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Currency Hedging Management in Global Firms -The Case of HeidelbergCement

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1. Introduction	4
1.1 Background	4
1.2 Purpose	5
1.3 Problem discussion.....	6
1.4 Restrictions	7
1.5 Disposition	7
2. Theory	8
2.1 The concept of risk and exchange rate risk	8
2.2 Hedging	9
2.2.1 Reasons to hedge	9
2.2.2 Reasons not to hedge	11
2.3 Market Parities and hedging	12
2.3.1 Purchasing Power Parity	12
2.3.2 International Fisher Parity and Interest Rate Parity	13
2.3.3 Fisher Parity	14
2.3.4 Expectation Hypothesis	14
2.4 Organizational structure	14
2.5 Hedging techniques	15
2.6 Hedging strategy decision-making	17
2.6.1 Exposure differentials	17
2.6.2 Time horizon	18
2.6.3 Risk attitudes	18
2.6.4 Information requirements and the use of forecasts	19
2.7 Four hedging strategies	20
2.7.1 Laissez-faire	20
2.7.2 Minimized exposure	20
2.7.3 Selective hedging	20
2.7.4 Aggressive hedging	21
3. Legal framework	22
3.1 IAS 39 Financial Instruments: Recognition and Measurement.....	22
3.2 FAS 133: Accounting for derivative and hedging activities	22
4. Method	24
4.1 Frame of references	24
4.2 The balance of objectivity and subjectivity.....	24
4.3 Method and Methodology	24
4.4 Choice of case company	25
4.5 Confidentiality of information	25
4.6 Interviews	26
4.6.1 Interview questions	26
4.6.2 Realization of the interviews	26
4.6.3 Compilation of the interviews	27
4.6.4 Target people of the interviews	27
4.7 Literature studies	28
4.8 Critical attitude towards sources	28
4.9 Validity and reliability	29
5. Empirical study	31
5.1 Introduction of the case company	31
5.2 Risk exposure at HeidelbergCement	31
5.3 Hedging strategies at HeidelbergCement	31

5.4 Credit worthiness of HeidelbergCement	32
5.5 The corporate view on parity conditions	32
5.6 Organizational financial risk management structure at HeidelbergCement.....	33
5.7 Hedging techniques	33
5.8 Hedging strategy decision-making	34
5.9 The necessity and use of forecasts within HeidelbergCement.	34
5.11 Disclosure requirements for HeidelbergCement	34
6. Analysis	36
6.1 Currency risk exposure.....	36
6.2 Hedging Strategy	36
6.3 Financial distress and risk attitude	38
6.4 Organizational structure	39
6.5 Legal framework	41
6.6 Purpose and results with the hedging strategy	42
7. Conclusions	44
8. Future research	46
Bibliography.....	47
Appendix 1.	52
Appendix 2	55

1. Introduction

During the past decades financial markets around the globe have experienced tremendous changes. Periods of uncertainty and fluctuating economies have more or less dominated the time period. The world has for example gone through the fall of currency pegs and oil crises, which taken together have created a less stable macroeconomic environment for companies to operate in.

Our ever-changing world has to a great extent created a need of efficient financial risk-management programs for financial institutions and corporations operating in a demanding international environment. These changes have however also increased the types of financial tools and derivatives used to handle the multifold macroeconomic exposures. Companies have therefore diversified opportunities to take in action to reduce and to control the different risks they are exposed to. One purpose of financial risk management is to control the down side of the exposure by insuring that the level of risk remains within an acceptable range. Macroeconomic exposures include among others; interest rate risk and inflation rate risk. However, one of the most significant exposures for a global corporation to focus on might be the exchange rate risk. One way to handle currency risk is to include and to carefully prepare currency-hedging strategies in the firm's overall risk management program.

The optimal level of currency-hedging activities is a widely discussed topic among researchers in the financial area. There are a lot of theories related to the subject, however the strategies developed cannot be seen as general, due to that every company faces a unique situation, which requires an exclusive strategy. Therefore, it is still up to the top management of the individual corporation and to the risk management team to deal with the currency risk exposure and to come up with a suitable strategy for the own firm.

1.1 Background

Financial risk management is a well-explored field within the area of finance. There are many ongoing studies and existing research examining the wide field of financial risk management and also the more defined area of currency hedging. Classic theories like the Modigliani-Miller Theorem (1961) and Markowitz's Portfolio Theory (1952) are basic when studying financial issues, so is also the case when studying risk management and currency hedging. The classic school, including Markowitz and Modigliani-Miller, argues that hedging is not of vital importance for the management of a company. This because investors are more capable to do this themselves by composing a portfolio of companies that better fit their preferred total level of risk.

There are however studies made during the last decades that convey the classic theories by arguing that there are a lot to gain by actively working with reducing macroeconomic exposure by hedging and other risk management activities. Among others; Dimond, DeMarzo and Duffie, Froot, Smith, Stein and Stulz, provides critical studies arguing against Markowitz and Modigliani-Miller's classical theories. They demonstrate in their studies focusing on different aspects that there is a lot to gain by hedging. Smith and Stulz (1985) provide for example a study of determinants of hedging policies that cover the issue of bankruptcy costs and costs of financial distress.

Pramborg (2004) shows further that there seems to be a positive value effect from hedging currency transaction exposure. Dimond (1981) shows how hedging makes it possible for

investors to evaluate managerial performance more efficiently. DeMarzo and Duffie (1991, 1995) imply that hedging is value creating due to the information asymmetries, which exist between managers and investors. Further, a study made by Froot, Scharfstein, and Stein (1993) indicates that companies sometimes have to invest sub optimally in the absence of hedging because of difficulties in securing funds to finance investments. They further show the under investment problem as a result of costly external financing in combination with unstable variable cash flows.

There are more examples of studies made that show in one-way or another that hedging activities is value creating. Stulz (1990,1996) argue how hedging can enable firms to intake higher leverage and that hedging makes it more likely that the firm will invest in value creating projects.

Additionally, there are also studies made in the field of risk management and hedging that examine and focus on the international corporation's risk exposure. This is of highly interest when discussing the need of currency hedging in a global firm. Oxelheim (2003) and Oxelheim and Whilborg (1995) show that a global firm needs to be aware of different exposures such as interest rate, inflation rate, exchange rate and political risk exposure. Oxelheim's (1999) MUST-analysis is a model of interest, which identifies and quantifies exposures that a global firm confronts on regular basis; for example how foreign exchange rate fluctuations, direct or indirect, effect a corporation's result.

Other existing researches of importance are surveys, which examine the corporate reality for global corporations. Belk and Glaum (1990) indicate in a study that corporations are generally risk-averse, which plays an important role when deciding which hedging strategy to choose. Another study by Belk and Glaum (1994), pinpoints that the parent company of a group is often responsible for the risk management program and the hedging activities. Belk (2002) confirm that generally companies are risk-averse, have centralized decision-making and their hedging strategy is generally formulated by the top-level management or/and by the centralized treasury function.

We have above been showing that financial risk management in general and currency risk management in particular are well examined areas, which researchers have been studying during the last decades. It is clear that currency hedging is of vital interest for both the academic world and for corporations operating in the uncertain global economy. In chapter two, our aim is to closer examine relevant theories that are of importance for the subject. However, first we discuss our purpose and problem definition in the next two sections in this chapter.

1.2 Purpose

The purpose is to study currency hedging strategies, the decisions making process behind currency hedging and different factors affecting currency hedging decisions in the multinational company HeidelbergCement. We also want to study differences and similarities between corporate reality and theory by comparing the case of HeidelbergCement with existing hedging theories. By studying HeidelbergCement's way of "thinking" and other non-quantitative measures our aim is further to increase the understanding behind the hedging procedure and to contribute to already existing research in the area.

1.3 Problem discussion

As showed earlier in this chapter, the area of risk management and currency hedging is a well-exploited area. Existing studies observe corporate risk management and currency hedging and give it a quantitative, measurable surface. However, there are still studies that can be done to add further knowledge and understanding how and why to hedge currency exposures. Therefore, there is a need of further qualitative studies to increase the understanding of currency hedging. To contribute to this already well-examined field of finance we therefore chose to present an in-depth case study of a company with global activities and a developed financial risk management and currency-hedging program.

Glaum and Fatemi (2000) among others present an attempt to give a complete picture of hedging and risk management from a corporate/management perspective. Their research consists of a questionnaire addressed to large non-financial German corporations with global activities.¹ This quantitative study gives a good overall view of how large corporations in general handle macroeconomic exposures, how risk management teams in general use derivatives in order to manage risks etc. It further gives a clue of how different risk management programs work from a practical perspective. However, it does not give a qualitative perspective of the thoughts behind chosen strategies etc. A study that covers qualitative aspect of currency hedging would therefore be value adding and contribute to existing research.

Glaum (2002) is supporting the above discussion by desiring an in-deep study of a single firm's action when dealing with risk management and currency hedging. He writes; *"As far as possibilities for future research are concerned, more theoretical and empirical research is needed in order to explain the actually observed corporate risk management. The heterogeneity of risk management approaches, and the endogeneity of alternative financial policies, indicates that in-depth case studies may be a fruitful avenue to provide explanations for firms' choices of risk management strategies. Further, as indicated in the present paper, it appears important to incorporate behavioral aspects such as bounded rationality and the effect of organizational decision-making into the models of corporate risk management."*

As shown above and earlier in this chapter many studies have been carried out about currency hedging but they have mostly focused on quantitative and not qualitative aspects behind the executed action. We are therefore interesting in, and will in this study focus on how an international company takes care of their currency risk exposures, and how the behavior and thoughts behind taken decisions looks like. We will also evaluate which hedging strategies our case company is using and what the company's aim is with the specific strategy. Thereafter we will discuss and try to assess if the chosen strategy is optimal for the company. Nevertheless an optimal strategy is always dependent on the aims of the strategy. More important is therefore to look at the decision making process and the variables which are influencing these decisions. However we have not found any previous research, which is addressing the decision making process from a comprehensive perspective, taking all the different variables into account. Therefore we will try to evaluate different variables that might effect the currency hedging strategy decision-making. It is also interesting to study on which management level the different decisions are taken and if the decisions taken are on an

¹ To be a part of the survey the companies must have a minimum sales volume of DM 400 million (year of 1997), 71 of the 153 companies that matched the criteria responded.

efficient level. We will in this study more exactly study how different factors effect currency hedging strategies and the decision making process behind the choice.

How do the following factors effect a company's currency hedging?

- *Financial distress*
- *Risk attitude*
- *Legal framework*
- *Stakeholders*
- *Organizational structure*

1.4 Restrictions

When studying such a wide area as currency hedging it is impossible to take every possible aspect into account. We therefore pinpoint some restrictions that are good to identify before reading this study. Foreign exchange exposure can be divided in three exposure areas: transaction, translation and economic exposure. However, we are only focusing on transaction exposure. We further focus on how the treasury department in a global firm treats their major currency exposures and not on how each and every subsidiary hedges. Our perspective is thereby the company's overall currency hedging decisions on a centralized level. We further assess decision-making with focus on the treasury department but do not in detail study how the decision-making process in this issue looks at for example the board level. When discussing the legal aspects we are only considering the legal framework of IAS 39 and FAS 133. There are probably more financial laws and recommendations that restrict a company's hedging activities but we found these to be the major ones that in a certain way impact the company and those which have the highest relevance in our study.

1.5 Disposition

To be able to answer the question how different factors effect a company's hedging it is of interest to have some background information in the area of currency hedging. In chapter one we present research done in the field of hedging and then we discuss the purpose and need of this study in the problem discussion. In the first chapter we further pinpoint some restrictions to take under consideration when reading this study. In chapter two we continue by assessing some theories that that we think are of vital interest in order to understand this subject. We start with discussing the concept of exchange rate risk and then continuing with reasons to hedge and reasons not to hedge. Further, we go through how market parities and organizational structure theoretically impact currency hedging. We then go through different hedging techniques and factors that have an impact on the hedging decision process. In chapter three we present the legal framework.

In chapter four we are going through our choice of method. We further discuss the frame of references, the choice of case company and we also discuss the sources we have used. In chapter five we present the empirical study of our case company. We are illustrating the case company, HeidelbergCement, and carefully presenting how the company is structured in reality. For example we examine what hedging strategies they are using and how they look upon risks and the market parities. We analyze our findings in chapter 6 and then in chapter 7 we pinpoint the conclusions.

2. Theory

In order to understand currency hedging and other risk management activities in a multinational company; awareness of existing theories within the area is an advantage. We here introduce some of the theories of interest that argue for and against hedging. Further, we examine different factors that might influence a firm's risk management program and currency hedging activities. Further, we also describe different hedging techniques and strategies. However, first we address the concept of risk.

2.1 The concept of risk and exchange rate risk

The awareness and identification of risk factors are important and it should be noted that risk identification is a continuous process in all organizational directions and on all organizational levels. It has been noted that risk refers to the probability and magnitude of changes, which are not expected. The management of risk therefore has to deal with the unanticipated changes. This has become a large issue for firms nowadays, due to the various market influences, which effect the corporate cash flow. For management it is important to provide stability and certainty in future corporate cash flows.²

When containing the information needed about the external as well as internal environment of the firm various sources of risk can be identified, which can further be used as the background to the firm's risks. This will give the management a better view of how to identify the accurate and essentials risks, as well as how to later on respond to them. It is however important to notice that a risk does not exist for a firm unless it affects the organizational resources.³

In general when management portrays risk, they usually perceive things as risky due to the lack of knowledge about consequences and impacts that this situation or action will have on their specific activity. However, when determination risk in an economic market oriented analytical perspective, this is usually in the situations when economists have all the essential information and knowledge to handle the specific activity with certainty as the outcome. Thereby a concluding remark for the existence of financial risk management is the transformation of the uncontrollable uncertainty of markets on the impact of the corporate outcome, into the controllable and quantifiable risk, through optimal management. Firms are constantly exposed to risks. Financial risk management helps the firm to properly identify the essential target variables as well a measure them in order to intake the proper hedging strategy to reduce them.⁴

The need of currency hedging is addressed to the existence of exchange rate risks. Many companies in today's society are dealing with numerous currencies in their operations. A strong currency as well as a weak currency can be a source of risk. This statement lies in the real meaning to determine if the fluctuations can be predicted or not. Currency risks can be defined as the variance in expected cash flows arising from unexpected exchange rate changes.⁵

² Lam 2003, p 43.

³ Tchankova 2002, p 292.

⁴ Ibid

⁵ Eiteman 2004, p 199.

2.2 Hedging

To deal with currency risk exposures, a risk management option is to use hedging. Hedging can be defined as the official statement of offsetting risks in order to increase the good, at the expense of the perfect outcome. It should simultaneously be noted that hedging could reduce returns, but also the potential downsides in terms of costs. Probably a more general definition is that hedging decreases the variance of outcomes, which is the direct responsibility of risk managers. The paramount importance of risk controlling advices is at its peak to meet a firm's earnings expectations. This however induces the need to manage a company's earnings volatility and especially when exposed to interest rate, exchange rate, and currency fluctuations as well as other market variables.⁶

2.2.1 Reasons to hedge

Hedging reduces the variability of expected cash flows about the mean of the distribution with reduction of risk as a result. This is positive for the single firm because the higher prediction of future cash flow improves the planning capability of the firm and the firm may be able to undertake activities or specific investments that otherwise might not have been considered. Hedging also reduces the probability that the firm's cash flow will fall below a critical minimum point and cause financial distress. Other reasons for management to hedge are that they obtain a comparative advantage over the shareholders in knowing the real currency exposure of the firm. Management is also in a better position than the shareholder to take advantages of disequilibria conditions on the market to enhance the value of the firm through selective hedging.⁷ It is noted that other reasons for the management to undertake hedging activities is that hedging might reduce agency problems within the firm, might reduce effective corporate taxes and might reduce risk aversion among managers and other contracting parties. It is also further considered to reduce the adverse information content of earnings.⁸

The theoretical explanations identify those incentives for hedging which are likely to benefit contracting parties. However, hedging might not benefit all parties equally and therefore the hedging strategies of firms will vary. We closer examine cost of financial distress, as it is one of the single most important arguments that advocate hedging. If the value of a firm's assets are below the firms liabilities and the firm is thereby not able to repay its transactional obligations or loans in due course, the company is considered to be insolvent and its value stands at risk. This aggravates and stresses the financial situation and condition of the firm but most of all their existence. The probability of this event occurring is the probability of the firm going bankrupt. This is what is defined as financial distress and force companies to take action to avoid it.⁹

Wedges appear when it becomes more expensive for companies to bear the risks inside the corporation, than outside on the market. To secure the firm from these conditions, companies pay the capital market to bear the risks as the alternative is often more expensive. This is correct under the assumption that the price is related to the firms activities. The theories that imply that there should not be any costs for financial distress, or any incentives for firms to engage in financial risk management, these theories are familiar as the neo-classical. They are

⁶ Oxelheim 1997, p 143.

⁷ Eiteman 2004, p 199 ff.

⁸ Nathan 2000, p 166 ff.

⁹ Stulz 1996.

based on the assumptions of a perfect world without taxes, information asymmetries and transaction costs. These theories state that investors can diversify their portfolios the same way as managers can do with hedging activities, therefore there are no incentives for companies to hedge. The theories also assume there are no bankruptcy costs either. However, in reality market imperfections do exist and the cost of financial distress is a fact.¹⁰ Therefore management can increase the firm's value and reduce the costs of financial distress when reducing the volatility of cash flows by introducing a financial risk management program. By reducing the probability of financial distress, currency hedging and other risk management activities have also the potential to both increase debt capacity and to facilitate larger equity stakes for management.¹¹ The costs of financial distress is the present costs of bankruptcy and the probability of it, the costs includes lawyers fees, court fees and risk premiums. When a company is running into financial distress there are a number of indirect financial distress costs existing as well, suppliers might demand that goods are paid up front and employees demand for higher salary when they fear the loss of jobs. Another source of indirect financial distress cost is that customers might be reluctant to buy the firms products due to the fear of not getting future service and guarantees.¹²

Financial risk management programs do not only reduce the cost of financial distress, in addition there are a number of other advantages related to financial risk management programs. It is seen to be more costly to acquire external funds than internally generated funds. Therefore it is an advantage to have stable cash flows to be able to accomplish planned investments with low funding costs. Otherwise there is a great risk of not being able to invest since external funding cost might be too high. A financial risk management program can provide a firm, as stated above, with more certain cash flows, accordingly the ability to commit investments to secure growth and increase the value of the firm.¹³

In countries where companies face a convex tax situation there are incentives to implement financial risk management programs to get more stable cash flows. If a company's earnings are fluctuating large from year to year, due to the macroeconomic environment a company might also end up paying more tax than necessary. The same argument can be used on the investor level. In this case it would be a matter of convexity in the tax dividends. It means that a progressive tax rate is in use and with higher earnings a higher tax percentage has to be paid.¹⁴

If a company has predictable and stable cash flows it will also be able to bear a higher debt level in the company especially since it reduces the risk of running into default. Nevertheless, debt is generally seen as less costly than equity, and the effect of the tax shield of the debt a higher debt/equity ratio will increase the value of the firm.¹⁵

By using financial risk management program with regards to hedging the firm increases its value, as they subsequently do not have to bear the costs of bankruptcy. A negative risk incurs a severe and trivial impact on the company not only in the form financial losses, but also the company's reputation and relationships with customer is affected. The value at risk is a clear

¹⁰ Glaum, 2002, p 4ff.

¹¹ Stultz 1996.

¹² Glaum 2002, p 5 ff

¹³ Ibid

¹⁴ Ibid

¹⁵ Ibid

definition of the potential maximum loss that a company can be exposed to. This signifies one of the core purposes of financial risk management, as companies can go bankrupt moderately rapidly if not managing their risks.¹⁶

Hedging reduces the variability of expected cash flows about the mean of the distribution with reduction of risk as a result. This is positive for the single firm because a higher prediction of future cash flows can improve the planning capability of the firm and the firm may be able to undertake specific investments. Managers are more likely to invest in positive net-present-value projects with high risk when the company's cash flows are stable and predictable. Managers are concerned about their income and future and are not as diversified as investors are. Therefore managers tend to be more risk averse than investors. Continuously, the implementation of a risk management program might serve the managerial interest as well.¹⁷

2.2.2 Reasons not to hedge

In the financial risk management theory there are also arguments why a firm should avoid hedging. Most of a company's macroeconomic exposure will not increase the risk of a well-diversified portfolio. Thus, most corporate financial exposures represent non-systematic or diversified risks. Shareholders can eliminate these risks by holding diversified portfolio and they have therefore an inexpensive risk-management tool at their disposal. Investors will therefore not reward companies, which reduce their earning volatility by managing their financial risks. One reward is for example lower required rates of return. Risk management and hedging is therefore according to this theory a value decreasing activity of the firm. Shareholders are much more capable of diversifying currency risk than the management of the firm. If stockholders do not wish to accept the currency risks of any specific firm, they can diversify their portfolios to manage the currency risk in a way that satisfies their individual preferences and risk tolerance. Currency risk management does not increase expected cash flow, however risk management activities normally consumes some of the firm's resources and that instead reduces the cash flow. The impact on corporate value is the balance between the reduction of cash flow by company resource consumption and the positive effect by the reduction in variance.¹⁸

According to the agency theory the management of a firm is generally more risk-averse than the shareholders and managers sometimes take actions that benefit themselves more than the shareholders. Management might conduct hedging activities that benefit them at the expense of the shareholders. Internal goals that benefit the risk managers more than the firm in total might drive them to take certain resource consuming actions. Agency costs and the separation of decision control from decision management generate an interest conflict between shareholders and management. Agency theory frequently argues that management is generally more risk-averse than shareholders and might see to their own interest instead of the best interest of the firm and thereby the best of the shareholders. If the company's goal is to maximize shareholders wealth, then hedging activity is probably not the best interest of the shareholders. Management's motivation to reduce variability might be driven by accounting reasons and risk managers may believe they will be criticized more severely for incurring similar or even higher cash cost in avoiding the foreign exchange loss. Foreign exchange losses appear in the income statement while the higher cost of capital and the costs of protection are buried in operating or interest expenses. However, efficient market theories

¹⁶ Mun 2003, p 277 ff.

¹⁷ Glaum 2002, p 7.

¹⁸ Markowitz 1952, p 77 ff.

believe that investors can see through the “accounting veil” and therefore have already factored the foreign exchange effect into firm’s market valuation.¹⁹

Another well established theory that is augmenting against hedging is the “Effective market hypothesis”. This theory argues that managers cannot outguess the market. If and when markets are in equilibrium with respect to parity conditions, the expected net present value of hedging is zero. Efficient market theorists also argue that hedging driven by accounting reasons cannot deceive the market because exchange rates or other exposures that effect the value of the firm is already factored into the market price of the firm.

2.3 Market Parities and hedging

Market parities, i.e. relations between exchange rates, interest rates and inflation rates, are some of the theoretical foundations in hedging strategy decisions. The management view of the parities might influence the choice of hedging strategy. We therefore in this section examine the Purchasing Power Parity, the International Fisher Parity and the Interest Rate Parity. Last but not least we examine the Fisher Parity and the Expectation Hypothesis.

2.3.1 Purchasing Power Parity

If Purchasing Power Parity (PPP) holds there should be no price differences on goods and services between different markets when comparing prices in the same currency. This theory relies on the assumption that price changes in one-country leads to a change in the foreign exchange rate in relation to the country in comparison; the exchange rate offsets the inflation rate differentials between countries. If the PPP holds no gains can be made through unexploited macro-generated deviations. Deviations from PPP would imply the opposite; profit can be made through different pricing on different markets. The PPP theory exists in two forms one absolute and one relative. PPP the absolute version states that an identical good can be bought at the same price regardless in which country it is bought, assuming the exchange rate is in equilibrium.²⁰

PPP (absolute version): $S = P^{DC} / P^{FC}$

S = spot rate (DC units per unit of FC)

P^{DC} = price level domestic

P^{FC} = price level in the foreign country

The relative version states that internal price changes are corresponding to exchange rate changes.

PPP (relative version): $S_t / S_{t-1} = P_t^{DC} / P_{t-1}^{DC} / P_t^{FC} / P_{t-1}^{FC}$

The relative version suggests that if price differences occur between countries, after adjusting the prices for taxes, transaction costs and transportation costs, then the good will flow from one country back to the first. This will force the prices back to equilibrium. One can see the

¹⁹ Jensen 1986.

²⁰ Oxelheim 1997, p73ff.

process as starting from a base year when prices and exchange rates are in equilibrium, then prices for example rise with x percent faster domestically compared with another country. This means according to the relative PPP that the domestic currency also depreciates with the same x percent. However, this might take some time depending on the exchange rate regime. In theory it should be easy to measure PPP in a very simply way, by comparing prices on an identical product, across countries. An attempt to do this is the “Big Mac Index” conducted by *The Economist* magazine on a monthly basis²¹. However, in reality it is very hard even when comparing prices on a large number of standard goods and services across countries, this problem arises since people in different countries consumes very differently and PPP can differ when comparing for example wholesale prices and consumer prices.²²

In a hypothetical world no gains can be made since deviations from the parities do not exist, however, empirical studies imply different results. It is now commonly accepted that PPP does not hold in the short run, since exchange rate movements in the short term are driven by information about interest changes, changes of the perception of economic growth etc. In the long term, a time horizon of 4-10 years, PPP is more likely to hold.²³ Small and relatively open countries follow PPP better than large economies that are not as dependent on trade.

2.3.2 International Fisher Parity and Interest Rate Parity

Another parity focusing on the same expected return of similar assets denominated in different currencies is the International Fisher Parity (IFP). The market price variables included in this relationship are the domestic and foreign interest rates, the current and expected future foreign exchange spot rates. Deviations from the IFP mean that there are gains to be made in international financial markets. The IFP assumes there is no currency risk premium. IFP sometimes serves as a predictor of the future spot exchange rate based on forward exchange rates. The relationship can be written in the following way.²⁴

$$\text{IFP: } St+1^* - St / St = it^{DC} - it^{FC} / 1 + it^{FC}$$

St = spot rate at time t; units of DC per unit of FC,

St+1* = market expectations at time t regarding future spot rate at time t+1

it^{DC} = domestic currency interest rate for one period at time t,

it^{FC} = foreign currency interest rate for one period at time t.

A closely related parity to the IFP is the Interest Rate Parity (IRP). This relationship implies that forward exchange rates are based on the differences between interest rates among countries.

$$\text{IRP: } Ft - St / St = it^{DC} - it^{FC} / 1 + it^{FC}$$

Ft = the forward rate at time t for delivery of currency at time t + 1

St = spot rate at time t; units of DC per unit of FC,

St+1* = market expectations at time t regarding future spot rate at time t+1

it^{DC} = domestic currency interest rate for one period at time t,

it^{FC} = foreign currency interest rate for one period at time t.

²¹ "The Economist", www.economist.com.

²² Oxelheim 1997, p73ff.

²³ University of British Columbia, <http://fx.sauder.ubc.ca/>.

²⁴ Oxelheim 1997, p 80ff.

If both the IFP and the IRP holds then $F_t = S_{t+1}^*$, the forward rate is the expected future spot rate. There is strong empirical evidence that the IRP holds at least within the Euro markets. Countries with high political risk premium are, however, not included, as countries where IRP holds. IFP is impossible to evaluate in terms of practical value since it contains expectations about exchange rate rates. However, it seems like real exchange rates are more volatile than expected future exchange rates measured by interest rate differentials. In addition, some evidence that the IFP holds in the long run have been found, but most research strengthens the theory of existing currency risk premiums.²⁵

2.3.3 Fisher Parity

The Fisher Parity (FP) states that nominal interest rates in each country are equal to the required real rate of return plus compensation for the expected inflation. The expected real interest rate and the expected inflation are then independent of each other. If the FP does not hold, considerations of the correlation between real interest rate and the expected inflation rate must be taken into account.

FP (app. form): $i = r + \pi$

i = nominal interest rate

r = real rate of interest rate

π = expected rate of inflation

The problem arising when using FP is the difficulty in forecasting the inflation rate, which is a necessity. Sometimes the past inflation rate is used to predict the future inflation rate and it is shown that FP exists for short-maturity government securities. However, when evaluating private securities and those with long-maturity the validity of FP's is inconclusive.²⁶

2.3.4 Expectation Hypothesis

The Expectation Hypothesis (EH) states that there are no gains to be made from domestically borrowing long-term versus a series of short-term loans or the opposite. A long-term term loan, according to this theory, is already the weighted average interest rate of a future series of short-term-loans. The relationship implies there is no risk premium for different debt maturities. The EH also implies that there are no gains to be made from predicting future short-term interest rates since the best information is already included in the long-term interest rate. The EH for term structure of interest rates in domestic markets can be compared to the IFP and the exchange rates for international markets.²⁷

2.4 Organizational structure

The alternative to a central managerial function is that every separate operational unit of the firm deals with their own macroeconomic exposure. The two alternatives have both positive and negative aspects and reflect a complex organizational dilemma. Factors such as pressure of time, geographical distance, market and product differentials, as well as complex business-government relations, point toward the advantages of a decentralized organizational structure.

²⁵ Etteman, 2004, p 143.

²⁶ Etteman, 2004, p 142ff.

²⁷ Whilborg 1997.

If the subsidiaries located in different countries and markets run their own risk management program independent of the parent company, they may better know what exposure they are facing and may better know how to handle the exposure in cost efficient way.

On the other hand, if financial decisions and policies, including risk management, are set centrally the performance of every unique operational group will be influenced by centralized risk policies, over whose decisions they have no control. Further disadvantages with decentralized risk management programs are that the operational units are likely to overreact to exchange rate risks. A centralized organization has large-scale advantages by their appropriate response to fluctuating exchange rates, taxation differentials, control on currency flows and variation in financial markets. The centralized risk management function can net the exposure the different subsidiaries are facing and lower the transaction cost.²⁸

A centralized treasury department might also have the function of an internal bank. If so, it might strive to implement a sound credit administration in the organization to ensure a full and appropriate use of bank resources consistent with goals and objectives in both the parent company and in the subsidiaries. It is possible to gain from a centralized credit function by large-scale advantages, for example better conditions in bank loans and fundraising from shareholders. The centralized function superiorly identifies the total need within the organization. It makes it possible for the firm to relocate funds to a low cost from subsidiaries with surplus to another with diminutive funds. A possible disadvantage for some subsidiaries within a large organization with a centralized credit function may be that the internal rate (cost of capital) may be higher than the market rate. For other subsidiaries it may be the opposite, they are gaining from it by getting a lower rate than it is possible to get from the market. This because the credit rating for the individual firms may differ causing different cost of capital on the market but the same from the corporations centralized credit function. The central credit administration unit is often primarily responsible for the corporations complete loan portfolio and lending to the subsidiaries. A strong centralized credit administration function can help insure a proper credit discipline and serve the subsidiaries with easy access to capital, professional support including risk management and deposit alternatives.²⁹

2.5 Hedging techniques

Companies can use both internal, external instruments as well as real options to hedge macroeconomic exposures. Internal hedging include adjusting operating and financing plans to reduce risks, for example matching in- and outflows of other than the domestic currency and include price adjustments clauses in contracts. Another example of internal hedging is having both liabilities and financial assets in the same currency denomination. Internal hedging of interest rate risks can be made through matching the interest rate sensitivities of firm's assets and liabilities, and thereafter comparing this value change to the interest rate value change, which should intensify to the same degree. This is referred to as duration matching.³⁰

Adjustable companies with possibilities to move their production or purchasing activities from one country or region to another can use real options and using their flexibility to reduce their macroeconomic risks. External hedging is action taken by entering contracts with an

²⁸ Lessard 1977.

²⁹ Western Independent Bank, http://www.wib.org/wb_articles/lend_oct01/cred_admin_oct01.htm.

³⁰ Lam 2003, p 40ff.

external party, for example entering a forward contract with one of the firm's subsidiaries as a counterpart. Other well-known hedging techniques are entering futures contracts, buying or issuing options, entering an option swap or a swaption.³¹

A firm's degree of internationalisation can affect the extent to which it uses hedging techniques and also what kind of techniques they use. Firms appear to initially use internal techniques to hedge exposures. A positive relationship is expected between the measures of internationalisation and the degree of utilization of internal techniques. Some reasons for a firm to make greater use of internal hedging techniques than external are for example the transaction cost of the derivative instrument, biased pricing, default risk etc. There is a greater use of internal techniques, which seems to imply less use of external techniques. The situation is also the other way around and most firms use a combination of different types of hedging depending on the exposure. What kind of techniques to use is also depending on the characteristics of the firm and the kind of business the firm is active in.³² Internal hedging can also impose a non-preferable technique for companies.³³ Thereby we can conclude that varies from case to case. Financial institutions and industrial firms are more likely to make much greater use of derivatives (than internal techniques) in order to indirectly communicate their managerial ability to operate on the derivatives market.³⁴ Some common external hedging techniques are briefly examined below:

Forward Rate Agreement: A FRA is an arrangement to buy or sell an asset at a future period in time specified at a certain date as well as a predetermined price. These contracts are bought and sold over the counter and directly negotiated between investors with up to date information and knowledge about the products. This is in contrary to the Futures, which are standardized contracts traded on exchanges.³⁵

Future: Futures, which are similar to forward contracts, enables investors to buy or sell a contract at a future place in time, although it is traded on exchanges. The assumption that the pricing of forward and futures is similar is relatively unjustifiable and incorrect. There are numerous differences including taxes, transaction costs, as well as the uses of clearing houses.³⁶

Option: Options have parallel to the financial innovations era also become popular trading and hedging tools. Two general categories exist within the options market. One emphasises the right to buy an asset for a certain price, a call option. The other one, to the contrary, emphasises the right to sell an asset for a certain price, referred to as put option. However, fundamental differences exist regarding options compared to the forward and future and swap contracts. The option holder has the right to buy or sell something, thus, is not in any way obligated to. Whereas in the in other derivatives market mentioned above the parties have in some way committed themselves to a certain degree of taking a specific action at a future period in time. The flexibility with options imposes a high positive trait, however it is not for free to investors. Premiums exist and are often quite high and might be paid upfront, and effect the choice of offsetting risks with options. The options, which are traded on exchanges,

³¹ Ross 2001, 695 ff.

³² Nathan 2000.

³³ Lam 2003.

³⁴ Nathan, 2000.

³⁵ Hull 2003, p 19 ff.

³⁶ Ibid

cover the underlying assets of future contracts, foreign currencies, stocks and stock indices.³⁷ A considerable difference on European options compared to American options is that the European options can be exercised only at the end of its life whereas the American any time. One model, which has come to have an important role in how traders price and trade options, is the Fischer Black and Myron Scholes findings, referred to as the Black & Scholes Model. This model values the prices of options in terms of volatility from the model.³⁸

Swap: In situations when firms agree to *exchange* cash flows at a future period in time, generally refers to a swap. A single future swap is commonly known as a forward rate agreement, however when conducted repeatedly, it is defined as a swap. It was first negotiated in the 1980.³⁹ Swaps are popular hedging instrument when offsetting interest rate exposures. However, a swap forward rate agreement is not solely the only single swap. Market makers can use interest rate futures as well as bonds to swap in their interest.

2.6 Hedging strategy decision-making

We are further in this chapter discussion the framework according to specific hedging strategies with the purpose to give a more detailed background on factors playing an important role in hedging decision-making. According to the existing financial theory we can distinguish four different hedging strategies: Laissez-faire, Aggressive, Minimized Variance, and Selective Hedging.⁴⁰ Necessary elements of determining the chosen strategy include deciding the hedging purpose, the time horizon, and the target variable. It also depends on the management's view on risk and their view on profit opportunities in the financial market. It is also a question of to what extent information is available. We will examine the different strategies but first we discuss some elements of hedging.

2.6.1 Exposure differentials

Volatility in macroeconomic variables such as exchange rate exposures would companies preferable avoid. There are three kinds of exposures to hedge: Transaction exposure, Translation exposure and Economic exposure. Transaction exposure (also called accounting exposure) is the potential for a change in the value of outstanding financial obligations entered into prior to a change in exchange rates but not due to be settled until after the exchange rates change. Translation exposure is the potential for an accounting-derived change in owners' equity resulting from exchange rate changes and the need to restate financial statements of foreign affiliates in the single currency of the parent corporation so as to create a consolidated financial statement. Economic exposure is the potential for a change in expected cash flow, and thus in value, of a foreign affiliate as a result of an unexpected change in exchange rates. Economic exposure is also called operating exposure, strategic exposure or competitive exposure. The exposure that is of most interest in relation to our focus on hedging strategies is the transaction exposure.⁴¹

A method when determining the total macroeconomic exposure and the variables, which affect a firm, is the MUST-analysis (Macroeconomic Uncertainty STrategy). This method is both forward looking and backward looking helping the management to see how different

³⁷ Hull, 2003, page 151

³⁸ Hull 2003, p 234.

³⁹ Hull, 2003, p 125.

⁴⁰ Oxelhiem 1997, p180.

⁴¹ Eiteman 2004, p 40ff .

macroeconomic variables impact the firm's value. The outcomes of the MUST-analysis are sensitivity coefficients, showing how different variables affecting the cash flow in the past and provide management with a hint on how they can offset and hedge against for example unwanted exchange rate movements. The MUST-analysis is a regression analysis method that requires a large amount of data inputs. Data such as monthly data of a firm's stock prices, cash flow figures and a range of market price variables that indirect or direct are of importance, such as oil price, exchange rates, and inflation figures etc.⁴²

2.6.2 Time horizon

The hedging activities taken to reduce risk must be taken before the unexpected changes in cash flow occur. What time horizon to prefer is up to the single company to decide but in general the short-term cash flow is more often hedged than the long-term cash flow. The economic value is the discounted value of future cash flow and the size of the discount rate, which play an important role. A high discount rate implies that near-term cash flows dominate the present value of the firm, while low discount rate signals that cash flows in the distant future likewise are relevant. The time horizon of the firm in the exposure management must be related to the overall time horizon of the firm and should decide the specification of exposure coefficients that are being estimated. The time horizon may for example be a quarter, six months or two years but it may also be a mix of different time periods.⁴³

2.6.3 Risk attitudes

The management's attitude toward risk plays an important role in the hedging strategy decision of companies. There is a distinction between two major risk attitudes, risk-averse versus being risk-neutral. The risk-neutral firm ignores the risks. Their aim is to maximize the value of its target variable over a certain time horizon. The risk-neutral firm is willing to increase their risks in order to increase their profit opportunities. The risk-averse firm is on the other hand willing to incur a cost to reduce risk. The risk-attitude of the shareholders, top management and the risk management team is necessary not the same and if no clear policy of the firm according to risks is worked out there may be a conflict between different interests. If the risk manager has no guidelines from the top-management the result may be that the risk manager will shape the risk management strategy from his/her own personal risk attitude. This can impose a rather biased and subjective strategy. The risk manager may be more concerned about his personal situation and his benefits than what is best for the firm. His actions may for example be driven by an internal bonus program or by fear that he will lose his job in case of financial distress. It is therefore important to have a clear internal policy towards risks so that the determined strategy is taken in the best interest of the firm and not the personal situation of the manager.⁴⁴ The view on profit opportunities in the financial market plays an important role in hedging strategy decision. We have in an earlier chapter been describing the market parities such as the Purchasing Power Parity (PPP), International Fisher Parity (IFP), Fisher Parity (FP) and the "the expectations hypothesis". We shortly mention them again because they play an important role in the hedging decision-making process and the managers risk attitudes.

⁴² Oxelheim 1997, p 201ff.

⁴³ Oxelheim 1997, p 182.

⁴⁴ Oxelheim 1997, p 184.

2.6.4 Information requirements and the use of forecasts

One of the most important and basic needs and an important task in risk management is the collection of reliable information and the forecasting of future exchange and interest rates. It is a complex task however essential to be able to manage macroeconomic exposures and to set up a successful risk management program. Data collection and analysis is inhibited by the fact that every financial instrument requires a unique set of data to understand prices and how to manage the risks. The data management technology must not only be equipped to transform all disparate data into a standardized form, but it must also catch errors, such as missing data and be able to handle large amounts. Another rather difficult undertaking for the management is to decide which the most important issues are. Generating risk measures in real time, or generating the most accurate risk information, which commonly accomplishes this. The question between speed and accuracy depends on the management resources and priorities.⁴⁵

Economic forecasts to predict macroeconomic variables are widely used in risk management. The forecasts are used for several different activities such as strategic planning, economic development assessment, foreign exchange rates, interest rates and inflation rate prediction. Forecasts in one way or another are essential for companies when planning and setting budgets. There exist a number of different ways to make forecasts. From personal assumptions of market development to statistical models such as "random walk"; (as one has no idea about the future one might as well take the present as the best guide), to advanced econometric equations based on up to 500 variables and equations.⁴⁶

A company can buy forecasts from forecast institutes or make their own forecasts, either by the first two options or by purchasing advanced computer programs of the major models. The latter is the same as to buy the forecasts externally but one chooses which inputs to use. In certain businesses companies might believe they have better information and therefore can make better forecasts compared to forecast institutes.

However, advanced computer programs and external reports are associated with large costs and therefore questions about the gains and advantages of using them are and have been raised. Grippaios (1994) examined British forecast institutes and their performances. In the report they found strong evidence for poor forecasting results. For example, the average prediction of GDP growth in Great Britain 1991 was 0.33 percent, while the economy in reality declined with 2.4 percent. The same pattern can be seen throughout the whole study. However, another conclusion from the report is that prediction in times of stabile growth is fairly good. In the meantime it is in those times good results are least needed.

Informed about terrible performances of forecasters one might wonder why companies are using them and heavily rely on them. Grippaios (1994) also discussed this question and came up with the following conclusions; there seems to be incentives for companies to use and rely on forecasts since there is a great demand for strategic planning. Advanced forecasts are believed to be the best instrument to predict market movements. When buying forecasts externally, especially from prominent and reputable firms, managers feel they have done all in their power to get the best forecasts since they hired the best people in business to do it. Expensive forecasts can therefore also act as a responsibility relief for managers.

⁴⁵ Lamser 2000,p 26ff

⁴⁶ Grippaios 1994.

2.7 Four hedging strategies⁴⁷

The following section gives an overview of four different hedging strategies as well as how and when to use them. The theories distinguish between the international financial market and the domestic bond market depending on the management's view on the parities and risk attitude. We are here describing them one by one and showing when and under what conditions to use them.

2.7.1 Laissez-faire

Risk-neutral managers prefer the Laissez-faire strategy. They believe that there are no profit opportunities in the financial market. According to the beliefs of IFP there is nothing to gain by adjusting the currency positions. In the domestic bond market the Laissez-faire strategy is used when the management believes in the expectation hypothesis. No action is taken under this strategy other than normal commercial operations because Laissez-faire implies that the maturity structure and the currency denomination are determined by the most favorable transaction fees and spreads offered in the market. The information needed when using the Laissez-faire strategy are transaction costs, bid and ask spreads and fees. Currency denomination and maturity choice is irrelevant in this "do-nothing" strategy and therefore not needed.

2.7.2 Minimized exposure

The strategy refers to the risk-adverse managers. They believe that there are no profits to be made in the financial market. Under this strategy only the risk matters when choosing the currency denomination, and financial positions are taken to minimize the exposure. In the domestic bond market this strategy is chosen when the management believes in the expectation hypothesis. The management's view on the FP makes a slight difference on what to hedge. If they believe in FP they minimize exposure to real interest exposures and if they don't believe in FP they also take inflation under consideration as an important factor in risk management. The information requirements for this strategy are all exposure coefficients for commercial cash flows or the values of assets devoted to commercial operations.

2.7.3 Selective hedging

The selective hedging strategy is more complex than both the minimized exposure and the laissez-faire because under this strategy the managers believe that forecasting activities create profit opportunities. The forecasting of the exchange rate can be made either internal or external, or both and is a result of that management believes in that there are profit opportunities on the financial market (they do not believe in IFP). The risk manager using the selective hedging strategy is risk-averse, trading off risk and return and trying to hedge "selectively" in order to reduce risk and benefit from forecasting. In the domestic market the management may use selective hedging if they do not believe in the expectation hypothesis. Their view on the FP is also of importance in relation to their view on exposures. If the management's view of FP is that FP does not hold they are considering the real interest rate linkage with inflation. If they believe in FP the inflation does not matter only the real interest rate is of importance. The selective hedging strategy is extremely demanding in terms of information requirements. The information needed is exposure coefficients, exchange rate

⁴⁷ Oxelheim 1997 p.180ff

forecasts and knowledge about the variances and correlation among currencies. The domestic market provides information about the interest rate exposure and interest rate forecasts, including the variances and correlation necessary to be able to manage the selective hedging strategy.

2.7.4 Aggressive hedging

The aggressive hedging strategy is used when the management is risk-averse and does not believe in IFP. The risk-averse manager will try to maximize speculative profits, hedging aggressive, using own or purchased forecasts of the exchange rate. The situation is the same on the domestic bond market and when it comes to their view on FP it does not matter if the management believes in it or not. The factors of importance using the aggressive hedging strategy on the domestic bond market is the maturity structure and the interest rate adjustability. Also in the aggressive strategy there is a necessity to use forecasts, especially exchange rate forecasts and interest rate forecasts over the maturity spectrum.

3. Legal framework

In this chapter we provide a brief introduction to the legal environment, which a global firm is facing. The frameworks, IAS 39 and FAS133, are two legal boundaries restricting risk management and the managers in their daily work by setting accounting standards and regulations on how to handle derivatives. These standards play an important role when restricting how to handle macroeconomic exposure treatment. The most significant is the disclosure requirement IAS 39. IAS 39 is directly effecting HeidelbergCement since the legal framework of IASB (International Accounting Standard Board) is an international accounting standard setting the rules of the game when hedging. FAS 133, the American legal standard from FASB, (Financial Accounting Standards Board), is indirect effecting HeidelbergCement since the company has subsidiaries in many countries around the globe.

3.1 IAS 39 Financial Instruments: Recognition and Measurement

IAS 39 is the single most important legal framework effecting the risk management programs of non-American companies such as HeidelbergCement. The standard mainly restricts the area of accounting and therefore also the hedging activities. IAS 39 became effective for financial statements covering fiscal years beginning on, or after, 1 January 2001. It requires consistent accounting for purchases and sales of financial assets for each category of financial assets using either trade date accounting or settlement date accounting. Under IAS 39 all financial assets and liabilities (included all derivatives) are recognized on the balance sheet. They are initially measured at their costs (transaction cost included), which is the fair value of whatever was paid or received to acquire the financial asset or liability either at trade date or settlement date.⁴⁸ IAS 39 is interesting and above all important because it implies that the firm should report every single hedging activity separate and not only the net hedging of the exposure. To fulfill the requirements of these standards the risk management team is obligated to report every single hedging activity. However, it should be observed that the firm is not forced by any law to do so.⁴⁹ We attached a detailed summary of IAS 39 in appendix 1 compiled by the International Accounting Standard Board with a more detailed specification of the standard.

3.2 FAS 133: Accounting for derivative and hedging activities⁵⁰

To increase certain disclosure requirements for American based companies the Financial Accounting Standards Board (FASB) issued a statement, FAS 133, “*Accounting for Derivative Instruments and Hedging Activities*”, in June 1998 regarding the accounting principals of all derivative instruments on all hedging activities. This became efficient after June 15th 2000 and required companies to report their derivatives at the fair market value in the balance sheet. Firms were previously used to recognizing their profits and losses on hedging simultaneously as they occur. It also requires that all hedging relationships should be individually documented. The requirements further signify that companies must recognize derivatives as assets or liabilities, and they must be acknowledged on the company's balance sheet. This has a great impact on for example accounting policies and hedging strategies.

⁴⁸ International Accounting Standard Board, http://www.iasb.org/standards/summary_ias20to41.asp

⁴⁹ Nilsson, Sven-Arne, Lund University.

⁵⁰ PricewaterhouseCoopers, <http://www.pwcglobal.com/extweb/service.nsf/docid/4AA3123983289DC580256E280042345D>

FAS 133 effect companies reporting under US GAAP, including US corporations, foreign subsidiaries and branches originating in the United States. The impact is however not limited to US firms only. Indeed, the impact may be significant on European firms such as HeidelbergCement, and foreign-based subsidiaries and treasury centers of US companies due to the high incidence of foreign exchange risk management activities in these locations⁵¹. The key impacts of FAS 133 include a new definition of derivatives, which captures many types of contracts not previously considered to be derivatives as for example sales contracts with embedded options. Traditional hedging strategies may not qualify for hedge accounting, which results in that FAS 133 forces many businesses to revalidate their whole approach to managing financial risks.⁵²

⁵¹ PricewaterhouseCoopers,
<http://www.pwcglobal.com/extweb/service.nsf/docid/4AA3123983289DC580256E280042345D>

⁵² Espinosa, 2001.

4. Method

In this chapter we present the case study method, which we have chosen to work with and how we collected the data that our study is based on. We further discuss our sources and we will in addition also address our approach of handling the data. However, we start with addressing the issue of human perception and our frame of references.

4.1 *Frame of references*

The literature we based our study on, the method we have chosen, and our values and personal frame of references effect the judgments of the results. The frame of references is a person's gathered knowledge, norms, preferences, prejudices and values.⁵³ A person's gathered life experience will effect a person's perception of things. We would like to describe our personal backgrounds as quite similar, since we are born and raised in Sweden. Taken together we have a wide range of academic experience within the Business Administration and Economics field. We all have our majors on a master level in International Finance and on the bachelor level we have all studied Corporate Finance. Thereafter, also on a bachelor level, we have studied different courses in finance, marketing, economics and management. Our studies have been conducted in a large number of different countries foremost in Sweden but also in Belgium, Canada, France, Great Britain, Hong Kong, Spain and the United States. We have also some work experiences from different areas. For example we have experiences within the financial industry, telecommunications and the hotel and restaurant industry. These occupations have also taken place in a number of different countries such as France, Germany, Great Britain, Luxemburg, Sweden and the United States.

4.2 *The balance of objectivity and subjectivity*

Aware of how the frames of references are effecting a person's perception, we have worked throughout the whole study to reduce the subjective estimations and tried to be as objective as possible. However, neutral and objective research does not exist. The research is normative.⁵⁴ Nevertheless, it can also be argued that subjective interpretation sometimes is necessary when conducting a case study. Case studies are designed to answer questions like why and how, these questions leave a lot of room for personal interpretation when compiling the answers. To keep a healthy balance between objectivity and subjectivity we have tried to discuss within the group as much as possible to reach a fair judgment in each case.

4.3 *Method and Methodology*

It is important to choose a method relating to the thesis statement. Our task is to look at the variables, which are affecting the hedging strategy a company decides to use. Hence we foremost base this study on a case study method. In addition we also conduct a small quantitative analysis to be able to strengthen some of our conclusions. Although the quantitative study will be presented first in the analysis chapter. As our objective is to make a case study of currency hedging management in a global firm and compare it with existing theory and previous empirical studies, we have chosen an exploratory case study method.⁵⁵

⁵³ Eriksson 1997, p. 36ff.

⁵⁴ Holme 1997, p. 30.

⁵⁵ Yin 1994, p. 4ff.

The exploratory case study is especially chosen since we have not been able to find any previous case studies within this area. Well-respected researchers as Glaum even make inquiries about such studies. The case study method has also made it possible for us to be flexible, make changes, and complements during the study. This since the case study method can be described as a comprehensive research strategy.⁵⁶

The methodologies we have chosen are interviews with respondents and informants. We have used a wide range of literature, published, non-published, and written material. The published material was mainly written by academics. The written non-published material was from our case company for the empirical part. We have tried to use a variety of sources of information, since a large number of different methodologies with similar results will improve and strengthen a study's conclusions.⁵⁷

4.4 Choice of case company

The choice of HeidelbergCement as the case company is a result of many different variables. We sought to find a multinational company with large operating activities in many various countries and currencies. Another prerequisite was the presence of a highly developed and centralized treasury department. We wanted to study a centralized treasury department since we believe that a centralized treasury department handles all currency hedging from the same perspective often set by companies' treasury guidelines. This is also evidence of consistency and highly developed hedging strategies. Another reason to study a centralized treasury department was to be able to collect information and study the entire hedging operation of the company when time and resources are limited. Most of the research previously studied in this area, partly conducted by Glaum (2002), has been studied on German firms. Therefore our aim was also to find a German company. By choosing a German company we believe it has been easier to compare our results with previous studies. HeidelbergCement, which is a German company with their treasury department, HeidelbergCement Financial Services AB located in Malmö, fulfill the preset requirements and was therefore appealing to us as a case company. As soon as the connection was established we worked continuously to improve our relationship with HeidelbergCement Financial Services AB.

4.5 Confidentiality of information

When studying and working close together with multinational companies there are naturally questions raised regarding the secrecy of information. This study is not an exception. Some of the information given by HeidelbergCement Financial Services AB has been confidential, and we have accordingly accepted their confidentiality requirements and excluded such information in this study. Additionally, we have not always been able to collect all the information we requested due to confidentiality. However, the confidential information we have obtained has been presented in a modified form. On the other hand the modified figures will not effect the results or conclusions in this study. HeidelbergCement Financial Services AB has approved all details written in this study prior to publication. However, as a control function all information of confidentiality has also been given to the advisor, Niclas Andrén, at the department of Business Administration at Lund University, which was also approved by HeidelbergCement Financial Services AB.

⁵⁶ Yin 1994, p. 13ff.

⁵⁷ Ejvegård 1996, p. 27.

4.6 Interviews

We have chosen to collect information and data from HeidelbergCement Financial Services AB through interviews and written material as Heidelberg Cement's annual reports and treasury guidelines. The main source of information has been qualitative interviews. This is a method where researchers rule the least since the interview is like an ordinary conversation. It is the person being interviewed who is designing the interview.⁵⁸ However, to be more efficient and not take up too much time we formed a framework for the interviews with prepared questions, which we sent out before the interviews. Appendix 1 is one example of a sheet with prepared questions we gave out as a framework for one of the first interviews.

4.6.1 Interview questions

The questions we asked during the interviews and the questions we sent out prior to the interviews have been created with a base from the literature. Using the literature as a standpoint gave us indications about the most valuable and interesting questions to ask. Interview questions should not be too extensive.⁵⁹ Thus, for us with the task of conducting an in depth study we saw it vital to ask precise, however, not unnecessary complicated questions. We also visited the case company a number of times and spoke with a number of different people, three individuals in total, which reduced the risk of misinterpreting complex questions. We believe that we succeeded with this part and the answers did not show signs of misunderstanding. Through the interview techniques we used (see below), our aim was to constantly only ask open-ended questions. We believe we partly succeeded in this. We always started with an open-ended question, but to make sure of the answer and that there were no misunderstandings from either side we sometimes asked leading questions to follow up on an open-ended question. We also concluded the answers at the interviews to be sure that we got the correct answers. This system ensured the quality of our questions and the answers.

4.6.2 Realization of the interviews

We conducted a number of different interview situations such as face-to-face interviews, telephone interviews, and email interviews. The latter one was most often preparation questions that we sent before the actual interview, however sometimes we also received short answers over email for questions with a more basic nature. From our point of view the different interview situations have preceded efficiently. The close relationship with the case company has contributed to the smooth process. It is hard to separate and evaluate the different situations, since we have conducted all the different techniques simultaneously. For example, we have called Martin Holm, our contact person at HeidelbergCement Financial Services AB. We followed up by sending questions over email. Some of these have also been answered by e-mail. Subsequently we have followed up with meetings with one or several company representatives where we have been able to ask more detailed questions. It shall be noted that we foremost used the face-to-face technique.

The advantages with face-to-face interviews are that they are less time consuming than other interview techniques. It becomes more of a clear-cut to ask complicated questions and directly confirm their soundness. Since we got the answer at the moment after asking the question we had the ability to directly follow-up with a new question. The disadvantage with a face-to-face interview is "the interviewer's effect". This is related to the fact that an individual might

⁵⁸ Holme 1997, p. 99ff.

⁵⁹ Holme 1997, p. 105ff.

respond different to the same question when it is asked by different interviewers. It is hard for us to evaluate “the interviewer’s effect”, since we cannot test it.⁶⁰ Nonetheless, we consider our face-to-face interviews to have given us the most dependable results. This has its origin in the fact that we could discuss and examine the answers directly. Moreover we could further distinguish the individual’s body language. However, the latter advantage can also be considered a disadvantage since one’s perception of a person can affect the interpretation of the answers.

The advantages of telephone interviews are especially the speed of realization to evaluate the response.⁶¹ We mostly encompassed short telephone interviews, which have been helpful for us as a source of fast accessible information.

We have supplementary to the above mentioned sent out pre-questions as a foundation for the face-to-face interviews. Foremost they have served as preparation material for the person being interviewed. We judge these questions to have served our purpose well. However, it can be argued that if the person being interviewed is prepared, one will seldom receive a spontaneous answer. Thus, for our study this is not considered accurate, since our intention was not to uncover an individual response, as we were searching for policies and actions of the company.

4.6.3 Compilation of the interviews

We have not tape-recorded any of our interviews. During our face-to-face interviews, all the three of us have been present and simultaneously taking notes. Immediately after all the interviews each and everyone one of us has clarified our answers individually and then we have compared our results internally. We evaluate this method to have served its purpose well as we have through its assessment avoided losses of relevant information due to positive overlapping. Other advantages with taking notes instead of using a tape recorder is that we believe this made us stay focused on the interview and accordingly leading up to better follow up questions. Some might argue that it is better to use a tape recorder instead of taking notes and therefore be able to stay more focused on the interview. However we have discussed which method we thought to be the most suitable and for us and we all agreed that taking notes was the best one. Since we structured and based the questions on the theories we also used the framework of the theories when we compiled the interviews into the empirical study. The interviews combined with secondary material, such as the HeidelbergCement Treasury Guidelines and annual reports, have served as the underlying source for the empirical study.

4.6.4 Target people of the interviews

Respondent and informant interviews are two categories of interviews utilized in our study. Respondent referring to interviews with people directly involved in the studied area, whereas informant referring to interviews with people who obtain specific knowledge in the area studied. The reason we carried out both of these types of interviews was to get as an extensive spectrum as possible, of the area studied.

HeidelbergCement Financial Services AB has employed all of the respondents. This refers to three individuals in total which we met and interviewed. These interviews have taken place

⁶⁰ Eriksson 1997, page 87

⁶¹ Ibid

during April and May 2004.⁶² We have foremost endeavored interviews with the Treasury Assistant. He has served as our contact person at the company. He has thereby also forwarded any questions beyond his attain to the most suitable and appropriate person to answer. This has to a large extent subsisted to the Group Controller, the Risk Manager and the Group Treasurer. We have attempted to reach the ultimate reliable source of information, however the time spent with the individuals, other than our contact person, has been limited. Nevertheless, we feel that the above-mentioned individuals have provided us with profoundly and detailed answers and all questions have been seriously responded.

In addition we have encompassed interviews with two people who have served as informants. They subsist of Senior Lecturers at the department of Business Administration, of Lund University. We have tried to find the people with superior knowledge within our field at the department in order to receive the most precise and accurate answers. We have conducted one face-to-face interview and a couple of email interviews.⁶³ These interviews have provided us with knowledge about complex issues, especially in matters related to the accounting and auditing area where we feel our knowledge has been limited. These interviews have served our study with valuable information, particularly in order compare and evaluate the theories and the empirical study in our analysis.

4.7 Literature studies

We used extensive literature as a foundation to the theory. This has provided us with a wide-ranging knowledge about the subject. The literature studies also endowed us with a base to develop the interview questions and accordingly the empirical study. We have also engaged a standpoint from the literature studies when analyzing the empirical study.

Further, we have foremost been searching for published articles through different databases, provided by Lund University. In addition, we have searched for published books at the economic libraries at Lund University as well as Internet based search engines such as Emerald. Our advisor has also contributed with relevant literature. After reading and sorting out the literature we have chosen to focus on a number of different areas. Nevertheless, we consider all the literature that we have studied of value to a certain extent as it has widened our perceptions of the subject. Foremost European and American authors have written the literature, which we have based this study on, therefore the literature can be considered to describe the western world's point of view.

4.8 Critical attitude towards sources

The literature serving as the theoretical foundation has to be relevant and be in accordance with the thesis statement. Despite our aim to present a comprehensive picture of currency hedging management theories we are aware of that by the selective approach we have taken when choosing literature we might have constructed a systematically distorted foundation⁶⁴. It is hard to assess if the literature we have used in this study is neutral and correct. However it is included in the role of a researcher to critically evaluate the source of information and its validity.⁶⁵ It is therefore important to discuss and evaluate the validity of the sources and always approach them with a critical attitude. Our ambition has been to read and use a wide

⁶² See bibliography for details

⁶³ See bibliography for details.

⁶⁴ Holme 1997, p 105.

⁶⁵ Esaiasson 2003, p.34ff

range of literature in order to create a broad theoretical foundation. As a part of the critical assessment we strived to chose material written by well known and respected authors. Most of the material we have used is also published in various academic journals. In accordance we have not find it necessary to evaluate the written material further than in the selecting process. Instead we tried to focus on evaluating our primary data. As stated above the literature we have selected to use as a theoretical foundation, is foremost written by American and European authors. However, we do not see a problem with using western literature since we are studying a western company.

We are aware of that the reliance of one company and the sources within the company has made us very dependent of them and their trustworthiness. Another source of distortion is the interpretation of the information emerging during the interviews. We have tried to avoid to control and misinterpret any of the information in order to understand it from the theoretical comprehension. We believe the awareness of this has helped us to avoid this. Since the people we have interviewed at HeidelbergCement Financial Services AB are experienced and responsible for their financial risk management we consider them to be reliable sources of information. We have also, as stated before, actively tried to get as close as possible to the best source of information by interviewing the people with relevant knowledge in the specific issue.

4.9 Validity and reliability

Regardless which method one chooses to utilize, one ought to emphasize certain requirements on the information collected. If the interpretation of the results should be of high quality and reliable it is important to examine the study's validity and reliability.⁶⁶

Validity can be divided into internal and external validity. The first stated referring to empirically appraising what theoretically is supposed to be measured, in other words the absences of systematical miss measurements. The external validity evaluates to which extent the results can be generalized.⁶⁷ We believe our measures are accurate, and comparing the theory about financial risk management and corporate reality with the case of HeidelbergCement. The purpose with the case study is to understand how the theory about financial risk management can be applied and how it can work in reality. It is therefore not the generalized reality we are measuring or describing.

Reliability indicates how trustworthy a measurement instrument is.⁶⁸ The instruments we have used are the interviews we have conducted with the employees at HeidelbergCement and the written information we got from the company. We have deliberately neglected to test the questions to see if we would get the same results if asking them again. This has its foundation in the fact we consider our questions and responses valid for our study, and that the answers would be the equal if asking them again. However in some cases, when required, we have asked the same general questions to more than one employee and received the same answers. Further providing evidence for the above is that we did not ask for personal opinions. Instead we where seeking the corporate reality, which ought to be the same regardless who one is asking. Since we foremost have used face-to-face interviews we also believe that the people

⁶⁶ Olsson 2001, 143ff.

⁶⁷ Esaiasson 2003.

⁶⁸ Ejvegård 1996.

being interviewed have understood our questions. Accordingly they have been able to ask us directly regarding difficulties of interpretation and understanding the questions.

5. Empirical study

This chapter focuses on financial risk management in general and on currency hedging from the case company, HeidelbergCement's, perspective. We will here present their currency hedging strategy, the decision making process behind it, and the variables effecting the currency hedging. However we start with introducing the company.

5.1 Introduction of the case company

HeidelbergCement is a German based company with their corporate head quarters located in Heidelberg. HeidelbergCement produces a wide range of building materials including cement, ready-mixed concrete, concrete products, aggregates, as well as dry mortar, sand-lime bricks, and building chemicals. The consolidated annual revenue of EUR 6.6 billion in 2003 and with a cement sales volume of approximately 46 million tons HeidelbergCement is one of the largest cement producers worldwide. The company employs almost 38,000 people and has activity in more than 50 countries, foremost in Europe and North America but also in Africa and Asia. Accordingly the major currencies the group operates in are the Euro, the US dollar, the British Sterling, and Canadian dollar. The group includes approximately 100 companies. Merger activities are conducted frequently within the group and the number of companies included in the group is therefore shifting regularly over time.⁶⁹

5.2 Risk exposure at HeidelbergCement

HeidelbergCement has a developed risk management program and is acting proactively to identify measure and minimize risks throughout the whole group. The group has identified a wide range of risks that might have an impact on the company. These are overall economic risks, industry related risks, market and strategic risks, operating risks, currency risks, interest rate risk, liquidity risks, legal risks, IT risks, and other risks as natural disasters. The group is working with a bottom up approach meaning that risks are identified on all levels and passed up in the organization. The highest management level in each unit is obligated to assess and take action responding to the risks. The risk status is thereafter reported on a quarterly basis to the managing board and in assistance with the risk committee they evaluate what actions to take on the group level. Risks can thereafter be passed down to different departments such as the Audit & Corporate Risk Management department. Or if the risk is of a financial nature it is passed on to HeidelbergCement Financial Services AB. This is what we focus on.

5.3 Hedging strategies at HeidelbergCement

HeidelbergCement follows the principals of their existing policies of hedging 100 percent of their transactions when the exposure exceeds EUR 50 000. This policy is clearly stated in the group's treasury guidelines from 2001, which were approved by the board. The main purpose of their hedging activities is therefore to minimize the variance of the cash flows. They aim to match cash in and out flows with a derivative instrument to secure that the cash flow does not differ from the expected value. Thereby they do not try to profit on their hedging. Their hedging contracts seldom exceed more than one year and hedging periods of one, three or six months are commonly used. No netting principle is in use, and thereby every cash flow is

⁶⁹ HeidelbergCement Annual report 2003

hedged separately. Further, forward contracts are the only derivative instrument used by the treasury department. However, with the approval from the treasury department the subsidiaries can take other positions on smaller amounts with a variety of different hedging derivatives, for example options. The subsidiaries are obligated to hedge their exposures, but the treasury department enters the positions on behalf of the subsidiaries. The treasury department itself only incurs forward contracts since they mainly are acting as an internal bank and the exposures here are related to credits. The subsidiaries transactions, on which they can enter other contracts than forwards, are related to sales conducted in other currencies.

5.4 Credit worthiness of HeidelbergCement

Essential measures of the firm's financial risks are the credit ratings conducted by external agencies. What should be mentioned is that the creditworthiness of HeidelbergCement, the credit rating, plays a vital role in the level and terms, that the company will be able to borrow and finance their investments. HeidelbergCement has been effected the past year 2003 of a downgrading in their credit ratings. Moody's Investors Service and Standard & Poor, among others, conducted this change based upon the difficulties the company had in Germany. These difficulties build upon the decline in the construction investments and in other building areas as well. However, the severest fall was in the public sector construction and commercial construction where their number reached an absolute low. Maybe the most important reason to the downgrading was that HeidelbergCement failed to sell one of their German subsidiaries with a cash flow deficit as a result. Instead of repaying a one billion loan with the money from the sale they had to finance it with another bank credit with poor conditions⁷⁰. This effected Heidelberg's long-term creditworthiness to a ranking of Ba1 by Moody's and BB+ by Standard & Poor. In the area of short term, the agencies both rated them on a B.⁷¹

The past downgrading of the credit rate has affected HeidelbergCement severely. A lower credit rating makes it more expensive to take loans, since investor wants a higher risk premium. With the lower credit rating in combination with the increased leverage, the large credit institutes have started to demand special hedging policies to secure the cash flows and the company's short-term liquidity. The hedging policies demanded by the banks are in accordance with the existing policies.⁷²

5.5 The corporate view on parity conditions

The parity conditions are of great importance when theoretically conducting financial risk management as well as when choosing hedging strategies. Representatives from HeidelbergCement are familiar with the concept of market parities but they pay no attention to them when deciding how to handle exposure and what hedging strategy to use⁷³. Further, nothing in their corporate guidelines indicates any consideration of them.

It shall be noted that the people working for HeidelbergCement Financial Services AB believe that there are gains to be made on the international financial market. During 1992 to 2000 the traders at HeidelbergCement Financial Services AB were allowed to trade in speculative purpose and they succeeded to gain from the market each year during the period. Today they

⁷⁰ Peter Turesson, Treasury Manager.

⁷¹ Annual report HeidelbergCement, 2003.

⁷² Magnus Cosmo, Group Treasurer

⁷³ Peter Turesson, Treasury Manager.

are not allowed to speculate, instead the derivatives are used in purpose to minimize risk, as stated above.⁷⁴

5.6 Organizational financial risk management structure at HeidelbergCement

The organizational structure of the Group is to a large extent decentralized and each subsidiary is more or less independent on the operational level but controlled and guided by group policies and strategies. According to the Annual report 2003 this decentralized structure is kept because of the local nature of the business. In the meantime the group has adopted centralized financial services.

The centralized treasury department handles financial objectives. The function of the centralized treasury department is to act as an internal bank and as a financial service provider for the group companies. The subsidiaries take major loans and deposit and handle most of their liquidity through the treasury department. The treasury department also hedges financial transactions and exposures that occur within the group and run most of the subsidiaries hedging activities. The group treasury department covers all the strategic aspects of the groups financing. This covers all external financing, such as the debt and equity funding of the Group, all the responsibilities of significant money market and capital market transactions and all the key relations with banks and rating agencies.

However the subsidiaries are nonetheless conscientious for the identification of the financial risks which has any type of influence over their earnings activities. The subsidiaries provide the group treasury with cash flow and financing forecasts and inform the group treasury about possible threats and opportunities as well as the overall development on the local market. Further, the subsidiaries inform the group treasury about future cash flows and what exposures to hedge. Nonetheless, the implementation of the treasury strategies is delegated to the Group Treasurer. However, the Finance Committee takes the underlying decisions, which subsequently evolves the final financial needs within the group.

5.7 Hedging techniques

As stated above HeidelbergCement Financial Services AB hedges all currency flows with a 12-month maximum time period. This is in some cases conducted over one, three, six or nine months. This strategy is independent of how long the actual time horizons are. As an example, assume that HeidelbergCement Financial Services AB has a payment of a loan in two years time where the currency and amount is known. Instead of entering a forward contract for two years, targeted hedging, they are hedging the flow in shorter time periods several times after one another, consecutive hedging. However the contracts entered always match the cash flows. Consecutive is a form of the minimized exposure strategy and is a risk adverse strategy, which aims to secure cash flows in the short term.

Previously, before 2001 when the new treasury guidelines where introduced HeidelbergCement had a selective hedging strategy. At that time the treasury department could enter speculative contracts. As stated above they managed to beat the market eight years in a row.

⁷⁴ Peter Turesson, Treasury Manager.

5.8 Hedging strategy decision-making

HeidelbergCement's hedging strategy aims to minimize the currency exposure and to secure the cash flow. This strategy is implemented and controlled by the treasury department, however the strategy was decided by the board and implemented through the treasury guidelines in 2001. The treasury guidelines serve as the main framework in the daily hedging activities. The board overview the treasury guidelines on a yearly basis, but changes in the guidelines are rare. They only occur when the market conditions or firm specific variables are changing dramatically. The daily operations are managed by the Finance Committee, which is headed by the Group CFO. Meetings with the Finance Committee are held on a regular basis. The people included in the Committee, except for the CFO, are the group treasurers, the risk manager and the group controller.⁷⁵

5.9 The necessity and use of forecasts within HeidelbergCement.

As mentioned in the theory chapter, forecasts are frequently used to predict macroeconomic variables on the market and subsequently evaluating the influences on the firm. Heidelberg Cement Financial Services AB produces their own forecasts because they believe that their forecasts are superior to external made ones. The Front Office at HeidelbergCement Financial Services makes forecasts on a regular basis fitting their purpose. They build the forecasts on their own perspective on the future after corresponding with external sources such as banks, analysts or the financial data base system Bloomberg.⁷⁶ External forecasts are often used as control system to justify own beliefs in the market development.

The group companies are solely accountable for doing the cash flow forecasts, which include all major known financing needs for the subsidiary. This is conducted in order to benefit from the local knowledge of the subsidiaries treasury departments and the expertise of their CFO's. The subsidiaries also have better knowledge of their needs and exposure and the local conditions effecting the firm. The group treasury department in Malmö thereafter evaluates the forecasts, in order to determine the exchange rate and interest rate positions of the total Group. However, based upon these forecasts, the Group Treasury department takes action by hedging the subsidiaries exposures.⁷⁷

The forecasts envelop the total operating plan procedure and their most frequent time horizon in relative to these forecasts, which is maximum three years. However, the time period for the risk management of the firm is often maximum one year. Part of the financial risk management is to identify adequate liquidity at all times. Therefore HeidelbergCement Financial Services AB requires their subsidiaries to prepare short-term cash flow projections, which should cover at least three months forward, however they are reported on a monthly basis.⁷⁸

5.11 Disclosure requirements for HeidelbergCement

All treasury transactions concerning HeidelbergCement are in accordance to the International Accounting Standards, IAS 39. These are also specified in the Group Accounting Manuals, and are clearly stated and followed insuring HeidelbergCement to not be exposed to any legal

⁷⁵ Magnus Cosmo, Group Controller,

⁷⁶ Peter Turesson, Treasury Manager.

⁷⁷ HeidelbergCement Treasury Guideline§ 2.1.

⁷⁸ HiedelbergCement Treasury Guidline § 3.1.

risks. This is however consoled by professionals within legal expertise. The subsidiaries are authorized to arrange powers of attorneys consecutive to their transactions. However, changes are at all times forced to be approved by Heidelberg Cement Financial Services AB.⁷⁹ The IAS 39 standards are supposed to be due in use by 2005. However, recently leading banks and insurance companies have called for a delay in the use of these accounting rules regarding derivatives. Therefore this date is still not yet finalized.⁸⁰ HeidelbergCement Financial Services has implemented IAS 39 but are still not absolutely sure about their exact applying. Even banks and auditors find it hard to evaluate the new rules.⁸¹

IAS 39 presents a challenge for the treasury systems of HeidelbergCement. Through the use of derivatives the systems are enhanced to calculate the fair values for derivatives. This in order to to apply the rules for monitoring the effectiveness of the hedging, and to track hedging relationships parallel to providing new disclosure information. Concerning any treasury transaction specific documentation is conducted to insure appropriate internal records. This type of documentation at the same time assures the soundness and accuracy of the internal revision. For this type of revision HeidelbergCement documents date and time of transactions, exact what type of contract, relevant currencies, principle and nominal prices and volumes, as well as what parties are receiving and what parties are paying. Specification of the name of the treasury department, staff member and transaction counter party further induce internal revision of their risks⁸².

Despite the inconclusiveness of the way of handling IAS39, HeidelbergCement has interpreted the legislation in the following way. HeidelbergCement hedge all transactions independently and is not using any netting principles. However, HeidelbergCement still confess their inconclusiveness about IAS39.⁸³

⁷⁹ HeidelbergCement Financial Services AB Treasury Guidelines § 2.4

⁸⁰ Financial Times, May 20th 2004.

⁸¹ Sven-Arne Nilsson, Lund University

⁸² HeidelbergCement Financial Service AB Treasury Guideline, § 2.3.1.1.

⁸³ HeidelbergCement Financial Services AB, Treasury Department.

6. Analysis

Currency hedging management is a complex issue, involving many different variables. When making the hedging strategy decision, not just one, but many variables must be taken into account. However, these variables are often discussed independently in the literature. We will in this chapter discuss currency-hedging management by looking at how different variables, put together, effect HeidelbergCement. By using a comprehensive perspective including a number of different variables, we will try to evaluate how different variables effect the decision making process both in terms of size and direction.

6.1 Currency risk exposure

HeidelbergCement is operating in many different currencies and have a large number of subsidiaries within the group. A large number of the subsidiaries reduce much of their operational currency exposures by operating in their local currency. However, since the centralized treasury department, which has the function as an internal bank, is funding the subsidiaries, large internal currency exposure arises within the Group. The advantage of the centralized funding is the increased control and the scale of economies when all credits are allocated at the same place.

6.2 Hedging Strategy

In financial theory there are a number of different hedging strategies to choose between. We will bellow asses the hedging strategy and what values it might create in both a qualitative and a quantitative way. HeidelbergCement Financial Services AB hedges all currency flows with separate contracts over a 12-month time period of maximum. This is in some cases conducted over one, three, six or nine months, however most often they have a time horizon of maximum twelve months. This strategy is independently of how long the actual time horizons are for the cash flows. For example, assume that HeidelbergCement Financial Services AB has a payment of a loan in two years time where the currency and amount is known. Instead of entering a forward contract for two years, targeted hedging, they are hedging the cash flows in shorter time periods, but several times after one another, consecutive hedging. The time series analysis on the next page is an attempt to explain how consecutive hedging effect the cash flow compared to a non-hedging technique.

n=792	EUR/SEK	EUR/GBP	EUR/CAD	USD/EUR
Qs	15,56%	3,45%	10,36%	13,20%
Qfwd3	15,53%	3,71%	10,42%	12,39%
Qfwd6	15,69%	3,99%	10,49%	12,34%
Qfwd9	15,97%	4,28%	10,57%	12,34%

The table shows the standard deviation from EUR versus SEK, GBP, CAD and the USD measured on a daily basis (n=792) during a time period of three years (2001-05-25 to 2004-05-24). Qs = Spot rate, Qfwd3, 6,9 = Forward rate 3, 6, 9 months. Source: EcwinPro

The table above shows that the standard deviation for spot rates and forward rates for independent currency relations are similar. Sometimes the forward rates are more fluctuating than the spot rates. Our results strengthen previous studies of the same issue.⁸⁴

Hedging in general and forward contracts in particular serves to secure future cash flows. Since the future exchange rate is uncertain and unpredictable there are incentives to secure the cash flows. The prediction of the near future is easier and more reliable than the distant future, since one has to take the time perspectives into account. Therefore it would be natural to hedge in a long-term perspective since the distant future is more uncertain.

For a company such as HeidelbergCement, which conducts consecutive hedging on maximum 12 months, it is worth looking into the alternatives of using forward rates, in order to conclude whether or not the outcome is the ultimate. We have therefore found it essential to look into the spot versus the forward rate of the four most used currencies of HeidelbergCement. Based upon the results here above, we can observe that the spot rates (Qs) in most cases are less volatile compared to the forward rates (Qfwd). What we can supplementary distinguish from the first stated as we look back upon the data of spot and forward deviations, is that the costs of hedging these currencies is larger for HeidelbergCement when using the forward rate. We therefore further find it important and essential to evaluate and reflect over this outcome.

When conducting consecutive hedging with short-term contracts, as HeidelbergCement, one is securing cash flows in a short-term perspective. Since the forward rate is as volatile or even more volatile in many cases, compared to the spot rate, the only thing achieved by consecutive hedging is stabile and known cash flows within the short-term perspective. This

⁸⁴ Oxelheim, 1987

also means that the volatility of the exchanged rate is not reduced, only delayed. Hedging with forward contracts involves a cost in terms of internal time resources. The option of not hedging at all compared to entering forward contracts consecutively would according to the time series analysis be more cost efficient. However, the delay of the variance of the exchange rates gives the management more time to take action if the market conditions are changing.

It may have given us a different outcome if we were to have looked upon the standard deviation of forwards covering longer time periods. However, HeidelbergCement, as mentioned, only hedges up to twelve months. This has its essence in the attitude of the management, and policies of the firm. It also depends on how much the firm is willing to pay to secure their cash flows, and how lucrative HeidelbergCement find their hedging to be.

We consider that hedging on these short-term time horizons is not considered ultimately cost-efficient, however it reduces the uncertainty of variation in future outcomes. While these above stated conclusions, are not in any way mistaken, there are supplementary specific reasons and explanations to why HeidelbergCement conducts this short-term hedging. Targeted hedging would have put them in a situation of being obligated to follow their contracts on a longer time-horizon. This further induces a slightly higher inflexibility from a liquidity aspect, than the short term consecutive hedging. Supplementary the market is considered to be more liquid in the short run, which is also enabling them to more frequently renegotiate and change the conditions on their financial obligations. The long term financing, considering the centralized credits, further brings on less possibilities for HeidelbergCement to thereafter take new credits at a most favorable cost of capital. We further stress that their consecutive hedging enables them to more accessible acquire capital assets, if preferred. The last stated could be considered approved if assuming that HeidelbergCement for example would desire to sell one of their subsidiaries. Then targeted hedging could, if they were assumed to conduct the deal immediately, limit their actions, compared to the consecutive hedging, due to the longer maturity.⁸⁵ Further findings of HeidelbergCement being rather risk adverse, is simultaneously verified on our results above. Even though it implies a cost to conduct this hedging, the firm is willing to take this on order to minimize risks and stabilize any future uncertainties.

However, to be noted when reflecting over these circumstances is that the outcome would differ depending on how the markets evolve and changes over time. And as mentioned, this is to a certain extent unknown. Therefore we find it essential and important to mention the different possible outcomes.

6.3 Financial distress and risk attitude

According to the theory, financial distress is the bankruptcy cost in a company. As we have discovered in our empirical study, HeidelbergCement's credit rating has recently been downgraded. The downgrading has made it harder and more expensive for HeidelbergCement to raise capital. We consider this to indicate an increased risk of financial distress. The credit market has increased the risk premium and accordingly the bankruptcy cost has increased for HeidelbergCement. It is interesting to evaluate how this affects the company's risk attitude and thereby also hedging strategy decisions. Perhaps even more interesting is to discuss if external requests, for example from the credit market, force the down graded company to take

⁸⁵ Martin Holm, HeidelbergCement Financial Services AB.

certain action, and if HeidelbergCement had chosen another strategy if these external demands did not exist.

From the answers we have collected in our interviews it is really hard to separate and to evaluate if the company's current hedging strategy is a result of the hedging requirements from the credit market or if it is an independently chosen strategy. However, we can conclude that the credit market requirements are pushing HeidelbergCement to undertake a risk-averse strategy and to hedge all currency exposures that are arising from the internal funding operations.

We believe that one way to evaluate the risk attitude of a company might be to look at how it is considering the market parities. During the interviews we have noticed that the personal at the treasury department is aware of the general theories about the market parities, however, these theories are not considered when making decisions. The current strategy, which was adopted in 2001, and thereby before the severe credit rate downgrading, is showing clear risk-averse behavior according to the market parities. When concluding this, it also becomes more likely that the current strategy might be chosen independently from the credit markets requirements since they were set before the actual happening. However, today there is no opportunity to choose a different strategy, even if we hardly believe this would be considered as an option referring to the previous risk-aversion.

We believe the most important here is to conclude how much the increased risk of financial distress actually is effecting the company's hedging strategy and their ability to actively chose a strategy. Even if the current hedging strategy was adopted before the last downgrading the company already at that time experienced the effects of financial distress, since they went through financial problems during this time period as well, which might have influenced the decision making at that point of time.

6.4 Organizational structure

The organizational risk management structure of HeidelbergCement is both decentralized and centralized in the same time. This may sound out of the ordinary but each subsidiary has responsibilities to fulfil according to the overall risk management strategy of the Group. However, the overall risk management is still in the hands of the centralized treasury department. The subsidiaries gather information about their specific risk exposure also and make forecasts about their future risk exposure. They report and prepare short-term cash flow projections every month, which should cover at least three months forwards. This gives HeidelbergCement an increased overview of their financing needs, the related costs and increased control over their financing activities. The subsidiaries have only limited possibilities to take actions by themselves; instead the treasury department execute the hedging. With this system HeidelbergCement has in our opinion two major advantages. First, the subsidiaries have a superior knowledge of the local conditions, which each and every of the subsidiaries are facing on a daily basis. The subsidiaries are therefore the right instance to collect the data that are the ground material for the ultimate currency hedging decisions taken within the Group. This is also a cost efficient way of collecting the data needed for an efficient hedging program. Secondly, the centralized treasury department have the advantage of having the scale of economies when hedging and the centralized treasury department have the overview and the expertise in the derivatives market that is needed to execute effective hedging. The expertise in risk management that is located to the treasury department might

also cover strategic aspects of risk management that each and every subsidiary might not be able to cover up.

One might think that the netting of currency exposure would be an obvious alternative or complement to the existing hedging program. The subsidiaries are located in about fifty different countries and matching or netting of exposure would be an easy and not as expensive way to hedge. But this is not the case and the reason is not totally clear, not for us and not for the risk managers at HeidelbergCement in Malmö. We would consider to net or match different currency risk exposures before undertaking resource-consuming activities instead of hedging every single exposure individually. The reason might be that there is not a clear picture of the legal framework that encourages that single exposures shall be hedged individually in order to make the accounting easier. We are above arguing that the expertise that is needed when executing hedging is centralized but this seems not to be the case when looking at the legal aspects. For us it would be obvious to include auditors or other legal professionals to take care of this. The risk management team seems however not to be totally sure about the legal framework and that is surprising and a big disadvantage of the firm. We continue to analyse the legal framework later in this chapter.

Another advantage with the structure of today is that the centralized treasury department has taken the role as an internal bank and thereby the role as a financial service provider. The subsidiaries get thereby an internal control and support function in the treasury department. The group treasury department covers all the strategic aspects of the group's financing. This covers all external financing, such as the debt and equity funding of the Group, all the responsibilities of significant money market and capital market transactions, all the key relations with banks and rating agencies.

The main framework of the hedging strategies at HeidelbergCement is decided by the board and stated in the treasury guidelines. The implementation of the hedging strategies is delegated to the treasury department but the Finance Committee takes the underlying decisions and gives directives how to handle the strategies, which are outside of the guidelines. The treasury department has this aspect to take into account when planning hedging activities. The Finance Committee has the overall perspective for the whole firm and are more risk averse than the risk managers.

It is debatable if the decision making process of today is the most efficient. We consider it to be an advantage to have specific treasury guidelines as a control function and as a quality ensuring function. However, according to the interviews it seems like the board is rather inactive in updating the guidelines when the market conditions are changing. Last time the treasury guidelines were updated was in 2001. This might have two different explanations. Either that the market conditions and the preferred risk have not changed or that the board is acting in reliance with old decisions. In the second case, one can draw the conclusion that the board is not prioritising the hedging strategy decision and they might lack expertise within the area. During the interviews we have conducted with the treasury department it seems like the people at the treasury department believe that they have a superior knowledge within the area and prefer a selective hedging strategy where they are allowed to speculate. They are often in the interviews referring to the period (1993–2001) when they were allowed to speculate on the market movements. They actually managed to beat the market for eight years in a row.

The employees at the treasury department might however have other incentives than the board to undertake a certain strategy. While the board wishes to minimise risk in all areas and

especially those that are not within the core business, the treasury department wants to make their work more important and challenging. Another aspect to consider is the managers' personal rewards if they perform well, for example bonus schemes. The issue above is closely related to the agency theory, which is interesting in itself, meanwhile in this case it is more important to focus on the competence of the decision-makers than to look at their incentives. It is very hard for us to evaluate the competence within the different levels but we strongly believe that the decisions must be taken in a good balance between competence and the understanding of the overall situation and aims for the company. Personal opinions of the single manager must however be excluded in decision-making process, it is the overall goals of the company that are important. We believe this is not the situation today and we therefore encourage better communication within the different management levels.

The Treasury department at HeidelbergCement also serves the subsidiaries as an in-house bank with the function to serve the subsidiaries with credit and risk management issues. This organizational form is well evaluated and serves its purpose. We believe that for a global firm with operations in many countries and currencies, it is a strength to have a centralized structure with an in-house bank guaranteeing the subsidiaries capital if needed and also deposit opportunities. On the other hand, there are from this aspect some disadvantages as well. With a strong centralization, the single subsidiaries can be stressed by regulations from the central headquarter or by an unfair cost of capital since the only source of funding may be from the in-house bank. From the subsidiaries point of view a centralized treasury function may not be seen as optimal because some of the local aspects may be lost when following the directives from centralized treasury function.

6.5 Legal framework

We agree that the legal framework, which consists of IAS 39 and FAS 133, is a significant factor that impacts the company's choice of hedging strategy. The accounting rules seem to restrict the action HeidelbergCement can undertake to treat their currency risks. The impact appears to be obvious since it is an important set of rules that restrict the possible risk treatment. However, during our research we observed that the managers at HeidelbergCement do not have a totally clear picture of the real impact, which the legal framework has on the firms currency hedging. For example the Group Controller of the treasury department does not know the exact impact of IAS39 and FAS 133. We think this is worth to mention because the legal framework is a significant factor to consider when hedging. We have earlier argued that matching and netting of different currency exposures would be a cost efficient way to hedge. To be able to do that it is necessary to have a superior knowledge what is and what is not, possible to do according to regulations. Why the employees at the treasury department do not have the legal expertise in the accounting area is a question that we have discussed however we do not find any satisfying reason. For a company such HeidelbergCement with a significant currency exposure and a large turnover it may be of high interest to have a clear picture of the legal framework. If not, the best action might not be undertaken to avoid currency exposure and thereby the company might lose large amounts of money. One reason to the lack of knowledge in the area might be that IAS 39 is a rather new standard. However but not an excuse.

The lack of knowledge and the confusion about the real impact on the legal framework seem however not only to be the case of HeidelbergCement. As we mentioned in chapter four some major international banks are arguing against the new regulation. Also some leading Danish banks are arguing against the implementation of the new set of rules. Danish banks are of

tradition a big players in the bond market and they agree that the new regulation hits them unfairly because of the new rule to report assets to the fair value instead of the value of the actual contract⁸⁶.

The legal framework requires consistent accounting for purchases and sales of financial assets. All derivatives are with this new standard recognized on the balance sheet, which implies that every position taken shall be reported separate. To fulfill the requirements of the standards the risk management team is therefore obligated to report every single hedging activity. This means that netting and matching of the exposure cannot easily be undertaken to create a natural hedge without using derivatives. This is of significant interest and it is of great importance when deciding what strategy to undertake. However, is this the correct way to interpret the legal framework? According to Sven Arne Nilsson, an Auditor⁸⁷ that we have been discussed this issue with, it should be observed that the firm is recommended but not forced by any law to separately report the positions taken. As a summary we can conclude that the legal framework is effecting the currency hedging strategy and limiting the hedging possibilities due to the consistent accounting requirement and the uncertainty of how to interpret it.

6.6 Purpose and results with the hedging strategy

When deciding a hedging strategy there are always factors effecting the decision as we have discussed above. These factors are both internal, such as the organizational structure and external as the credit market. However when discussing factors influencing the choice of hedging strategy one also has to take the purpose and goal with the specific strategy into account, especially when evaluating the performance of the strategy.

HeidelbergCement's goals with their hedging strategy is to minimize the variation of predicted future cash flows. They also seem to have the goal to not be locked up by contracts for longer time periods. This with the further purpose to act more flexible on the credit market, when refunding and depositing money, which involves hedging activities. The market is also more liquid in the short term than in the long term according to HeidelbergCement, which is another reason for short term hedging. Another advantage with short term consecutive hedging according to the company is the improved flexibility when acquiring and selling subsidiaries. Despite that we have suggested that consecutive hedging probably is value destruction in its pure form compared to a non-hedging strategy, it might be value creating for HeidelbergCement since the consecutive hedging seems to serve the company's hedging purpose. Even if consecutive hedging does not, according to the time series analysis, reduce the variance there are other advantages such as the delay of variances. This gives the management time to react on market variations. In this case management is buying time to be able to react to market variations. For example it enables them to plan future cash flow such as revenue and investments since they are familiar of the cash flows before they occur. Simultaneously the current hedging strategy serves the credit markets requirements on the hedging strategy. Nonetheless, since consecutive hedging is considered to be a risk averse strategy HeidelbergCement is willing to pay for the risk reduction they believe they achieve. A proof of this is that the treasury department is considered as a cost center. We can therefore conclude that the hedging strategy serves the purpose of the strategy.

⁸⁶ Financial Times, 13 October 2004.

⁸⁷ Nilsson, Sven-Arne, Lund University.

As we have discussed and suggested before there might be more lucrative hedging strategies. However these often include speculative hedging. This is not possible for HeidelbergCement to conduct due to the credit markets requirements on the strategy. Secondly it would not serve the company's aims with the strategy. The non-hedging strategy, which according to the time series analysis would be less expensive than the current strategy, does not fulfill the requirements from the credit market. It would therefore not be an option even if it could serve the company's purpose. An interesting point to add here, is how the credit market, which should have expertise knowledge in the area, can force (to hedge) and allow (consecutive hedging) HeidelbergCement to conduct consecutive hedging when this strategy is proved to be more expensive and not risk reducing in a longer perspective. Is it because they are profiting from this strategy?

7. Conclusions

The intuitions of our results steam from the fact that recent technological and financial innovations have increased the demand for risk management. Parallel to this increase, companies are taking a more in-depth look at the importance of hedging. The derivatives market is a multibillion-dollar market, which has been by most countermeasures successful of serving the need of its users. The era of financial services is entering a new stage in corporate performance assessment. The new precocious growth in this area has increased the importance of the new risk paradigm.

The desire to understand and control the future is large among companies. However there is a dilemma in finding the absolute certainty in markets, which makes risk management of utmost importance in firms. For firms operating in the corporate world today the desire to produce sustainable growth, to develop intrinsic corporate profits and control the downside of potential losses is greater then ever. This all comes down to emphasize on the need for effective risk management. The favorable market, in terms of risks, have led the companies to seek ways to if not reduce risk at least find ways to control them.

As stated in the beginning of this study, a lot of research have been done is this financial risk management area. Most of the research is however of a quantitative nature. These studies focus on one variable isolated from other variables that are effecting a company's hedging strategy. Our aim was therefore to study how different variables from a comprehensive perspective effect the hedging strategy decision making process. The five different variables we identified and assessed are as bellow:

- *Financial distress*
- *Risk attitude*
- *Organizational structure*
- *Legal framework*
- *Stakeholders*

HeidelbergCement has adopted a risk adverse consecutive hedging strategy and hedge all single cash flows over a considerable sum in a short time perspective. We have in our analysis found evidence that consecutive hedging in its pure form is value destructive compared to a non-hedging strategy. In addition, we have identified a number of factors which can be value creating for HeidelbergCement when using a consecutive hedging strategy. These involve a larger flexibility on the credit market, since markets are more liquid in the short term. Delayed market movements, which enables management to react to market movements and an increased planning horizon for revenues and investments.

HeidelbergCement has been downgraded recently by the major credit rating institutes. It has become more expensive and harder to allocate capital for the company. The credit market has also set up specific hedging requirements, which the company has to fallow to be able to raise capital. Since the lower credit rating increases the risk of financial distress, we can here conclude that HeidelbergCement is suffering from the effects of the higher risk of financial distress. We can also conclude that it has a large impact on the company's hedging strategy decision making process.

HeidelbergCement's risk attitude has changed over the past years. The company used to speculate on the market with selective hedging, which they also seem to have accomplished

very successfully according to the traders. However the risk attitude changed when the group started to experience economic difficulties a couple of years ago. In this case we can conclude that the risk attitude towards the preferred hedging strategy is effected by the economic situation in the company. It is hard to clarify if the change of risk attitude is due to internal decisions or forced on the company by the credit market. It is however most likely to be a combination of the two.

HeidelbergCement has a centralized treasury department. However the subsidiaries gather information about their specific risk exposures and make forecasts about their future risk exposures. This meaning that the firm identifies risks on all levels within the organization. Thereafter forward them up to the highest units who decide the strategy and then state the directions of how to take actions downwards back to the local units. We can conclude that the centralized form of the treasury department goes along well with a risk averse attitude, since it is giving the company a good and controllable overview of their hedging positions.

The legal framework, IAS39, is affecting HeidlebergCement's hedging strategy, by limiting them from certain actions as netting positions. However as discussed above questions about how to interpret the regulations have been raised, and HeidelbergCement confesses their uncertainty regarding this issue.

When referring to stakeholders in this study we have mainly focused on the credit market and the employees of HeidelbergCement. As concluded above the credit market have affected the hedging strategy and limited the actions to very risk averse. The employees at the treasury department would like to adopt a more speculative strategy again since they believe in their strength to beat the market. However, the hedging strategy decided on the board level at HeidlebergCement and therefore the possibilities for the employees at the treasury department to impact the decision is very limited. As discussed it might have been an advantage if the employees at the treasury department could have effected the above mentioned strategies a bit more since they must be seen as experts in the area.

8. Future research

Our aim with this study was to contribute to previous research in the same area. While the previous research have been of a quantitative nature, exploring different hedging strategies used by a large number of different companies, we are with our case study focusing on how the decision making process works and which variables that are effecting the hedging strategy decisions. The case of HeidelbergCement has been very interesting and we have been able to conclude that many different variables are effecting their hedging strategy decision. We have also been able to detect and discuss the decision making process. However, when studying one company one cannot draw general conclusions valid for a large number of companies, which is not the purpose of a case study. Therefore we would find it very interesting to qualitatively study a large number of companies in different financial situations to be able to generalize conclusions and find patterns.

Another interesting avenue for further research would be to study the legal framework of IAS 39 in order to evaluate how it effects the hedging activities within a company. This topic is closer to the accounting area, but the experience from this case study suggests that IAS 39 is effecting the hedging strategy severely and therefore it is of interest in the financial area as well. Nonetheless, the inconclusiveness about how to handle IAS 39 among auditors, large banks, and the case company does not make the topic less interesting.

In this study we have discussed the decision making process of hedging strategies. We have focused on which levels the decisions have been taken and tried to evaluate if they are on the most efficient level. We have also evaluated which factors that are effecting the decisions. However, it would have been very interesting to evaluate how the different levels actually are taking the decisions in reality and how the board is taking the decisions in particular.

One of the strongest conclusions in this study is the possibility that consecutive hedging is more costly and not reducing the variance over a longer time period compared to a non-hedging strategy. A question arising here is how the credit market, which has certain requirements on HeidelbergCement, can accept a more costly way of hedging even though does not reduce the risk compared to a non-hedging strategy. Although the variances are delayed it is not for a longer time period. Is the credit market driven by profit since they are the ones issuing the derivatives? Is the short time delay of variance that is important to them? This would be another interesting area to study.

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EcwinPro, real time system, collection of quantitative time series data, spot and forward rates.

Primary Information and Data.

- 1.) Martin Holm, Assistant Treasurer, Heidelberg Cement Financial Services AB, Malmö
- 2.) Magnus Cosmo, Group Controller, Heidelberg Cement Financial Services AB, Malmö
- 3.) Peter Turesson, Treasury Manager, HeidelbergCement Financial Services AB, Malmö
- 4.) Sven-Arne Nilsson, Doctor in Business Administration and University Lecturer (translated from Ekonomie doktor och Universitetslektor), Lunds School of Economics and Management.
- 5.) Harry Ruijsenaars, lecturer in Accounting, Lund School of Economics and Management

Face-to-face interviews conducted on the following dates:

At HeidelbergCement Financial Services AB, Limhamn Malmö

1. Interview with Martin Holm, Assistant Treasurer HeidelbergCement Financial Services, Malmö, 31st of March 2004, 10th of May 2004, and the 25th of May.
2. Interview with Magnus Cosmo, Group Controller HeidelbergCement Financial Services, Malmö 10th of May 2004.

3. Interview with Peter Turesson, Treasury Manager, HeidelebergCement Financial Services AB, Malmö, 25th of May 2004.
4. Harry Ruijsenaars, lecturer in Accounting, Lund School of Economics and Management, 19th of May 2004.

Email interview:

1. Sven-Arne Nilsson, Doctor in Business Administration and University Lecturer (translated from *Ekonomie doktor och Universitetslektor*), Lunds School of Economics and Management, 19th of May 2004.

Appendix 1.

Questions to co-workers involved in financial risk management activities at HeidelbergCement (HC)

Prerequisite: The questions should be answered from HeidelbergCement's point of view. In any other case it will be clearly stated in the question.

Risk Management & Hedging.

1. What is the structure of HC's credits?
2. What are the maturity structures of HC's credits?
3. Does HC use fixed or fluctuating interest rates?
4. How is HC's search for the lowest funding costs conducted?
5. From which banks and countries where the credits received?
6. In what different currencies were the credits?
7. Does it exist that HC take a loan from a bank in one country, however not with the corresponding currency of this country?
8. How does HC look upon the above question if availability would occur, even though HC might not have conducted that yet? Does it increase exchange rate risks? If, in what way?
9. What were that basis points on interest rate payments credits in 2003? (On average and the total spread)
10. How does HC forecast changes in the value of their repayments of loans and interest-rate payments?
11. Does HC hedge all foreign exchange rate transactions arising from credits, which derivatives are in use?

Parity Conditions.

12. What is HC's view on the markets parity conditions?
13. Have there been any changes in HC's beliefs the past years and why?
14. Are any decisions taken out of the market parity views, are they considered at all when decisions are taken?

Hedging Strategy.

15. What is HC's hedging strategy according to exchange rate exposure?
16. Who are involved in the decision making of the hedging strategy? Any changes over the last years? If, why?
17. What type of information does HC build the choices of hedging strategies? Forecasts etc.? Origin of forecasts?
18. What is the primarily purpose of hedging for HC?

Corporate Value

19. What is corporate value from HC's point of view?
20. Maximizing corporate value is a natural aim, but for whom?
21. Stockholders, Bondholders and Stakeholders, but who comes first?
22. What value does HC believe their hedging strategies are generating
23. Interest rate exposure. Do you hedge interest payments? Do you hedge interest rate exposure? The policy of the company? Fluctuating or fixed rates?
24. Describe EVA, what is it? When did HC start using it? What is gained from using it?

Evaluation of your own hedging

25. How does HC report the hedging activities in terms of accounting? Are HC following the IASC 39 regarding the new regulations of hedging?
26. How does HC evaluate the performance in terms of successful hedging?
27. Does HC have any division in evaluation levels; in terms of the Management, CFO, and Operational level?
28. How often does HC evaluate the performance?
29. Which criteria's are used when evaluating the performance?
30. Does HC believe the hedging is generating value in terms of;
 - Better predictability of future cash flows, if yes elaborate in what way?
 - Minimizes the value at risk? If yes, in what way?
 - Has HC's hedging in any way had any positive influences on the credit ratings? If yes, in what way?

- Has HC's hedging been value creating in terms of any tax shields/advantages related to the hedging?
- Does hedging in it self create even further risks? If, can they be managed, and how should they be handled?
- Does a successful hedging increase incentives for investments through lower funding costs in HC's case?
- In what way do you see that agency costs can be decreased through hedging?
- In what way is asymmetric information decreased through hedging?
- In what way does a hedging decrease hostile take-over defenses?
- In what way does hedging effect the planning of resources in the company?
- Does hedging create transparency in the corporations accounting? Elaborate?
- In what way do hedging decrease inefficiencies in the markets they operate in?

Appendix 2

IAS 39⁸⁸, Financial Instruments: Recognition and Measurement, became effective for annual financial statements covering financial years beginning on or after 1 January 2001. Retrospective application is not permitted.

In October 2000, the IASC Board approved five limited revisions to IAS 39 and other related International Accounting Standards (IAS 27, IAS 28, IAS 31, and IAS 32) to improve specific paragraphs and help ensure that the Standards are applied consistently. These changes become effective when an enterprise applies IAS 39 for the first time. The revisions:

- require consistent accounting for purchases and sales of financial assets for each category of financial assets using either trade date accounting or settlement date accounting;
- eliminated a requirement in IAS 39 as originally approved for a lender to recognise collateral received from a borrower in its balance sheet;
- provide more explicit requirements for impairment recognition;
- require consistent accounting in the consolidated financial statements for temporary investments in equity securities in accordance with IAS 39 and other International Accounting Standards; and
- eliminated redundant disclosure requirements for hedges in IAS 32.

Summary of IAS 39

- Under IAS 39, all financial assets and financial liabilities are recognised on the balance sheet, including all derivatives. They are initially measured at cost, which is the fair value of whatever was paid or received to acquire the financial asset or liability.
- An enterprise should recognize normal purchases and sales of financial assets in the market place either at trade date or settlement date. Certain value changes between trade and settlement dates are recognized for purchases if settlement date accounting is used.
- Transaction costs should be included in the initial measurement of all financial instruments.
- Subsequent to initial recognition, all financial assets are re-measured to fair value, except for the following, which should be carried at amortized cost:
 - a. loans and receivables originated by the enterprise and not held for trading;
 - b. other fixed maturity investments with fixed or determinable payments, such as debt securities and mandatory redeemable preferred shares, that the enterprise intends and is able to hold to maturity; and
 - c. financial assets whose fair value cannot be reliably measured (generally limited to some equity securities with no quoted market price and forwards and options on unquoted equity securities).
- An enterprise should measure loans and receivables that it has originated and that are not held for trading at amortized cost, less reductions for impairment or uncollectibility. The enterprise need not demonstrate an intent to hold originated loans and receivables to maturity.
- An intended or actual sale of a held-to-maturity security due to a non-recurring and not reasonably anticipated circumstance beyond the enterprise's control does not call into question the enterprise's ability to hold its remaining portfolio to maturity.

⁸⁸ International Accounting Standard Board, <http://www.iasb.org>

- If an enterprise is prohibited from classifying financial assets as held-to-maturity because it has sold more than an insignificant amount of assets that it had previously said it intended to hold to maturity, that prohibition expires at the end of the second financial year following the premature sales.
- After acquisition most financial liabilities are measured at original recorded amount less principal repayments and amortization. Only derivatives and liabilities held for trading (such as securities borrowed by a short seller) are re-measured to fair value.
- For those financial assets and liabilities that are re-measured to fair value, an enterprise will have a single, enterprise-wide option either to:
 - a. recognize the entire adjustment in net profit or loss for the period; or
 - b. recognize in net profit or loss for the period only those changes in fair value relating to financial assets and liabilities held for trading, with the non-trading value changes reported in equity until the financial asset is sold, at which time the realized gain or loss is reported in net profit or loss. For this purpose, derivatives are always deemed held for trading unless they are designated as hedging instruments.
- IAS 39 requires that an impairment loss be recognized for a financial asset whose recoverable amount is less than carrying amount. Guidance is provided for calculating impairment.
- IAS 39 establishes conditions for determining when control over a financial asset or liability has been transferred to another party. For financial assets a transfer normally would be recognized if (a) the transferee has the right to sell or pledge the asset and (b) the transferor does not have the right to reacquire the transferred assets. With respect to derecognition of liabilities, the debtor must be legally released from primary responsibility for the liability (or part thereof) either judicially or by the creditor. If part of a financial asset or liability is sold or extinguished, the carrying amount is split based on relative fair values.
- Hedging, for accounting purposes, means designating a derivative or (only for hedges of foreign currency risks) a non-derivative financial instrument as an offset in net profit or loss, in whole or in part, to the change in fair value or cash flows of a hedged item. Hedge accounting is permitted under IAS 39 in certain circumstances, provided that the hedging relationship is clearly defined, measurable, and actually effective.
- Hedge accounting is permitted only if an enterprise designates a specific hedging instrument as a hedge of a change in value or cash flow of a specific hedged item, rather than as a hedge of an overall net balance sheet position. However, the approximate income statement effect of hedge accounting for an overall net position can be achieved, in some cases, by designating part of one of the underlying items as the hedged position.
- For hedges of forecasted transactions that result in the recognition of an asset or liability, the gain or loss on the hedging instrument will adjust the basis (carrying amount) of the acquired asset or liability.
- IAS 39 supplements the disclosure requirements of IAS 32 for financial instruments.
- The new Standard is effective for annual accounting periods beginning on or after 1 January 2001. Earlier application is permitted as of the beginning of a financial year that ends after issuance of IAS 39.
- On initial adoption of IAS 39, adjustments to bring derivatives and other financial assets and liabilities onto the balance sheet and adjustments to re-measure certain financial assets and liabilities from cost to fair value will be made by adjusting retained earnings directly.