, compared to using globalized accounts or other buffer strategies.[81]

This strategy is also very useful for companies with operative units in the countries where the customers are located. The cash flow will then be reduced since both costs and income can be managed in the foreign currency, and only the net flow will be exposed to currency fluctuations.[82]

3.5. Volatility Effects on the Society

As companies plan their production, they make predictions to how the demand will change as the prices of their goods change. The higher the price, the lower demand and vice versa is a fundamental model in economics. When equilibrium is met, both parties both and buy and sell on a satisfactory level.

If the company operates on the world market, they can either set their prices in the local currency or in the foreign currency. If the local currency is used, the company will indirectly be affected by exchange rate movements will affect the prices for the buyer and thereby the demand will shift. But they will also be affected by exchange rate fluctuations if the prices are set in the foreign currency. As the currency fluctuates, the company's income will be affected, and thereby the supply curve will shift. These fluctuations also affect the society in a macro perspective. As a country's currency fluctuates with a high volatility to other currencies, foreign investors will hesitate to invest in the country, since the rate of return is difficult to predict. This will affect the society as a whole since the fluctuations lead to a lower turnover for the country. [83]

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[79] Schuster, Walter, *Foreign Exchange Exposure from an Accounting Perspective – an Analysis of Foreign Currency Hedging Loans of a Larger Amount than the Net Investment*, p 11.
[80] Schuster, Walter, *Företagets Valutarisk - en Studie av Horisontella och Vertikala Styrprocesser*, p 39.
[81] Clark, Ephraim; Marois, Bernard, *Managing Risk in International Business – Techniques and Applications*, p 268-269.
[82] Ibid, p 268-271.
[83] FRBSF Economic Letter, Number 2004-22*, Measuring the Costs of Exchange Rate Volatility.*

To avoid these costs, some countries have tried to control their local currencies by locking in an exchange rate to the USD or other well known and extensively used currencies. In this way investors and companies will be able to predict returns on investments with a higher level of significance. Some countries have also agreed to abandon their own currency and adopted a brand new currency. The most recent example of this strategy was when the EUR was introduced in Europe, and 12 countries abandoned their previous currencies. [84]

3.6. Risk Management

In risk management hazard and threats are not the same as risks. Hazards and threats are characteristics in a situation that may cause an accident or other harm. Risks on the other hand are in risk management used as measurements to how likely the hazard will lead to an occurrence of loss.[85]

3.6.1. Pure and Speculative Risks

In risk management there is a distinction between pure and speculative risks. Pure risks are such that there is only a chance of loss, and no chance of gain. On the other hand we have speculative risks, which may lead either to a loss or a gain. [86] Sometimes "speculation" and "gamble" is used synonymously. This is however wrong, since when gambling you do it mainly for the pleasure and excitement of risk exposure, while in speculation the main goal is to gain in the long run. Speculation can hence be defined as taking on the action in spite of the risks, while in gambling you participate for the experience and enjoyment of a risky activity.[87]

One important difference in character of pure and speculative risks is that insurance is suitable for pure risks, while speculative risks can be hedged.[88] This study will focus mainly on the speculative risks, since the goal of hedging is reducing a volatility that can both affect your company positively as well as negatively. We will however also briefly deal with pure risks, such as when a counterpart fails to deliver, and how that will affect the company with a hedged position.

3.6.2. Risk Analysis

An important part of risk management, is obviously to determine the risks the company is exposed to and how severely these risk may affect the company's activities. Analyzing systems and report systems is crucial when foreseeing and managing hazards and risks.

Value at Risk is a method that with a set significance level determines the worst case scenario for a risk.[89] Say that we for example want to determine how high our exposure to USD fluctuations may be during a time period, with a 99% significance level. We may

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[84] FRBSF Economic Letter, Number 2004-22*, Measuring the Costs of Exchange Rate Volatility.*
[85] King, Roy; O'Conor, Darren. *Risk Management*, p 14.
[86] Ibid, p 16.
[87] Bodie, Zvi; Kane, Alex; Marcus, Alan J., *Investments*, p 167.
[88] Dempster, M.A.H., *Risk Management - Value at Risk and Beyond*, p 1.
[89] Moosa, Imad A., *International Financial Operations – Arbitrage, Hedging, Speculation, Financing and In*vestment, p 69-71.

then, with statistical data of USD fluctuations, determine that the USD will not fluctuate outside a percentage boundary during the time period we set.

Value at Risk is however not a fundamental risk analysis. The method is very dependent on the assumptions laid down as a ground for the analysis. Also, the method will not consider catastrophic losses, such as sudden sharp changes in exchange or interest rates. Therefore it should be used with discretion, preferable in combination with other methods and strategies.[90]

The result of a Value at Risk analysis will depend on how much the currencies fluctuate and how the volatility may have changed over time. If the volatility changes irregularly, with high volatility in some time periods and very low volatility at other times, it will be very difficult to predict the volatility for a coming time period[91]. Thereby the conclusions in a Value at Risk analysis will not be reliable, since they are based on averaged assumptions. This is however a problem for all analysis methods, since the characteristics of the underlying data always affects the result of the analysis.

Another limitation of Value at Risk is that it can only be applied to data that has been captured by quantitative techniques, i.e. data that can be measured. Thereby it can not be applied to political, regulatory and operational risks.[92] This is a limitation that will affect the use of Value at Risk analysis of exchange rate movements, since the currency fluctuations often is affected by government interventions.

3.6.3. Reducing or Eliminating Risks

Pure risks can often be reduced by risk transfer. Insurance is the most commonly used way to transfer risks. In insurance you pay a premium to the insurance company, and the aggregate premiums paid to the insurance pool can then be used to cover losses for the party which was exposed to a loss. Hedging works slightly different compared to insurance. Often there are only two parties involved; such as two investors or one investor and one bank, and these two parties help each other eliminate the speculative risk. The term risk transfer should however be used with care. The company may still be exposed to the risk, but there is some other party that takes responsibility for the downsides of the risks. Such an example can be insurable events, whereas fire for example will still directly affect the business, but an insurance policy can transfer the responsibility of rebuilding the factory to an insurance company.[93]

In some cases insurance is not suitable, since it can be costly in the long run with all the premiums that are to be paid to the insurance company. The company can instead accept some risks and hence choose not to insure at all. This way of retaining risks may be used if the company is exposed to a speculative risk, such as fluctuations on the exchange rates,

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[90] Moosa, Imad A., *International Financial Operations – Arbitrage, Hedging, Speculation, Financing and Inv*estment, p 69-71.
[91] Davis, Edward; Coates, Jeff; Collier, Paul; Longden, Steven, *Currency Risk Management in Multinational Companies*, p 55.
[92] Butler, Cormac, *Mastering Value at Risk - a Step-By-Step Guide to Understanding and Applying VaR*, p 5.
[93] Young, Peter C.; Tippins, Steven C., *Managing Business Risk - an Organization-Wide Approach to Risk Management*, p 131.

and the management assumes that the ups and downs will even out in the long run.[94] Investors are however risk averse and aim to avoid all risks possible. Therefore this strategy is rarely used.[95]

Another way of retaining risks is to self insure. This can be done by setting up emergency accounts, which can be used at times when the speculative risk affects the company negatively. The accounts can then be balanced again when the speculative risk causes positive effects on the company's economy.[96]

Pure risks can be reduced by limiting the hazards and threats for the company. This can be done by installing fire alarms, burglary alarms, or take other safety precautions and thereby reduce the threats or limit the impacts of a possible incident.[97] Risks can also be reduced by differentiate the product line or market positions. A company operating on two independent markets may take advantage of a stable development on one market when the other market is in recession. Taking the aggregate risks affecting a portfolio or operation does not give the same result as if we take the sum of the risks. Some risks, speculative risks in particular, will even out each other and thereby reduce the total impact on the business operation.[98]

A final resort in risk management is risk avoidance. Extremely risky operations, that are difficult to insure or hedge, should be avoided. Since a company's future and market value is highly dependent on performance, it is unwise to take high risks in the operative process. But sometimes it is impossible to avoid risks. Substitution may then be a way to at least reduce the risks for the company.[99]

This study will merely focus on risk transfer in the hedge process and risk reduction with netting strategies.

3.6.4. Risks when Using Derivatives

Reducing or eliminating some risks when hedging may expose the company to other risks in the process. Operative risk refers to the administrative or technical difficulties in the organization. It may be the lack of communication between the finance department and the corporative management, but does also include imperfections such as security flaws that may lead to fraud in the hedging process.[100]

Each hedging strategy includes taking positions with legal contracts, such as options, futures or forwards. This implies a legal risk, since the lack of awareness and knowledge of the contract characteristics may lead to complications when the contract matures, and may lead to one party trying to get away from its responsibilities defined in the contract. This is however extensively controlled when trading standardized contracts on the open

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[94] Doherty, Neil A., *Integrated risk management - techniques and strategies for managing corporate risk*, p 5.
[95] Van Horne, James C.; Wachowicz, John M. Jr, *Fundamentals of Financial Management*, p 105-106.
[96] Doherty, Neil A., *Integrated risk management - techniques and strategies for managing corporate risk*, p 5.
[97] Ibid, p 5.
[98] Ibid, p 119-120.
[99] Ibid, p 5.
[100] Stenkula, Peter, *Den Svenska Derivatmarknaden – Omfattning och Systemrisker*, p 6.

market. The financial institutions have control systems that will reduce the legal risks for the participants. [101]

If a company will export goods and receive the payment on a later date, they may want to hedge the payment by taking position in a forward contract. The company will however still be exposed to a credit risk if the counterpart fails to deliver before or at the time when the forward mature[102]. If the counterpart for example files for bankruptcy shortly before the trade is to be made our company would then be forced to cover the forward position, which causes problem since there is no foreign cash flow to the company. The counterpart risk also includes the fact that our company has to cover the costs of production, which of course will be difficult if we have no income.[103]

3.6.5. Alternative Strategies

If derivatives for some reason are not suitable for the company's hedging objectives, alternative tools and strategies may come into play. A few alternatives will here be presented, and practical obstacles for these strategies will be discussed.

3.6.5.1. Foreign Loans

As we have seen so far, most companies on the world market are exposed to exchange rate fluctuations. But there are of course other financial factors to take into consideration in the production process. Financing the production is one issue that all companies need to set up a strategy for. Sometimes stocks are sold to finance new companies, and most of the time loans are used to finance projects or the production within a company.

Using a foreign loan both offsets the exchange rate exposure and helps financing the production. The company takes a loan in the foreign currency at the same time as the trade is entered, and then converts the loan to the local currency on the spot market. As the payment from the buyer is received, the company can pay back the loan. This way the company will both finance the production and eliminate the exchange rate exposure in one single strategy.

On the plus side, this is a strategy that is easy to set up, and easy to manage. The loan will not mature in the way that forwards do, and thereby the company has a great deal of flexibility to when the loan is to be closed compared to as when a forward position is to be closed. But the company needs to pay interest on the loan, and if the interest rate is higher than the difference between the spot and forward rate, this strategy will cost more than hedging with forwards.[104]

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[101] Stenkula, Peter, *Den Svenska Derivatmarknaden – Omfattning och Systemrisker*, p 6.
[102] Dempster, M.A.H., *Risk Management - Value at Risk and Beyond*, p 35.
[103] Stenkula, Peter, *Den Svenska Derivatmarknaden – Omfattning och Systemrisker*, p 7.
[104] Clark, Ephraim; Marois, Bernard, *Managing Risk in International Business – Techniques and Applications*, p 284-285.

If the loan is used for a limited period of time we may easily calculate the cost of this strategy. If we add the interest factor to the spot price, we will see that this strategy theoretically imposes the same costs as a forward hedge.[105]

Equation 2, Cost calculation of a foreign loan
$E = S_t * (1 + r * dd / 360)$

E The actual exchange rated when the interest cost is taken into consideration
S_t Spot rate
r Annualized interest rate
dd Time period when the company holds the loan

We can now see that the actual exchange rate is calculated in the same way as the forward price was calculated in equation 1.

3.6.5.2. Risk Premium added to the Contract Price

If a company is exposed to a currency that normally fluctuates within certain boundaries, they may add an extra premium on to the price they charge for their products, and in this way handle minor fluctuations and still sell the products with profit.

The downside of this strategy is simple. In a competitive market, all parties need to cut their costs to maximize profit. If the company adds an "unnecessary" premium to their prices, they will be less attractive on the market, and the demand for their products will fall. This will of course affect the company negatively, since a lowered demand will lead to lower revenue for the company.

3.6.5.3. Emergency Account

If a premium is added to the price, the company may over time save this extra income in an emergency account. When the currency fluctuates to a disadvantage for the company, they may use the premium to cover the loss, and when the exchange rate works to the advantage for the company they may save the extra profit. After a period of time this account can be used as a buffer for the company. In bad times, the money in the account can be used to cover losses, and in good times it can be refilled with the extra profits. Also, the company will still have the money safe in the account if no loss occurs, and hence they have not spent any funds on commission or insurance premiums.

This strategy does however have downsides as well. First of all it is costly to keep money inactive in the company. Often the managers in a company want to invest the extra money they have, and maybe even borrow more from banks and institutions to expand the business. Also, this account can not protect the company from extreme losses, and at longer periods of bad exchange rates it will be emptied and is then not useful any more.

[105] Penza, Pietro; Bansal, Vipul K., *Measuring Market Risk with Value at Risk*, p 223.

4. PRACTICAL METHOD

In this chapter I present the choices I made when preparing and performing the study. The decisions are based from the information provided in chapter 2. This chapter is hence a practical application of the theoretical methodology in chapter 2, and should be viewed as a bridge between the theoretical framework and the interviews that are conducted in this study.

4.1. Preconceptions

Since the fall of 1999 I have been a student at Umeå University. When I began my studies I planned to become a high school teacher, but after studying mathematics for a year I decided to leave that career path and find ways to combine mathematics and finance to get a job in the private sector. After that decision was made I studied the introduction courses in business administration including marketing, accounting, management and finance.

In the winter of 2003 I earned a bachelor degree in mathematics at Umeå University. It is because of my large interest in mathematics I have become interested in how financial tools can be used to protect a company. In all these tools, there are underlying mathematical models and without good knowledge in mathematics I believe it would be impossible to manage risks within a corporation. Therefore I find it very interesting and useful to combine these two subjects.

During the academic year of 2003 - 2004, before writing this thesis, I studied at Wright State University in Dayton, Ohio, USA. There I took 4 classes in finance that are directly related to the topic in this thesis. The courses were named Risk and insurance, Advanced topics in insurance, Investing in securities and International financial management.
The first two courses are very much insurance related, while the latter two are related to financial trade and management. These four courses gave me a lot of knowledge in how to trade derivatives on the open market, and how these derivatives can be a tool for protecting a company's financial assets.

4.2. Scientific Ideal

I am using a hermeneutic ideal in this thesis. With the study I strive for seeing patterns in how the tools are applied and how they in practice are suitable for companies.

I do not believe there in practice is a perfect way to apply all the theories on how to use derivatives in a hedging process. We may in theory set up examples to where the strategies can be applied, and have a perfect fit even for the very most rigid and standardized derivatives. I will not select data or statistically look into how the tools can be applied. I will rather examine how the tools can be used in practice and if the tools are suitable outside the theoretical framework. Thereby I aim for understanding rather than a fundamental truth, and hence the hermeneutic ideal will suit this study.

4.3. Perspectives

Two major perspectives are used in this thesis.

First it is the perspective of the companies. I will look closer on what needs local companies have and what knowledge they have about the tools offered on the open market. With the right information and knowledge, it is rather easy for the companies to hedge their income and expenses. I will look closer on if there is sufficient information provided to the companies, and what they need to do themselves to gain the correct knowledge about currency options and futures.

A secondary perspective I will use is the perspective of the bank. It is obvious that banks want to sell more of their services to customers, and if there is a section of the market that is not fully covered, I strongly believe that the banks will be interested in looking closer on this, to gain more customers.

4.4. Selection

In the selection process I aimed to get in touch with companies that have their main office and thereby their financial controller in this local region. But also I did not want the companies to be so small that they did not have any export to measure. If so, they would not have been able to give any useful information for this study. Therefore I chose to select only companies that are locally based but still export a significant part of their production.

4.5. Approach

As a ground for this study, there is a theoretical framework. I have in chapter 3 presented the characteristics of the derivatives and how they according to their characteristics is supposed to be used. I did however not begin this study with any hypothesis on how the smaller and medium sized companies differ to larger corporations when using derivatives. I rather wanted to enter the field with an open mind, and from the empirical findings generate new hypotheses.

In the study I will draw conclusions from the empirical findings and from the information the respondents provide I will generate theories and present patterns in the use of currency derivatives. I will hence use an inductive approach where I begin my path to the conclusions in the field study and from the findings I then generate new hypothesis.

4.6. Choice of Method

The purpose is to find answers to questions such as “How is derivatives used today?”, “What can be improved?” or “What is the banks role in the process?”. And therefore choosing a qualitative method comes natural to the researcher.[106]

The main difference between a qualitative and a quantitative method is how the researcher collects his data, and how the gathered data how it is processed an analyzed. In a quantitative method a larger number of occurrences of the problem are examined, and

[106] Berg, Bruce L., *Qualitative Research Methods for the Social Sciences*. p 2-3.

the data is statistically collected and analyzed. In a qualitative approach, a smaller number is examined, and the result of the study is in many ways a product of the researcher's perspective and experience of the problem.[107]

Since there is a limited amount of time when writing a thesis of this size, it is suitable to use a qualitative method. Also, the selection criteria limits the numbers of suitable companies for this study, and a qualitative method is then better for the purpose of this study since it makes it possible to go deeper in to the problem, rather than reach out to a wider range of companies.

The purpose of this thesis is to find out how smaller companies use derivatives to hedge for currency fluctuation. And after finding an answer to that, a secondary purpose is to find out what can be improved in the relationship between the bank and the company. Therefore it is suitable to use a qualitative method where I in interviews can modify and formulate the latter question immediately after the representative for the company has answered the first question.

In this thesis, the purpose is to seek understanding to how good the knowledge and level of awareness is in the local companies. Therefore I found it suitable to use a qualitative method. Also, I do not intend to prove neither that there is a good, nor a bad, level of awareness among the economists in the local companies. I rather aim to show how good the level of awareness is, and how and why this is. Therefore a hermeneutic scientific ideal in a qualitative method suits this mission.

4.7. Search Approach for Literature

When searching for secondary sources I have mainly used the University Library and their services. In the database ALBUM I looked for books related to the study, by searching with key words such as "hedging", "exchange rate", "exposure" and "currency". I also used the equivalent words in Swedish, since many books in the library are in Swedish.

Some sources were too detail in to specific cases and the information in these could not be used. Examples of those books were earlier studies made in the field by researchers or students at universities in Sweden. However, they gave me new ideas and new perspectives on the problem of exchange rate exposures and could thereby lead me to new paths to explore.

Some sources have been papers found on the internet. I have though been restrictive when using internet sources, since it is not always possible to determine the source behind these papers. The only internet sources I chose to use were information from political parties, exchange rate history and a paper about what costs are involved when hedging. I determined that these papers and sources were trustworthy since it was obvious who was responsible for them, and that the writers are well known.

[107] Berg, Bruce L., *Qualitative Research Methods for the Social Sciences*, p 2-4.

4.8. Search Approach for Respondents

To get in touch with companies in the Umeå region, I first contacted Jobs & Society in Sweden.[108] They did not have a proper register over their clients that could provide me information about what companies exported or imported goods. But they suggested that I should contact Chamber of Commerce and Industry in Sweden. They provided contact information to four companies with export oriented production in the Umeå region.[109] One of the companies they suggested I could contact was Indexator, who later on agreed to do a phone interview for this study, while the other suggested companies were discarded since they either had only a limited amount of exports and hence did not suit the selection criteria for this study, or their finance managers were too busy to give interviews.

In a very early stage I also contacted two of the larger banks in Sweden, to find out how common it is that smaller companies use derivatives to hedge for currency fluctuations. I wanted to know what the market looks like today, and what kind of derivatives the companies request.[110] One bank, SEB, provided some initial information over the phone. I then learned that Handelsbanken has one of their region offices located here in Umeå and hence I chose to make a longer interview with Handelsbanken.

Two companies that I knew about from before, and that would fit my selection profile were Ålö and Logosol. Both these two companies have their main offices in this region and I therefore decided to contact them for interviews.

4.9. The Interview

The interview in this study follows the semi-structured interview scheme, since it was important that the same kind of questions initially were asked to the respondents, but researcher also needs to be able to ask follow up questions if new information is provided during the course of the interview.

When I prepared for the interview I visited the home pages for the companies that I where to meet. I wanted to have a mental picture of what the companies produced and for whom. Also, I wanted to make sure that the delimitations and selection methods I had chosen were applicable for these companies. Then I wrote an interview manual consisting of the main questions I determined would be interesting to ask to the companies. The questions where written and asked in Swedish, but in the appendix to this thesis you will find both the original Swedish and a translated version in English. A tape recorder was brought to the interviews, so that I could write down the transcript after the interview, and focus on the questions during the interview.

4.10. Primary Source Critics

When it comes to the primary sources, i.e. the respondents, they have been chosen according to their positions in the company. I have only talked to finance directors and

[108] *Jobs and Society,* Nyföretagarcentrum.
[109] *The Chamber of Commerce and Industry of Sweden*, Industri- och Handelskammaren.
[110] Kjell Lundgren, SEB Umeå.

supervisors in the companies and of course a currency broker working for a bank. Their positions in the companies imply a lot of responsibilities, but also they have a lot of information on how the companies use currency derivatives since they are key personnel in the hedging process. The position in the company does however include a great deal of confidence that the company has for the employee, and the employee want to keep the company's trust and hence not reveal any business secrets to outsiders. Therefore it was not possible for me to read any policies the companies had on hedging strategies. The respondents were however very helpful as they answered my general questions on how the policies where developed, written and used, and thereby I don't see any shortcomings in this study for not looking into specific details in the policies.

During the course of the interviews I got many chances to ask follow up questions or extend and differentiate the questions in the interview manual. Hence I often had a chance to ask second question if the respondent did not have an answer to the first question. Thereby I got answers to all the ideas I had before I entered the interviews, and I determine the answers to be reliable since the respondents both are key personnel with the right information and they also put a lot of effort in to answering my questions, even the detailed and specific ones.

The respondents were very helpful and answered my questions according to their best abilities. They never denied me any answers, and if there was a question they could not right away give an answer to, they helped me find it. Such questions could be about information that can be found in the company's annual reports, and they also provided up to date information from their annual reports as I requested it.

4.11. Secondary Source Critics

When it comes to the books and other written material I have studied before conducting the interviews or analysis, they are mainly written in English. Some sources I found in the library were written in Swedish, but when reading them it was sometimes confusing with the terminology, since there for example is no term for "future contract" in Swedish. When studying the Swedish material, most of the books focus on forwards and options.

As I looked for books in the University Library, I always tried to get hold of books that had been printed or updated in a recent year. It was not always possible. Some of the sources for the methodological framework where dated as far back as the 70's. I do however believe that the actual methods have not changed over time, and therefore even older sources may be used for setting the standards of the methodology. When it comes to the sources used for the theoretical framework in chapter 3, only one source where dated before the 90's. The information I used form this book, by Ljungström, could however be confirmed and supplemented with information from several other books. Hence the date of this book has not affected the study.

By often relying on several sources for the same sections or chapters, I could compare the information provided in the different sources, and thereby uncover false or biased statements. Combined with the fact that the sources I used are published by Universities or other well known institutions or publishers, they can be considered reliable.

5. EMPIRICAL FINDINGS

In this chapter I will present the result of the interviews made with three companies and one bank. The result will be analyzed and summarized in later chapters. In this chapter the interviews will only be presented the way it was given by the respondents.

5.1. Ålö

5.1.1. Introduction and Company Presentation

Ålö AB is a producer of front loaders for farm tractors. For this study I interviewed Mattias Byström who is the finance director at Ålö. He studied International Business during his time at the university and has been working for Ålö since August 2001.

Ålö operates on 25-30 markets with different market positions. The main concentration is in the European and North American markets. Around 10% of the exports go to Oceania, countries such as New Zeeland, Australia and Japan. They also exports on a smaller scale to countries such as Chile, Argentina and Brazil, but these markets are not of significance today.

Ålö has their main growth in the North American market now. Some countries in Europe, Poland for example, are new market that Ålö entered this year. They are not market leaders in Germany or France, where competitors are larger. But these countries are the largest markets in Europe, and Byström says there are future possibilities there to advance and gain more market shares.
The production is located in 3 countries; 4 factories in Sweden, 1 factory in Denmark, 1 factory in France. The main part of production is in Sweden and thereby most of their costs are in SEK.

5.1.2. Exports

Exports stand for more than 90% of Ålö's production. But approximately 520 of 800 employees are situated in Sweden. Thereby the main part of their costs is in SEK. Some imports come from France and is therefore paid in EUR, and other suppliers charge in EUR, DKK and NOK. The imports in USD stand for a very small part of the total imports.

The parent company buys from factories in Sweden and Europe, and then exports the product. The currencies USD, CAD, GBP, EUR, DKK, NOK and SEK are used when trading. Two main exposures are USD and GBP, since no flow to meet up with the export incomes. Ålö have very few costs in dollar, and the net flow is hence rather large. On the sales there is a EUR exposure, but net exposure is there lower since some costs are in EUR.

5.1.3. Contracts and Policies

Contracts are entered and signed by the market department. The company has a finance policy that states how the exchange rate exposure is to be handled. The main outline is

that the company strives to use SEK, but since 90% of the production is exported it is not always doable. If not using SEK, one of the main currencies shall be used. It is not ok to for example sell to South Africa in ZAR, since it is not a major currency for the company. However, they agree trade in EUR, USD and the other main currencies.

The policy was developed in early 2003, in cooperation with the Swedish bank Nordea. Before this policy was implemented, there was a larger aspect of speculation involved when trading in foreign currencies. If the USD was appreciated, you could argue to not hedge and take advantage of the profitable exchange rate. But this also includes a speculative risk since you can not be sure how long the USD would have such a high exchange rate. However, after a new owner stepped in during 2003, the policy was taken to hedge the currency exposure, and so is done on a 12 month basis. The purpose of this rather new policy is to eliminate the aspect of speculation, and thereby eliminate the risks involved.

5.1.4. Hedge Approach

There is a continuous flow of smaller product packages produced by Ålö that represents their income and expenses. There are no large projects or special contracts to be specified in the hedging. Therefore Ålö has chosen to use a continuous hedging strategy.
Once every month the flow is measured, and the flow that is not secured from before will be hedged. The company also has a continuous incoming cash flow, since there are no seasonal differences in the sales. Thereby a prognosis can be approximated in advance and then be adjusted as the production continues.

Since the policy was implemented it has so far been followed. If there would be reasons to depart from the main outline of the policy, it is also controlled by the policy. Such decisions are to be made within a group of directors in the company.
Say that if the USD appreciates significantly, there is a reason to try locking in this higher exchange rate for a longer period. For example a 24 month perspective may then be applied instead of the 12 month horizon that is used today.
If that decision is made, a factor of speculation plays a role since the decision is based on assumptions on how the USD would fluctuate during an upcoming time period. However, this speculation also results in locking in a fixed exchange rate, and thereby securing the cash flow for a longer time period.

When hedging against currency fluctuations, Ålö use so-called flexible forward contracts. The exchange rate in the contract is a little lower than the spot rate, but if the foreign currency appreciates, so will the exchange rate for the company. This has been chosen lately, especially since the USD is very low compared to how it has been previous years. The company is willing to accept an exchange rate that is a few points lower than the spot rate, but they also then gets the opportunity to gain if the USD appreciates.

5.1.5. Ålö and their Bank

Ålö stays in touch with the bank and receives information through a broker. The contact is mainly conducted by monthly phone calls. They discuss the current situation, hedging possibilities and then make the decisions together. When I ask Byström if the company

suggests new products or strategies, or if that is something that is being suggested from the bank, he underlines that the communication between the company and the bank is based on dialogue.

For Ålö the products and tools supplied from the bank are sufficient. There is today no demand for new or changed products. Byström agrees that there exists more advanced tools that in theory could be used, but there is no need for such products for Ålö. The main business for Ålö is to produce, market and sell their products, and be focused on the main process. Therefore they have no need for the most advanced financial products.
The policy clearly sets limits to what tools are to be used. This is done with the purpose of minimizing the risks. There are risks involved in using hedging strategies if you don't have the right knowledge or routines. Therefore this is avoided since there is no real need for more advanced strategies.

Byström states that the bank sells more than only the financial tools, i.e. the derivatives. They also help inform and teach the responsible parties in the company. This is done to support the company, and make sure the right personnel have the right information and knowledge when a financial policy is to be shaped and applied.

5.1.6. Risks

When it comes to risk, Byström says that it depends on what perspective you choose. For him all risks are only negative. If you could eliminate all risks, it would be better for all parties.

The two main negative sides of hedging he can see from his perspective is first of all that if you today have a very low USD and you hedge, you may miss an appreciation of the USD in the coming months. Secondly you take a risk when you hedge, since the derivatives are contracts and if you don't get the cash flow that you counted on you still have to cover the derivative. Byström explains this with a matrix model, where the cash flow versus hedge size and the spot rate versus hedged rate.

Figure 1, Remaining risks when hedging.

	Forward rate lower than spot rate	Forward rate higher than spot rate
Cash flow lower than hedged amount	**1**	**2**
Cash flow higher than hedged amount	**3**	**4**

1. The company will loose out on a lower exchange rate, since they would have received more money if trading on the spot rate. Also, the cash flow they receive is lower than they had hedged for, and thereby there hedge is too large and need to be covered.

2. The exchange rate is higher than the spot rate, and thereby we will gain from the hedge. However, we have hedged too much, and need to cover the excess hedge.
3. The hedge affects us since the locked in rate is lower than the spot rate. On the plus side there is however am excess cash flow that we can convert to the higher spot rate.
4. The company gains from the hedge since they can trade for a rate higher than the spot rate. However, the whole traded amount is not covered by the hedge, and thereby the excess cash flow will be transferred on the lower spot rate.

Only in field 1 we will have two negative effects. Thereby we have reduced the impact of the hedge from 1 bad of two possible cases if we had chosen not to hedge, to 1 out of 4 when we choose to hedge. It is also important to note that the impact in case 1 is lower than an unhedged case, since only a marginal amount of the hedge will be affected by the exchange rate fluctuations. A major part of the amount is however hedged and even though we trade on a rate that is lower than the spot rate, we can with certainty know in advance that we are guaranteed a certain amount as long as our customers manage to deliver the money.

5.1.7. Cash Flow Aspects

Ålö want to take position in SEK as soon as possible, since most of their costs are in SEK. Therefore it is desirable to lock in the rate when making a trade. And since the company has a continuous cash flow, this can be done by the monthly measures and prospect updates.

5.1.8. Final Observations

The policy is to be presented to the board once a year. Since it is in general terms to a large extent, there will be no need to adjust any details in it every year. Byström says revision should not be needed since in the policy a mandate given to the operatives to make decisions about strategies and daily routines when hedging.

Hedging has become more and more of a routine for the operatives today, and just about approximately ½ - 1 day per month is spent on producing reports and prognoses for hedging. It has become a monthly routine to update the measures and the system seems to be working well for its purpose.

5.2. Logosol

5.2.1. Introduction and Company Presentation

Logosol has 20 employees and manufactures wood processing machinery[111]. For this study I interviewed Maria Palmgren who is the finance director at Logosol in Härnösand. She is responsible for areas such as accounting, finance and IT within the company and has worked for Logosol since 2000. She has a background in accounting and business administration.

In 2003 the turnover for Logosol was 55,877,000[112] SEK, and is approximated to reach 60,000,000 SEK during the fiscal year of 2004.

5.2.2. Exports

Approximately 50% of the production is being exported. Buyers are located in the European countries as well as in the United States and Russia. The company does not import supplies, but buys directly from suppliers in Sweden. They have no production in their facilities, they only buy and sell the end product. They do however own the inventions and the patents for the inventions and thereby controls the product development.

When exporting, Logosol use different ways to distribute the product. First of all they sell the product directly to companies which used to be subsidiaries and now are independent corporations. These companies are located in Germany, Norway and in the United States and are selling and distributing the product to the end customer.
On other markets Logosol sell to independent importers who buy various quantities of the products. Some orders only a few machines per year, while others buy up to 30 per year. The largest market for Logosol, excluding the former subsidiaries, is Russia. Logosol also sells directly to individuals abroad, when receiving individual orders. Hence there is a broad variety of paths that the product is distributed over.

5.2.3. The Order Process

There is no continuous flow of orders to the company. Instead the orders come with irregularity in time and with varying proportions. The underlying subsidiaries produce quantities that are approximated by predetermined prognoses and Logosol aims to gather as much information as possible from the buyers, to foresee a coming demand. Adjustments in the production process are continuously made if larger or smaller quantities are needed.

Contracts are not entered with customers. Instead orders are made from the buyer to the company for each trade. The product is primarily price in SEK, but buyers in the United States and Germany pays with USD and EUR. All buyers outside the United States and Germany pay with SEK. Buyers in Russia and Norway, for example, don't buy the

[111] *LOGOSOL UK - Wood Processing Equipment: Products,* Logosol.
[112] Logosol Årsredovisning för räkenskapsåret 2003.

product using their own currencies, instead SEK is used. This policy is taken to avoid the insecurity caused by currency fluctuations.

5.2.4. Currency Policy

When comparing the EUR and the USD, it is obvious that the USD causes the highest exposure to fluctuations, since the SEK to the EUR fluctuates less than the SEK to the USD. And this extensive fluctuation affects both parties in the trade. If the USD appreciates to the SEK, it will be hard for the importers in the United States to place new orders. And likewise if the USD depreciates to the SEK it will be difficult for the exporter in Sweden to price the new orders.

The exchange rate exposure of the USD is controlled in two ways. First of all, Logosol has an agreement with the buyers in the United States that the prices will be set in USD, but will not be increased with more than a certain percentage over a 6 month period. Thereby Logosol can adjust the prices for smaller fluctuations, but the buyer can still be sure that the prices won't fluctuate more than this percentage limit. This way, the risk is shared by the two parties.
After the price list is set it will be used for the coming 6 months and may only be adjusted within limited boundaries. Thereby it would be interesting for the company to secure the price list by hedging. But since there is no regular flow of orders it is hard to predict how many products will be sold and it is thereby difficult to approximate a cash flow to be hedged.

Logosol has earlier used the strategy of hedging with forwards. But since they could not predict when orders will come and the cash flow is very irregular, this strategy did not suit the needs of the company. Using forwards implies the responsibility to perform a trade when the forwards mature. And since the company could not predict the cash flow, a lot of adjustments had to be made to the contract sizes. These adjustments were too extensive and complicated to control and therefore this strategy was abandoned.

5.2.5. Hedging Receivables

Today Logosol use a strategy that works similarly to having a foreign loan. They use a checking account nominated in USD for the incoming payments, and regularly money is transferred from the checking account to an account nominated in SEK. The negative balance on the checking account is later balanced out when receivables are paid to the company

The receivables are estimated according to prognoses and an average amount is approximated. The checking account is then balanced to 75% of the approximated amount of receivables, and in this way the company can secure the main part of the receivables today, and cover the negative balance in the checking account when payments are received. The remaining 25% of the receivables are converted to SEK at the time of payment and the company then accepts the exchange rate of the day of the payment for this quarter of the payment. However, these 25% also functions as a buffer; since the aggregate amount of receivables may be lower some months if fewer orders come in to the company.

The cost of this strategy mainly consists of paying the interest on the checking account when having a negative balance. However, the interest rates on USD are lower than interest rates on SEK or EUR. As currently the interest rate is as low as 3%, and this is a cost that is acceptable since that strategy makes it possible controlling a major part of the receivables.

5.2.6. EUR and Currency Fluctuations

The EUR on the other hand is not hedged at all. This decision is made is since they have a lower turnover in EUR, and the EUR is more stable to the SEK. The exchange rate of the EUR will at some periods be profitable and during some periods a disadvantage to the company and these fluctuations are accepted since they are small and affect only a smaller part of the company's revenues.

5.2.7. Strategies and the Bank

Currency options have been considered for hedging, but the bank stated that the amounts that the company wanted to hedge were to low for using options.

The issues of currency fluctuations and how they affected the company have been discussed with their bank. Logosol suggested to the bank that a loan in USD could be desirable for their hedging purposes, and the local office in Härnösand could then help them set up this loan and make it a part of the company's invoice system.
This strategy has been used for a bit more than a year, and so far it has worked well. If the company in the future has a more extensive operation in the United States, the policy might be reviewed but so far there is no need for changing the hedging strategies according to the company. The system that is set up today for invoicing in USD and using the checking account to control the USD exchange rate fluctuation needs no extra time for the company. It is an integrated part of the system today and no extra time is spent specifically for currency control.

5.3. Indexator

5.3.1. Company Introduction

Indexator manufactures slewing rotators that for example can be used in forest machines. The company is situated in Vindeln, a village located 50 km from Umeå. For this study I interviewed Åke Karlsson who is the finance director at Indexator and he is amongst other duties responsible for hedging the foreign currency cash flow in the company.

The company exports both to European countries and to the United States and has their main foreign cash flows in EUR and USD. Their foreign currency policy has been used for the last tree years, and consists of two strategies.

5.3.2. Strategies for the EUR Cash Flow

Primary a netting strategy is used. When trading, it is the buyer who controls what currency is to be used. Therefore the company exports to the European countries in EUR and to the United States in USD. To minimize the EUR exposure, the Indexator has a policy to buy supplies mainly in EUR. By doing so, the net flow of EUR will be minimized, since there is both an inflow and an outflow of EUR in the company. Hence when the company imports from Finland, Denmark and even suppliers in Sweden, they will pay with EUR.
Since the net flow of EUR thereby has been minimized, there is no need to hedge the EUR exposure. Since no hedging position is taken for the net flow, the company accepts the spot rate as it is at times when the net flow is to be converted to SEK.

Secondary Indexator uses forward contracts to hedge for some currencies. Since Indexator has no imports from the United States, it is difficult for them to use the same strategy with the USD as with the EUR. Therefore they have chosen to use forwards to hedge the USD cash flow.

5.3.3. Strategies for the USD Cash Flow

Karlsson uses prognoses and signals to forecast the USD cash flow. He then hedges the cash flow with USD forwards contracts. There is a continuous cash flow in the company and there are no seasonal changes that affect the orders or deliveries. Therefore these forecasts can be used as an effective underlying instrument when setting up the hedge. The only fluctuations that can be noticed in the order flow are from cyclical changes on the market.

The company has an account nominated in USD, where incoming USD is gathered. And as a forward contract matures, this account is used to deliver according to the contract. The remaining balance on the account is then either saved in USD if the exchange rate is low, or transferred to an account nominated in SEK if the exchange rate is good for the company. By keeping or transferring the USD the company is exposed to a speculative risk, but only to a rather small extent since a major part of the cash flow is hedged already with the forward contracts.

Indexator continuously forecasts the cash flow and hedges on a 3-6 month basis. In the forecast they try to predict upcoming orders that will directly affect the production. In the forecasts they also predict when receivables will come in to the company, and how large the hedged amounts should be. Since these calculations are only predictions and there still is an uncertainty tied to the forecasts, they choose to not hedge the whole amount. 75% of the approximated upcoming cash flow is hedged, and the remaining 25% is converted on the spot rate as of the day when the money is received. This way, most of the speculative risk is eliminated, but still the company does not take position in forward contracts that can lead to excess hedging, and thereby affect the liquidity to the negative.
Indexator uses fiscal exchange rates when setting up the yearly budget, and uses updated cash flow and liquidity forecasts to predict the foreign cash flow.

5.3.4. Bank Relations

The contact with the bank is maintained by regular phone calls, usually once a week as Karlsson contacts the bank for updates and adjustments to the hedged positions. On a quarterly basis they make adjustments and updates to the overall trends and major forecasts. They also meet with the bank every 6 months, to make updates on predictions of business cycles and similar issues.

Karlsson says that approximately 1h per week is spent on hedging issues, and thereby approximately ½ day per month is spent to maintain an effective hedge.

5.4. The Bank: Handelsbanken

5.4.1. Bank Introduction

Handelsbanken is one of the largest banks in Sweden, with both corporate and private customers[113] with a yearly turnover of 21.8 bn SEK as of 2003 (15.1 bn SEK for the parent company alone)[114]. I have interviewed a representative from the bank, and will in this section present a summary of what derivatives are supplied from the bank, and what derivatives their customers demand.

Handelsbanken has one of their regional offices in Umeå that provides service to companies in the northern part of Sweden, from Härnösand in the south to the very north parts of the country. Approximately 25 people work at the office; out of 2 are currency brokers.

As a customer in Handelsbanken you contact your local office in the city where you operate. The local office is then in touch with the regional office and the regional office is in some ways controlled by the banks main office in Stockholm.

Björn Lenman is one of the currency brokers at the regional office in Umeå and he spends around 60% of his time on currency trade, and around 40% on investing large amounts for customers who demand higher interest rates than what is offered in standard savings accounts. His duties also include supporting the local offices in these issues when questions arise.

5.4.2. Customer Demand

Most of the banks customers who ask for currency derivatives are exporting companies. Mainly forward contracts are sold to the customers when they want to hedge against currency fluctuations and currency options are rarely used.
In Sweden, currency forwards are widely used when hedging, while the currency option trade is limited. This pattern can especially be noticed among the companies in the northern parts of Sweden.

Nowadays the EUR currency forward contract is the derivative most frequently demanded. Approximately 40-50% of the trades that Lenman makes with the customers are for EUR derivatives. Secondly USD forwards are sold, followed by GBP and NOK derivatives. For example JPY derivatives are rarely used, but there is however a demand also for these derivatives, mainly from companies in the forestry sector.

5.4.3. Customer Relations

The customer relations are mainly managed over the phone. The bank provides an internet service, called market online, but this service is mainly used by larger companies that trade forwards on a weekly or daily basis.

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[113] Handelsbanken Annual Report 2003, p 17.
[114] Ibid, p 60.

Incoming and outgoing phone calls are taped, so that if a conflict arises when the bank has bought or sold a derivative for a customer, there will be no doubts to what had been agreed upon when the trade was agreed upon. However, these conflicts rarely arise. It is more common that there are conflicts when trading stocks than when trading currency derivatives.

The frequency of how often the bank talks to the customer varies a lot depending on the customer. Most of the time it is the customer who contacts the bank when needing to hedge or adjust previous hedges, and larger companies is contacts the bank more often as the smaller companies makes updates less frequently.

Handelsbanken also provides information to the customers and educates key personnel in the customer companies to increase the awareness of the financial tools available. During these information sessions, the bank illustrates how the tools can be used and how they suits different purposes. This is sometimes done by meeting a single company's representatives, but the bank also provides information sessions when key personnel from many different companies attend.

5.4.4. Policies and Strategies

When a company plans to set a financial policy or strategy for hedging, the bank provides information and support, but does not take part as an active writer of the policy. This is since if they did write a policy for a customer, there is a risk that the bank would be seen as liable for the outcome of the policy and its following causes. Also, there could be a conflict in interest if the bank both writes the policy and set up the strategy, and then makes the trades according to the policy and strategy. Therefore it is more reasonable to provide information to the companies and then have them write their policies and set the strategies themselves.

According to Lenman there is a difference in demand depending on the company size and experience. Some companies ask only for some advice, while others need a full service cover. It is mainly larger companies that ask just for limited advice, while smaller companies need more help in the hedging process.

When comparing the use of forwards versus options, forwards are used more frequently when hedging against currency fluctuations. Options are recommended if the customer is in the process of entering a deal and they are obligated to leave a binding offer to the other party. If the customer is chosen to be the supplier, they are obligated to meet up to the offer they presented in the bidding process. But if the customer is not chosen to be the supplier, and he has taken a position in forwards he will have an obligation to deliver when the forward matures, but would not have any cash flow to meet up this obligation. Therefore options are recommended if the customer is in the bidding process including binding offers.

The forwards are recommended if there is an actual cash flow that needs to be secured. When hedging with forwards there is no actual cost for the company, except the bid / ask spread on the contract. The company does not pay a premium, as is done when hedging

with options, and there is also no commission to be paid for the forwards, as is done when trading stocks through a broker.

5.4.5. Pricing and Risks

When trading currencies the bank use the so called bid / ask spread to set the spot rates. When the bank buys EUR from a customer, the exchange rate could for example be set to 9.05 SEK per EUR. At the same time they sell EUR to customers with an exchange rate of 9.08 SEK per EUR. And thereby the bank will earn .03 SEK for each EUR that is bought and then sold. This bid / ask spread is used to control the risk when trading currencies but will also generate a profit for the bank.

The price of forward contracts is based on the spot rates. Let us consider an example where a customer wants to sell EUR to the company in a few months time. They will then buy a EUR forward contract with the same maturity date as the delivery date. The bank will take a loan in EUR, and transfer the money to an account nominated in SEK. Thereby interest has to be paid for the EUR loan and interest will be gained on the SEK account.

As the contract matures, the customer pays the bank with EUR, and the bank can thereby close the loan. The bank will at the same time pay the customer with the money from the SEK account. EUR loans usually have a lower interest rate than the accounts nominated in SEK, and thereby there will be a net interest that will affect the forward rate. This difference is calculated in advance, when the forward contract is sold, and thereby the forward rate may differ to the spot rate. Whether the forward rate is higher or lower than the spot rate will thereby depend on the interest rates.

The main risk for the bank when selling forward contracts is that the customer might not deliver when the contract matures. There is however an asymmetric flow of currencies to the bank. Customers supply more EUR than they demand, and thereby large amounts of EUR are gathered at the bank. The excess EUR is transferred to the main office in Stockholm, where brokers sell the EUR for SEK on the intra bank market. Handelsbanken also has offices in the United States, Great Britain and on some locations in Asia. Thereby the main office can transfer the excess amounts to these offices if they don't find buyers on the Swedish intra bank market.

5.4.6. Alternatives

The bank has not produced any new products for currency trade. There is no direct need for new products, and there are no new products that have developed from other actors on the market either.

When it comes to alternative strategies, such as foreign currency loans, the paper work is managed at the local office, but the regional office manages the supply of currencies for these loans. However, Lenman states that this strategy does not work as well as hedging with derivatives. The strategy of foreign loans is mainly used by companies which operate abroad with subsidiaries or branches of the company.

6. ANALYSIS AND DISCUSSION

In this chapter the information from chapter 5, Empirical Findings, will be analyzed and discussed. I show patterns of similarities and differences in how the companies in practice use the provided financial tools when hedging. A few alternative strategies will also be suggested and evaluated and finally I will suggest how change can be managed..

6.1. Introduction

All three companies I talked to when performing the study had strategies and policies for controlling their exposure to currency fluctuations. As presented in chapter 5, we can see that the three companies both had similarities and differences in their ways of setting up and adjusting their strategies to fit the operations in the company. These similarities and differences will now be analyzed and discussed.

6.1.1. Similarities

The first approach all three companies use in their hedging strategies is to reduce the net flow of foreign currencies. This can be done in different ways, but the common reason is to reduce the foreign cash flow and thereby reduce the uncertainty involved.

One way to reduce the net flow of foreign currencies is to limit the numbers of currencies in operation. The companies chose a few currencies to use in operation, and will then not agree to buy or sell in any other currencies. There are two reasons for choosing this approach. Primarily it is easier to control the foreign cash flow if only a few currencies are involved. Also, it is easier to reduce the net flow if only a few currencies are used. It would for example be hard to pay suppliers in Europe with ZAR, and thereby it will not be possible to reduce a ZAR cash flow if the company allowed buyers to pay in ZAR.

All three companies use netting strategies. They either have operations in other countries, or choose to pay suppliers in the incoming currencies, and can thereby reduce the net flow of foreign currencies. As the impact of the net flow has been reduced, there will be fewer needs for hedging. Some currencies may even have such a low impact on the company's operations that they can choose not to hedge at all.

None of the companies use currency future contracts. The reason for not choosing futures is most likely that forward contracts have the same practical functions, but can also be modified to fit the company's needs when it comes to maturity dates and contract size.

As the company has set a list of “acceptable” currencies, they never need to negotiate with the buyers on what currencies are to be used. Thereby orders can be placed and the process is simplified compared to if what currency to be used had to be agreed upon for each trade. The companies can also set price lists in foreign currencies, and it is then easy for the buyer to see what the product costs. The price lists may be updated if the currencies fluctuates, but it will at least be possible for the buyers to know what the products cost as of today.

As hedging strategies are developed, they are based on prognoses and expectations. The two companies that actually use derivatives when hedging have no seasonal changes in their production or in the demand for their products. They can thereby forecast a demand for the products. These forecasts will then affect both the production and the hedging positions.

6.1.1.1. Opinions on Risks

The finance managers are risk averse. They choose hedging strategies to reduce risks, and they have even in some cases an open opinion on how risks affect the business operations. None of the companies I interviewed applies strategies that can reduce all risks, since they can not foresee exactly how many orders they will receive in the future. This is still an uncertainty the companies have to accept.

6.1.2. Differences

The larger companies tend to use the classic hedging strategies, setting up forecasts and then hedging with derivatives; mainly forward contracts. The smaller company in this study uses a foreign loan strategy. This is not the first strategy they have applied, but when using forward contracts they came to the conclusion that the characteristics of the forward contracts weren't compatible with the company's needs.

Logosol has chosen a different strategy when hedging. By using an account nominated in a foreign currency they can adjust the delivery dates, compared to if they had used forward contracts. Logosol also use flexibility in their price lists to manage minor currency fluctuations.

The EUR exposure for Logosol is so low, that there is no need for controlling this flow with derivatives or other hedging methods. The exposure is not low because of a low cash flow; it is rather low because the EUR fluctuates less than other currencies, such as the USD. The company has hence decided not to hedge the EUR cash flow at all, and thereby accepts the exchange rate as of the day when the payment is made from the customer.

Both Ålö and Indexator use forward contracts when hedging and they both use prognoses to make forecasts on how many orders will come into the company. There is however a difference in how much of the forecasted foreign cash flow that will be hedged. Indexator choose to hedge 75% of the expected foreign cash flow. This percentage is set to cover most of the incoming cash flow, but still leaves room in case the number of orders is reduced or declines. The company takes thereby no risk of being over hedged. Ålö hedges the forecasted amount, and believes that a slight over or under hedge only affects the company marginally (as presented in the matrix in section 5.1.6), and it is for sure better to hedge on an approximation than not hedge at all.

6.1.2.1. Strategies Correlated to the Size of the Company.

We can clearly see that there is a difference in the hedging strategies depending on how often orders come in to the company. In the case of Logosol, it has been proven impossible to use forward contracts when hedging, and alternative strategies have thereby been chosen.

The larger companies, Ålö and Indexator, are however large enough to use the derivatives when hedging. The forward contracts are flexible contracts and can thereby be adjusted to suit the needs of the buyer. Thereby they can be defined for smaller sums, and it is hence not the size or amounts of orders that make it impossible for Logosol to use forward contracts. It is however crucial to be able to predict a coming flow of orders. It is the irregularity in the flow of orders that makes it difficult to make forecasts for smaller companies, and it is hence therefore hard for them to use forward contracts.

6.1.3. Alternative Strategies

Options are a type of derivatives that may be used if there is a possibility, but no certainty, that the company will get an order. Currency options is however a tool that is rarely used in Sweden, and seems to be more popular in other countries. As we know from section 5.2.7, Logosol considered using currency options, but these contracts were only applicable for larger transactions. We also know that the larger companies, Ålö and Indexator, have chosen not to use currency options at all. This implies that currency options are best suited if a company is bidding for a specific and rather larger order, and that the company in the bidding process does not know if they will get the order or not. And since the companies who have participated in this study have a flow of smaller orders, options are not applicable for them.

If a company wants to reduce the exchange rate exposures, they could move the production facilities and operations to the countries where they have their customers. We can see that if the SEK is low compared to the USD for a long period of time, the Swedish exporters will meet obstacles when looking for new customers. But if the production were located abroad, the net flow of foreign currencies would be reduced. The Swedish company would then only have an exposure on the net profits at the end of each year. This would however imply a need for rather large reorganizations and with all reorganizations there are costs involved. Also, if the company wants to grow on new markets, they would not be able to start productions in these markets until they have strong positions there. It can thereby be very difficult to move production and operations to new countries as the market where the company operates change. I thereby think it is better to spend time and resources on monitoring the hedging strategies, than changing the organization of the companies.

6.1.4. Bank Relations

The bank educates key personnel in the customer company and provides updates to the companies if needed. The bank does however have a limited liability for the hedging policies and strategies that the companies use, since the bank does not write policies for the companies. The bank rather helps applying the policy to a strategy according to the needs and demands of the customer.

The companies are usually the ones who contact the bank to take new positions in forward contracts, or if adjustments have to be made. The contact is maintained by regular phone calls, and the companies can over the phone place new orders of forward contracts, close positions or make adjustments to the previous positions. Normally, the

companies make new forecasts and updates to their hedged positions once every second week or once a month according to projected order flows, and updates from the bank. Online trading is more frequently used by larger companies.

As Logosol has integrated the checking account in their invoice system, they have no regular contact with the bank. The system works well for them, and only if adjustments on the credit limits on the checking account needed to be made, there would be a need for them to contact the bank. Hence there is no regular contact between Logosol and their bank for the issues of currency control.

Ålö and Indexator have a more active relation to their bank, since they actually use forwards when hedging and they hence need to make updates continuously as some forward contracts mature and new orders are to be hedged with new contracts.

6.1.5. Change in Policies

All three companies are using strategies to control the exchange rate exposure. And all three companies are using strategies that today are well suited to the company's need. But if the companies' production expands or changes, there could be a need for new hedging strategies. Thereby it is very important that the companies keep updating their policies, or at least review them on a regular basis.

Logosol is a good example of a company that has changed their strategies since earlier approaches did not work properly. By abandoning the use of forward contracts, and turning to a foreign account strategy, they are a good example of a company that has adjusted the hedging strategy to fit the operations, and not the other way around.

If a company's operations change, new financial strategies may very well be needed. When entering new markets, new obstacles may come along, and except from the practical considerations, where to locate production and how to set up marketing strategies, the company may have to apply new hedging strategies. We have seen that currency options and forward contracts do not suit the needs of smaller companies. These tools may however be useful if the company expands and thereby gets a more continuous order flow. It is then important that the bank informs the customer of the new hedging possibilities. Therefore the bank should maintain the relation also with the smaller companies, since they may need new services as their business expand.

The larger companies may also need to change their hedging strategies if their production and operations change over time. If they for example meet demand from new markets, they may have to look closer on how much the currencies in these markets fluctuate. If the currencies fluctuate more than the currencies in the market where the company operates today, they may have to find more detailed hedge strategies than they use today. If they for example expand to new markets and are exposed to currencies with high volatility, it may not be enough to hedge 75% of the expected foreign cash flow. This implies that more detailed and precise hedges would be needed if the environment where the company operates is changed to a more insecure environment.

7. CONCLUSIONS

After the analysis is performed, the conclusions of the study will be presented. This chapter will briefly present the outcome of the analysis and how we can generalize the result of the study.

7.1. Review

1.3. Problem Description

How do smaller and medium sized local companies hedge against currency fluctuations?

1.4. Purpose

The purpose of this study is to find a deeper understanding to how well informed the finance directors at smaller companies are, as they are to protect the companies' incomes and expenses that are exposed to exchange rate fluctuations.

Another secondary purpose is to see how the relationship with the banks works and what needs to be developed in the business relationship..

7.2. Conclusions of the Study

The finance managers gather information to make prognoses to be able to predict the cash flows. If there is a large net flow of a certain currency, and the currency is known to fluctuate, the company will hedge. If the foreign currency flow has been reduced, by netting strategies, they may choose not to hedge since the exposure is reduced as the net flow is reduced. The exposure is in some cases also determined to be of low significance, and not needed to be hedged, if the currency has a low volatility.

Forward contracts are the main tool that medium sized companies use to hedge against currency fluctuations. However, to be able to buy contracts for the correct amounts and maturity dates, the company needs to be able to make accurate predictions of the foreign cash flow in the company. And hence they need to be able to predict the order flow in the company.

The bank provides not only derivatives, but do also help if strategies and policies are to be developed for the companies.

If the company does not have a continuous order flow, they will not have a continuous cash flow, and hence the predictions will be difficult to make. Alternative strategies are then used, such as foreign loans or accounts nominated in foreign currencies. The smaller the company is the less continuous the cash flow seems to be.

8. INFORMATION CRITICS

As section 4.11 turned to question the correctness of the chosen sources, this chapter will discuss whether this study fulfills validity, reliability, transferability and ethic standards.

8.1. Reliability

To begin with, we will ask ourselves if this study is accurate to what it was supposed to study. We must ask ourselves if we have measured and studied what we intended to measure.[115] When we want to observe an object, we should make sure we are observing the actual object, and not something related to the object.[116] This can take shape in studying attitudes to risk, and not how the finance managers actually handle risks. Plans and action can sometimes have different objectives and results.

To each interview that was conducted in person, I brought a recorder to tape what was said during the interview. This simple tool helped me in three ways during the interview; I could focus on asking the questions in such a way that they were clear to the respondents; I could listen carefully on the answers and not waste my attention on taking notes; and I could formulate proper follow up questions.

After the interviews I wrote down a transcript, based on the information from the recordings, and hence both detailed and accurate information was written in the transcript, since there were no extra steps in the information processing.

In the interviews I included questions that are not directly related to how smaller and medium sized companies use currency derivatives. Such questions could for example be about how the finance managers view risks and what their opinions on risk management are. I did however determine that these questions were important for the study since they give us a deeper understanding for how the finance managers argue as they set up hedging strategies.

8.2. Transferability

The conclusions we have come to in this study may be used for other purposes than the purpose set for this study. If the conclusions can be used as a base for solving other problems, and if the study could be conducted on another population, the study meets the criteria of transferability.[117]

To be able to transfer the conclusions to a different population we must first generalize the generated theories.[118] If we aim to generalize the findings in such a way that they can be valid the population as a whole, the respondents must be representative for the population. Therefore the selection process lays the grounds for the transferability.[119]

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[115] Björholt, Ingela, *Validity of Resource-Use Data in Economic Evaluations*, p 3.
[116] Kvale, Steinar, *Issues of Validity in Qualitative Research*, p 141.
[117] Johansson Lindfors, Maj-Britt, *Att Utveckla Kunskap - om Metodologiska och Andra Vägval vid Samhällsvetenskaplig Kunskapsbildning*, p 169.
[118] Ibid, p 162.
[119] Ibid, p 91.

The respondents for this study were selected according to size and location, and it was their characteristics that determined if they would be useful for the. The conclusions in this study are generalized to present characteristics of a phenomenon rather than characteristics of a single company, as could be if a case study was performed.

8.3. Ethical Study

During a field research or interview, the researcher may come across information that is not intended to be shared outside the field. Information may be given in confidence between the researcher and the respondents, and it is then the researcher's duty to make sure this information does not come into the wrong hands. For ethical reasons it is also important that the written transcription is accurate to what the respondent stated during the interview.[120]

Since the empirical chapter was sent back to the companies before the information has been officially published, the respondents have had a chance to control the information in *Chapter 5, Empirical Findings*. So, if any insider information or such had been included in the text, or if any misinterpretations in the transcription had been made, the respondents would have been able to comment on this. I would of course then remove the improper information and correct what had been incorrectly interpreted from the interviews. The respondents did however not have any demands on me to remove any information, but only to change some passages in the text.

[120] Kvale, Steinar, *Interviews - an Introduction to Qualitative Research*, p 111, 114-115.

9. FURTHER STUDIES

Finally I will present a few suggestions for further studies that can be performed using this study as a starting point.

In this study we came to the conclusion that forward contracts can be used for medium sized companies, and are suited when the company has a continuous foreign cash flow. It could however be interesting to perform a quantitative study to determine how large a company has to be to be able to use forward contracts properly. With a quantitative study we could reach more respondents and hence get a broader view of how derivatives are used for hedging purposes.

We have seen that companies rarely use currency options when hedging, and it has been suggested that currency options are less popular in Sweden than in other countries. A comparative study could find reasons to why these derivatives are more common in other countries. Is it because of differences in possibilities to apply the derivatives in practice, or is it a matter of awareness of what tools are available for different hedging purposes?

This study has focused on the exchange rate exposure, but other fluctuations on the market may also affect a company's budgets and forecasts. Futures are better suited when trading oil or farmer products since larger quantities of a standardized product then are traded, and a study of the practical use of these derivatives could also be performed, were the theories of risk management presented in this thesis could be used as a theoretical framework.

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APPENDIX 1: Interview Manuals

Original Interview Manual for the Companies, in Swedish

Företagets produktion
1. Hur stor omsättning har ert företag?
2. Hur stor del av erat företags produktion går på export?
2.b. Till vilka länder?
3. Hur stor del av erat företags inköp kommer från import?
3.b. Från vilka länder?

Kontrakt
3. När kontrakt skrivs, för export eller import av varor, vilken valuta används då?
3.b. Är det givet från början av förhandlingarna, eller är det något man kommer överens om?

Policy
4. Finns det inom företaget någon policy om hur valutafrågor ska hanteras?
4.b. Hur ser huvuddragen ut i den policyn?
4.c. Vem har skrivit den policyn?
4.d. Har en person i företaget skrivit policyn, eller har man tagit hjälp utifrån?
4.e. Följer ni alltid den policyn, eller händer det att man bortser från den?
4.e.a. I så fall, av vilka anledningar avviker man från den?

Derivat
5. När en främmande valuta används, hur hanteras då växelkursrisken?
5.b. Använder ni valutaoptioner?
5.b.a. Om så är fallet, varför väljer ni att använda optioner?
5c. Använder ni valutaterminer?
5.c.a. Om så är fallet, varför väljer ni att använda terminer?
5.d. Ser ni några praktiska fördelar med optioner jämfört med terminer?
5.e. Ser ni några praktiska fördelar med terminer jämfört med optioner?

Bankerna
6. Hur ser ni på det utbud av finansiella verktyg som erbjuds från bankerna?
6.b. Är det heltäckande produkter, eller är det något ni saknar i utbudet?

Framtiden
7. Har ni planer på att förändra ert användande av valutaoptioner eller terminer, eller fungerar policy och liknande som det ser ut idag?

Translated Interview Manual for the Companies, in English

Production
1. How large is the company's yearly turnover?
2. How much of your production is for export?
2.b. To which countries?
3. How much of your operating expenses is from imports?
3.b. From which countries?

Contracts
3. When a contract is signed, for export or imports, which currency is then used?
3.b. Is that given when entering the negotiations, or is it something to agree on later upon?

Policy
4. Is there a policy in the company for how to deal with currency issues?
4.b. What is the main idea in that policy?
4.c. Who wrote that policy?
4.d. Did someone in the company write it, or did you get help from someone outside the company?
4.e. Is the policy always used, or do you sometimes disregard from it?
4.e.a. If so, for what reasons?

Derivates
5. When a foreign currency is used, how do is the exchange rate risk then managed?
5.b. Do you use currency options?
5.b.a. If so, why are currency options used?
5.c. Do you use currency futures or forwards?
5.c.a. If so, why are currency futures or forwards used?
5.d. Can you see any practical advantages with options to futures or forwards?
5.e. Can you see any practical advantages with futures or forwards to options?

The banks
6. What do you think about the financial tools that are supplied from the banks today?
6.b. Is it sufficient products, or is the anything else would like to see on the supply side?

The future
7. Do you have any plans for modifying the way you use currency derivatives, or does the policy work the way it is used today?

Original Interview Manual for the Bank, in Swedish

Bankens organisation
1.a. Hur många anställda har ni i banken?
1.b. Hur många jobbar här i Umeå?
1.c. Hur många jobbar på företagssidan?
1.d. Hur många av dem jobbar med den här typen av frågor?
1.e. Hur stor del av er kundbas är företagskunder?

Utbud
2. Säljande av valutaterminer och valutaoptioner, hur mycket tid tar det i anspråk?
3.a. Hur mycket säljer ni av optioner, futures, forwards?
3.b. För vilka valutor efterfrågas dessa?

Kundrelationer
4.a. Hur ser relationen till kunden ut?
4.b. Är det regelbundna telefonsamtal mellan kund och bank, eller sköts affärerna via internet?
4.c. Kan kunden produkterna redan, eller är det grundligt resonerande som ligger bakom säljandet?

5. När ni ska hjälpa kunden att ta fram en plan för hantering av valutarisker,
5.a. Hur involverad är då kunden i processen?
5.b. Hur mycket skräddarsys?

6.a. Hur argumenterar ni när exempelvis forwards ska rekommenderas till kunden?
6.b. Hur argumenterar ni när exempelvis futures ska rekommenderas till kunden?
6.c. Hur argumenterar ni när exempelvis options ska rekommenderas till kunden?

Riskhantering
7. Att sälja forwards innebär en risk för banken. Hur hanteras den risken?

Framtida produkter
8.a. Tas nya produkter fram?
8.b. Tas de fram av er på banken här, eller är det av anledning att nya typer av derivat eller liknande kommer ut på marknaden?

Alternativ
9. Har ni några alternativa strategier att rekommendera till företagen?

Translated Interview Manual for the Bank, in English

The organization
1.a. How many employees does the bank have?
1.b. How many works here in Umeå?
1.c. How many works on the corporation unit?
1.d. How many works with this kind of products?
1.e. How many of your customers are companies?

Supply
2. Selling currency forwards, futures and options, how much time do you spend on that?
3.a. How much do you sell of options, futures, and forwards?
3.b. For which currencies are these demanded?

Customer relations
4.a. Tell me about the relationship to the customer?
4.b. Is it regular contact by phone between customer and bank, or is do you keep the contact by using internet?
4.d. How much does the customer know about the products, is it fundamental discussions between the bank and the customer behind the sales?

5. When you help the customer designing a plan to handle currency risks,
5.a. How involved is the customer then in the process?
5.b. How much of the plan is especially designed for the customer?

6.a. What arguments do you use when recommending forwards to the customer?
6.b. What arguments do you use when recommending futures to the customer?
6.c. What arguments do you use when recommending options to the customer?

Risk management
7. Selling forwards includes a risk for the bank. How do you manage that risk?

The future
8.a. Are you developing new products?
8.b. Are you developing them, or is because of new types of derivatives that can be found on the market?

Alternatives
9. Do you have any alternative strategies to recommend to the companies?