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ANALYSING AND ESTIMATING ACCOUNTING ENTRIES FOR FOREIGN EXCHANGE HEDGES: MANAGEMENT ACCOUNTANTS´ VIEWPOINT

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ABSTRACT

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Foreign exchange (FX) hedging is common in today´s global markets. It is usually executed using derivatives, such as forwards and swaps. Previous studies have emphasized the importance of the monetary outcome of hedging, the internal monitoring and analysis of derivatives and relevant and timely information on the use of derivatives. In addition, the role of management accountants in risk management has been highlighted as important, although the relationship between management accounting and risk management has not received attention in empirical research.

The purpose of this research was to study the analysis and estimation of accounting entries for FX hedges from the viewpoint of management accountants. The research was conducted as a qualitative case study. The objective was to identify the needs for analysis and possibilities for estimation in the case company operating in technology industry. As far as is known, the topic had not been studied before, and the theoretical framework was intended to provide an insight into the research topic instead of answers to the research questions. The empirical data were collected mainly through five semi-structured interviews, and the analysis of the data was data-driven.

Several needs for analysis were identified from the empirical data. First, the analysis was considered needed and management accountants were considered to have a key role in it. Particularly accounting entries in the statement of profit and loss and the variance these entries cause were considered necessary to analyse. The particular needs for analysis identified from the empirical data were divided into three categories: knowledge and expertise, data analysis and reports and targets.

Some possibilities for the estimation of the accounting entries were also identified. Estimating accounting entries for the forward elements of derivatives was considered possible at a rough level. Instead, possibilities to estimate entries for spot elements were considered limited. The need for an increased understanding of derivatives and their accounting was a central theme in terms of both the needs for analysis and possibilities for estimation. The research results can be used in the case company when developing processes. This research was also able to contribute to the need for empirical research on the relationship between management accounting and risk management, although there is uncertainty about the applicability of the results outside the case company.

Keywords: analysis, derivative, estimation, FX hedging, management accountant, qualitative research

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1 INTRODUCTION

1.1 Background

Exchange rate fluctuation is a significant source of uncertainty in multinational companies (Zhou & Wang 2013, 294). Foreign exchange (FX)[1] risk, that is the risk arising from fluctuations in exchange rates (Fiedor & Hołda 2016, 94; Jankensgård, Alviniussen & Oxelheim 2020, Introduction), is one of the most significant financial risks for companies in their international business activities (Bartram 2019, 23). Companies can engage in hedging activities to reduce their exchange rate exposure (Chong, Chang & Tan 2014, 178). There are several ways to hedge against FX risk, but the most typical one is to use derivatives (Hong, Li, Xie & Yan 2019, 298), such as futures, forwards, options and swaps.

The accounting and financial reporting of derivatives are considered challenging and complex (Campbell, Mauler & Pierce 2019, 44-45; Chang, Donohoe & Sougiannis 2016, 584). Under International Financial Reporting Standards (IFRS), derivatives can be accounted for in accordance with two alternative accounting methods (IFRS 9, in IASB, Suomen Tilintarkastajat & ST-Akatemia Oy 2019). In this research, the first method is referred to as general principles. The alternative method, in turn, is called hedge accounting. General principles refer to the accounting practices that are used if hedge accounting is not applied. The chosen accounting method regulates where the accounting entries for derivatives are recorded. In addition to derivatives, also the hedged FX risk exposure impacts financial statements and figures (IAS 21, in IASB et al. 2019).

The research topic of this master´s thesis is the analysis and estimation[2] of accounting entries for FX hedges. The topic is examined from the viewpoint of management

[1] In literature, FX risk is sometimes referred to as currency risk (see Bartram 2019 among others) or exchange rate risk (see. Fiedor & Hołda 2016 among others). In this thesis, the term FX risk is used to refer to any of these synonyms.

[2] In this research, the term estimation refers to making evaluations of the future. In previous studies, this is sometimes referred to as forecasting (see Järvenpää 2007 among others). In this thesis, forecasting is considered synonymous with estimation. The term estimation is widely used in the case company, which is why it is the term that is mainly used in this thesis.

accountants. In this research, the term management accountant is defined to mean any management accounting professional, despite their title.

The research topic is important for several reasons. First, perhaps the most important justification for this research is Soin and Collier´s (2013, 82) argument that "risk management has moved away from being an issue of narrow concern to finance (value at risk, derivatives, etc.) or accountants (financial statement disclosure, etc.) to an issue about management control and therefore a key area in which management accountants need to engage." This confirms that the viewpoint of management accountants is relevant and justified in this research.

Second, the use of derivatives has resulted in significant losses and collapses both in financial and non-financial companies, and the importance of internal monitoring and analysis of derivatives has been emphasized in several studies in this context (see Dhanani, Fifield, Helliar & Stevenson 2008, 55; Hogan 1997, 14; Jayaraman & Shrikhande 1997, as cited in Dunne & Helliar 2002, 27 among others). The internal analysis of accounting entries for FX hedges is central to this research which can be considered to contribute to the above-mentioned studies.

Third, relevant and timely information has been described as enabling managers to monitor the achievement of objectives and strategies for derivative use (Dunne & Helliar 2002, 27). Future-orientation has been highlighted as an important feature of information that is relevant and timely (Appelbaum, Kogan, Vasarhelyi & Yan 2017, 30). Analytics literature has repeatedly emphasized that future-orientation is an important part of the role of management accountants (Nielsen 2018, 180), and forecast information has been found to be very important in empirical studies (see Järvenpää 2007, 118 among others). All of this suggests that future information on derivatives may be of interest to management accountants. The estimation of accounting entries for FX hedges is central to this research from the viewpoint of management accountants, which can be considered to contribute to the studies mentioned above.

Hong et al. (2019, 298) argue that the monetary outcome of hedging is an important area of research, but it has not received attention in previous empirical studies. Conducting an empirical study on the accounting entries for FX hedges can, therefore, be considered

needed and justified. Empirical studies have found that derivatives are widely used around the world and in Europe (see Bartram, Brown & Fehle 2009; Carrol, O´Brien & Ryan 2017; Jankensgård 2015 among others). The use of derivatives for hedging purposes is even further increasing (Hong et al. 2019, 298). This suggests that if derivatives and the accounting entries they generate were considered important among management accountants, the significance would already be apparent and still growing.

Bhimani (2009, 3) and Soin and Collier (2013, 82) highlight that the connection between management accounting and risk management has not been paid much attention in scientific research. Campbell et al. (2019, 48), for their part, find derivatives to be an understudied area in accounting research. Therefore, this research can contribute to filling those voids in previous research. Presumably, there are no prior studies on the topic of this research.

There is a need for this research in real life, too. This research focuses on one case company that is undergoing an enterprise resource planning (ERP) system change. Along with the implementation of the new ERP system, accounting practices for FX hedges are also slightly changed. As a result of these changes, the company faces the need for internal analysis and estimation practices for the accounting entries for FX hedges in a new way. This real-life situation emphasizes the need for this research and proves that the research topic must be included in accounting research.

1.2 Research questions, objectives and scope

The aim of this research is to study the needs for analysis and possibilities for estimation of accounting entries for FX hedges in the case company. The research objective is pursued through the following research questions:

1. What needs are identified in the organisation for the analysis of accounting entries for FX hedges?
2. What possibilities are identified in the organisation for the estimation of these entries?

This thesis is a commissioned research ordered by the case company. The company is presented anonymously at their request, and only relevant general information about the company is provided in this research report. Any detailed information that would allow the company to be identified is not presented.

The case company operates in technology industry. FX hedging is widely used in the company, and the number of FX hedges is very large. The company is currently undergoing an ERP system change. Simultaneously, the accounting practices for FX hedges are slightly changed. In the previous ERP system, all accounting entries for FX derivatives that were recorded in profits or losses were recorded in other income and expenses (OIE). This line item is below project-level figures in the statement of profit and loss. Consequently, no entries were allocated to projects and they did not have an impact on projects´ profit margins through net sales and cost of goods sold (COGS).

However, in the new ERP system, certain entries for FX derivatives are recorded in net sales and COGS. This change means that certain entries for FX derivatives will have an impact on project margins in the future. Another change is that FX derivatives are designated as hedging instruments in their entirety when hedge accounting is applied, which has not been done before. This has an impact on the accounting entries these instruments generate.

Overall, these changes are massive and, depending on the project and how well the sales and purchase amounts, their currencies and payment schedules have been estimated and hedged, the impacts on projects´ financial figures can be substantial. This means that the entries must be carefully analysed and, where possible, estimated by management accountants. Currently, management accountants in the case company do not have defined follow-up, analysing and estimation processes. These factors influenced the company´s willingness to commission this research.

An important change related to the new ERP system is the availability of data. Compared to the previous ERP system, more data on accounting entries for FX hedges is available in the new system. In addition, data is available at a more detailed level. This also

influenced the case company´s willingness to identify the needs for the analysis and possibilities for the estimation of the entries.

The topic of this research is wide and little examined. It is important to set boundaries to the topic in focus because the possibilities are vast. The first boundary set is that this research focuses only on one company. This research is a commissioned research ordered by the case company which is the main reason for the choice of the firm. However, the company is considered fit for this research for other reasons, too. The case company is listed in Nasdaq Helsinki which means that its financial statements must be prepared in accordance with IFRS standards. The standards improve possibilities for international comparison of financial statements (Haaramo, Palmuaro & Peill 2020, chapter 1). Therefore, by selecting a company that applies IFRS regulation instead of Finnish legislation, the results of this research can be considered interesting among a wider group of readers. In addition, focusing on a company with financial statements prepared in accordance with IFRS enables the examination of hedge accounting and its impacts which is an interesting addition to this research.

The case company is big in terms of its annual sales, and it operates globally. This research is conducted focusing on one of their business lines where the hedged amounts are significant. Presumably, large hedged amounts can lead to big impacts on financial statements which makes the chosen company and business line fit for this research. Excluding financial firms is typical in the literature examining derivative usage (Carrol et al. 2017, 653). Therefore, using a non-financial firm as the case company is sensible and justified in this research.

As described earlier in section 1.1, the research focuses on the viewpoint of management accountants. This is accomplished by focusing on said viewpoint in the theoretical framework of this research as well as collecting the empirical data by interviewing management accountants working in the case company. The viewpoint of this research is emphasized to the interviewees, and the interview questions refer to management accountants. Since this research focuses on the viewpoint of management accountants, other groups that may also be relevant with regard to the topic of this research are not given attention. For example, the viewpoints of finance or financial accounting professionals are not significant in this thesis.

Only cash flow hedges are relevant in this research since they are the only type of hedging relationships used in the studied business line. Therefore, fair value hedges and hedges of a net investment in a foreign operation, both of which qualify for hedge accounting, are excluded from the research. Many small foreign currency[3] amounts are sometimes hedged simultaneously with a single derivative in the case company. These hedges are small and, consequently, their impact on financial figures is also small. Therefore, these hedges are also excluded from the research. The focus is on big cash flow hedges that can have a substantial impact on financial statements.

As mentioned earlier in this section, the case company is undergoing an ERP system change. This research is limited to only examine the situation and possibilities in the new ERP system and the effect of the new accounting practices implemented along with the new ERP system. Examining the situation in the previous ERP system and the accounting practices that were used before would not bring any practical value to the case company.

1.3 Research methodology

This research is conducted as a qualitative case study. With qualitative research, knowledge about research topics can be produced in real-life business context (Eriksson & Kovalainen 2008, chapter 1). As this research focuses on the needs and possibilities in a real-life company, qualitative research can be considered fit. In addition, the aim of this research is to create a holistic understanding of the research topic and to interpret it, both of which are typical characteristics of a qualitative research (Eriksson & Kovalainen 2008, chapter 1).

The social structure of reality is a starting point for a qualitative research (Flick 2007, 2). Millo and MacKenzie (2009, 640) posit that financial risk management developed in the social structure of markets. Furthermore, Soin and Collier (2013, 84) highlight that risk objects and risk management processes and systems are social constructions. In line with

[3] The term foreign currency is used in this thesis to refer to any currency that is not the home currency of a reporting entity. The term home currency is used to refer to the currency which is used to prepare a firm´s financial statements. See similar use of the terms in Jankensgård, Alviniussen & Oxelheim (2020).

these arguments, it is justified to conduct this research which focuses on FX risk management as a qualitative research.

As stated earlier in this section, this research focuses only on one company and the needs and possibilities identified there. Therefore, this research is a case study. Case study is an applicable research method when there is only a limited amount of prior empirical research and when the objective is to increase understanding about the topic (Eriksson & Koistinen 2005, 4-5; Laine, Bamberg & Jokinen 2007, 10). Both circumstances apply to this research.

Since reality is viewed more as a social than concrete structure when it comes to risk management and its components (Millo & MacKenzie 2009, 640; Soin & Collier 2013, 84), this research is placed closer to subjectivism in a line between objectivism and subjectivism. Subjectivism is a feature of interpretivism. Creating new and richer understandings and interpretations of social contexts is the purpose of interpretivist research. In practice, interpretivist research looks at organisations from the viewpoint of a group of people. (Saunders, Thornhill & Lewis 2019, 149.) The aim of this research is to create an understanding of the research topic and interpret the needs for analysis and possibilities for estimation. The case organisation is studied from the viewpoint of management accountants. Therefore, there are features of interpretivism in this research.

The Neilimo and Näsi (1980) classification has traditionally been the basis for the classification of research methodologies in Finnish accounting research. This classification includes four approaches: nomothetic, decision-oriented, action-oriented and conceptual approach (Neilimo & Näsi 1980). Kasanen, Lukka and Siitonen (1991, 1993) later added a constructive approach as the fifth approach. Case studies usually represent the action-oriented approach which aims at producing an understanding of unique processes (Kihn & Näsi 2010, 47-49). Since this research is conducted as a case study and the purpose is to understand the researched phenomenon in the case company, this research can reasonably be placed close to the action-oriented approach. The approach does not have an established set of methodological rules (Kihn & Näsi 2010, 48).

1.4 Report structure

The remainder of this thesis is structured as follows. The second chapter forms the theoretical framework of this research. Relevant studies on FX risk, hedging and derivatives are presented first. This is followed by an introduction of IFRS standards and the accounting for FX hedges in accordance with the standards. Finally, relevant studies on management accountants and management accounting practices are covered to include and highlight the viewpoint of this research in the theoretical framework.

The third chapter introduces the case company in more detail. The chapter also presents the chosen research methods for data collection and analysis. In addition, the chapter discusses the reliability of this research. Empirical findings are presented in the fourth chapter. The chapter is divided into three sections. The first section presents the empirical findings related to the first research question, that is the needs for analysis. The second section presents the empirical findings related to the second research question, that is the possibilities for estimation. The third section summarizes the key empirical findings of the research.

The fifth and final chapter includes discussion on the findings and their contribution to previous studies. In addition, the chapter discusses the limitations of this research and suggests possibilities for future research. Reference list and appendices can be found from the last pages of this thesis.

2 THEORETICAL FRAMEWORK

This chapter includes a literature review on FX hedging and management accounting research, as well as an introduction to IFRS regulation concerning FX hedges. Together, these topics can create the understanding that is needed so that accounting entries for FX hedges can be studied and understood from the viewpoint of management accountants. Since the topic of this research has presumably not been studied before, the literature review is not intended to find answers to the research questions. Instead, prior research and IFRS regulation are presented and discussed in an order that provides an insight into the research topic.

The chapter is organised as follows. First, the concept of FX risk is introduced together with FX derivatives that are used to hedge said risk. This creates an understanding of the financial instruments that generate the entries that are central to this research. Second, IFRS standards and their use are briefly presented to provide basic information about financial statements prepared in accordance with IFRS. Third, the first two sections are linked by presenting how accounting entries for FX hedges are presented in financial statements prepared in accordance with IFRS. The fourth section combines the viewpoint of management accountants with the topic of the preceding section. Finally, the fifth section summarizes the theoretical framework. The structure of this chapter is shown in figure 1.

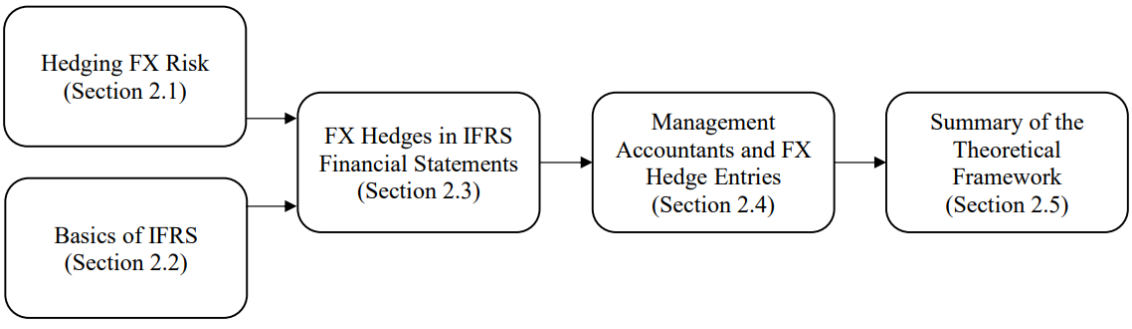

Figure 1 The structure of the theoretical framework

2.1 FX risk and hedging

This section consists of three parts. FX risk is presented first. Second, the basics of hedging are introduced. Finally, the section introduces derivatives and their use in more detail.

2.1.1 FX risk

According to neo-classical view, financial risk is composed of variability in the outcome of an action or an event from that expected. It is irrelevant whether the actual outcome is worse or better than the expected outcome. In other words, financial risk consists of both the downside risk and the upside potential. (Knight 1921, as cited in Dhanani et al. 2008, 53-54.) Variability has been used as the definition of risk more recently, too. For instance, Jankensgård et al. (2020, chapter 1) define risk as variability in corporate performance. Helliar, Lonie, Power and Sinclair (2002, 167) state that basing the definition of risk on variance is a standard approach in finance theory. However, they point out that practitioners such as managers do not find the whole variance as a useful definition of risk. Instead, managers concentrate on the downside risk. (ibid. 167.)

FX risk is inherent in the operations of multinational companies. A common definition for FX risk is a possible loss, either direct or indirect, which is caused by an unexpected change in exchange rates. The loss can appear in a company´s cash flows, profits, assets or liabilities. (Fiedor & Hołda 2016, 94.) Jankensgård et al. (2020, Introduction) also highlight the impact of changes in exchange rates by stating that if a company´s performance is sensitive to these changes, it is exposed to FX risk. Consequently, FX risk is defined in this thesis as the impact changes in exchange rates have in a company´s cash flows, profits, assets or liabilities. FX risk realises in financial statements when foreign currency amounts are translated to a reporting entity´s home currency. Fair value accounting also makes the impact of exchange rates apparent in financial statements. (Jankensgård et al. 2020, Introduction.)

Since variability in outcome or performance is considered a financial risk (Jankensgård et al. 2020, chapter 1; Knight 1921, as cited in Dhanani et al. 2008, 53-54), changes in exchange rates can be viewed as one form of financial risk for companies. Bartram (2019, 23) states that FX risk is one of the most significant financial risks companies are exposed to regarding international business activities. Today´s global environment is characterized by extreme and periodical volatility in exchange rates (Dhargalkar & Anderson 2014, 14). It is generally believed that exchange rates follow a random walk and, therefore, cannot be forecasted based on their historical performance (Fabling & Grimes 2015, 323). The characteristics of extremity and unpredictability of exchange rate fluctuations underscore the impact FX risk can have on companies.

Exchange rate fluctuation is a major source of uncertainty for multinational companies and unfavourable FX conditions can lead to exchange losses within these firms (Zhou & Wang 2013, 294-295). However, even companies that are domestic in all their operations can be exposed to FX risk indirectly through competition with companies that are directly exposed to FX risk (Aggarwal & Harper 2010). An adverse exchange rate change can result in domestic companies being outcompeted by foreign competitors (Jankensgård et al. 2020, Introduction). The globalised and integrated financial markets of today´s world also result in every firm being exposed to FX risk (Chong et al. 2014, 176).

Chong et al. (2014, 179) state that FX risk has an impact on firms´ profitability and cash flows. Dhargalkar and Anderson (2014, 11-12), for their part, argue that there are two places in the income statement[4] where FX risk typically manifests itself. They highlight the impact on margins when there is volatility in revenue and expense lines because of currency translation. The other place where FX risk manifests itself, according to Dhargalkar and Anderson (ibid. 11-12), is net income. They state that this is because change in the value of foreign currency-denominated assets and liabilities is often recognized in foreign currency gain or loss when remeasured to companies´ home currencies. Similarly to Chong et al. (2014, 179) and Dhargalkar and Anderson (2014, 11-12), also Jankensgård et al. (2020, Introduction) present that exchange rate fluctuation, in other words FX risk, can greatly impact companies´ profit margins. In addition, they

[4] Under IFRS, the equivalent for income statement is the statement of profit and loss.

highlight the impact FX risk has on balance sheets[5] and market shares (ibid. Introduction). In summary, FX risk is a form of financial risk to which most companies are exposed, and which can have a significant and unpredictable impact on various financial figures.

2.1.2 Hedging

A concept that is closely related to financial risk and its subcategories, such as FX risk, is financial risk management. The historical development of risk management has shifted the focus from merely measuring, quantifying and calculating risk to considering it as a manageable factor. It has been suggested that management consists of two components. Firstly, there is a demand for knowledge. In the case of risk management, this may include the calculation and measurement of risks as well as descriptions of actions. The second component is the performance of this knowledge in real life. Having knowledge and descriptions of actions is not enough. Dictation and control over these actions is also needed. Therefore, financial risk management fuses together both knowledge and practice. (Millo & MacKenzie 2009, 639; Power 2007, 24-28.) Bezzina and Grima (2012, 417) also describe that risk management consists of the identification of existent and ideal risk levels and the transformation of the existent level to the ideal level of risk, in other words of knowledge and practice.

Companies can manage their financial risks by hedging. In general, hedging refers to the act of neutralizing risk and transferring it to other market participants, or eliminating risk exposure (Bartram 2019, 12; Döhring 2008, 1). Although the purpose of hedging is to neutralize losses arising from risks, potential gains are lost at the same time. In FX hedging, this means that while hedging can neutralize unfavourable changes in exchange rates, it also neutralizes favourable changes from which the company could benefit without hedging. (Haaramo et al. 2020, chapter 6.) As can be noticed, hedging neutralizes both downside risk and upside potential, in other words variability in its entirety.

Companies can engage in either financial or operational hedging or, alternatively, use both methods to reduce their exchange rate exposure (Chong et al. 2014, 178). Financial

[5] Under IFRS, the equivalent for balance sheet is the statement of financial position.

hedging refers to the use of financial derivatives for hedging purposes whereas operational hedging includes means such as the geographical diversification of production and the operational matching of a company´s revenues and expenses (Döhring 2008, 5). Financial derivatives are central to this research. Thus, in this paper, hedging refers to the use of derivatives with the intention to manage FX risk. Instead, operational hedging is not presented in more detail.

Modigliani and Miller (1958) famously argued that in a world of perfect capital markets, financial decisions such as hedging do not increase a company´s value. According to them, this is because individual investors can organise their own hedging strategies, rebalance their portfolios and, consequently, accomplish all the positive impacts of corporate hedging. However, in reality, capital markets are imperfect and incomplete which makes corporate risk management important (Dhanani et al. 2008, 54). Volatility in underlying rates is considered to cause significant costs to a firm when there are market imperfections and, therefore, derivative use is explained with these market imperfections in corporate risk management theory (Campbell et al. 2019, 48). The market frictions that have been suggested as potential rationales for corporate hedging include costs of financial distress (Smith & Stulz 1985) and costly external financing (Froot, Scharfstein & Stein 1993), to name a few.

Joseph and Hewins (1997, 153) argue that even though investors and other shareholders can conduct risk management activities themselves, corporate hedging is preferable because corporates have more information about their currency exposure as well as better resources for hedging. Suggesting these kinds of principal-agent conflicts between managers and shareholders for the reason behind corporate risk management is common in empirical studies. In addition to market frictions and agency problems, corporate risk management has also been explained with other factors not well motivated by risk management theory. (Bartram et al. 2009, 185.) For instance, Bartram et al. (ibid. 185) found in their empirical study that “derivative usage is determined endogenously with other financial and operating decisions in ways that are intuitive but not related to specific theories for why firms hedge.”

It has been suggested that hedging should not be a separate operation in companies. Instead, hedging decisions and hedging policy must be considered together with other

financial decisions such as cash holdings and preferred level of debt. (Bartram et al. 2009, 200-201.) However, Carroll et al. (2017, 687) suggest that internal policies such as liquidity and investment policies mainly play a part in interest rate derivative usage decisions. According to them, FX derivatives are rarely used for other reasons than to hedge the immediate FX exposure.

The basic logic and practical reason behind hedging is that it reduces variability in cash flows and earnings (Campbell et al. 2019, 48; Froot et al. 1993, 1630; Joseph & Hewins 1997, 152). Since variability is considered a risk, reducing it is a risk management action. Derivatives as hedging instruments are presented in more detail below.

2.1.3 Derivatives

Financial derivatives are financial instruments that derive their value from the value of an underlying asset. The underlying asset can be almost anything from the weather to interest rates. In FX derivatives, the underlying asset is a specific exchange rate. (Jankensgård et al. 2020, chapter 5.) FX derivatives are often used to hedge FX exposure (Carroll et al. 2017, 687). Hedging risks in businesses was the very reason behind the creation of derivative instruments (Vu, Le, Pham & Tran 2020, 805).

The value of a derivative depends on the performance of the underlying asset and the structure of the derivative type used (Campbell et al. 2019, 48). When the value of the underlying asset changes, the value of the derivative changes (Haaramo et al. 2020, chapter 6). The hedging effect of derivatives builds on the fact that the value of a derivative contract moves in the opposite direction of the value of the hedged risk exposure (Campbell et al. 2019, 45). In the case of FX derivatives, this means that when changes in exchange rates result in a change in the value of a hedged risk exposure such as cash flow, the value of the derivative contract moves to the opposite direction, thus offsetting the risk. Changes in the values of derivatives and hedged risk exposures are central in terms of the accounting entries FX hedges generate.

Forwards, futures, options and swaps are common derivatives. These four instruments act as FX derivatives as follows:

- FX forward is a contract in which the parties agree on a fixed exchange rate for a transaction that will take place on a specific day in the future. It is negotiated over the counter which means that the contract parties negotiate the details of the contract. (Jankensgård et al. 2020, chapter 5.) An important issue to consider in terms of accounting for forward contracts is forward points (Ramirez 2015, 99). Spot rate is the exchange rate used in an immediate currency exchange, whereas forward rate is the negotiated exchange rate for a currency exchange that takes place on a specific day in the future (PKF International Ltd. 2019, chapter 23). Forward points are calculated from the difference between these two rates. Spot and forward rates converge at maturity of the transaction which means that forward points eventually become zero. (Ramirez 2015, 99.) In short, FX forwards include a spot element and a forward element, that is the forward points.
- FX future is also a contract in which the exchange rate is fixed for a specific transaction at a future date. However, unlike forwards, futures are standardized and traded on an exchange. Another difference compared to a forward contract is that in order to participate in a trade on a futures exchange, a collateral must be posted. (Jankensgård et al. 2020, chapter 5.)
- Currency swap is an over-the-counter contract that allows a company to swap cash flows in one currency for another currency. The time horizon is longer than the one normally available for an FX forward or future. Currency swap can be thought of a series of FX forwards. (ibid. chapter 5.)
- FX option is a contract which gives the holder a right but not an obligation to buy or sell a currency at an exchange rate that has been predetermined. An option premium is paid upfront. (ibid. chapter 5.)

The terms of derivative contracts have a significant role in hedging. The level of hedging can be different in two companies with the same notional amounts of derivatives if the contract terms are different (Hong et al. 2019, 298; Smith 1995, as cited in Carroll et al. 2017, 656). As stated above, some derivatives are negotiated over the counter which means that the terms of different contracts can vary significantly. The initial investment of derivatives is low or nearly zero (Vu et al. 2020, 806).

Majority of prior research on derivative use focuses on companies based in the United States (Carroll et al. 2017, 651; Zhou & Wang 2013, 295). However, there are a few studies focusing on companies around the world or in Europe. Those are considered more relevant with respect to this research since the case company is based in Finland. For example, Bartram, Brown and Fehle (2009) examined 7,319 companies in 50 countries, a sample covering approximately 80% of the global market capitalisation of non-financial firms at the time of the study. About 60% of the companies examined used derivatives. FX derivatives were the most common type of derivative, with about 45% of the companies using them. (ibid.) Jankensgård (2015), for his part, examined 207 Swedish listed companies, out of which 120 were FX derivative users. That is 58% of the sample. Carroll et al. (2017) used a sample that consisted of 710 non-financial firms in the eleven original eurozone member states, including Finland. The examined timeframe was two years which equated to 1,420 firm-year observations. 917 of these observations were FX derivatives users which means about 65% of the sample. For the 80 firm-year observations from Finland, as high as 70, in other words 87.5%, were FX derivatives users. (ibid.)

It can be noticed that derivatives are widely used in Europe. FX derivatives in particular are important for many European companies. As financial derivatives are becoming increasingly popular in capital markets, companies are still increasing their use of derivatives for hedging purposes (Hong et al. 2019, 298).

Besides hedging, derivatives can also be used for speculative purposes. Speculating with FX derivatives means that a company seeks profits by establishing financial positions based on the company´s view on exchange rates. The view taken or forecasts made result in the company altering the timing or size of hedges or to take positions in currency derivatives. (Aabo, Andryeyeva Hansen & Pantzalis 2012, 729, 731.) Bartram (2019, 9) ponders that speculative purposes can even appear under the guise of hedging. While hedging with derivatives is commonly viewed as a risk decreasing activity, using derivatives for speculation increases risk exposure (Campbell et al. 2019, 48).

The empirical evidence on whether companies speculate with derivatives is mixed. For example, Lins, Servaes and Tamayo (2011, 535) report that nearly 50% of the 229 companies in 36 countries examined in their study take active position, in other words

speculate at least part of the time when using derivatives. However, Bartram (2019) examined 6,896 non-financial companies in 47 countries and found no evidence of speculation with FX derivatives.

Brown, Crabb and Haushalter (2006, 2927) argue that it is unlikely that non-financial firms have superior information about FX markets. Similarly, Bartram (2019, 12) argues that non-financial companies usually have a competitive advantage on the operative side of business and not in predicting financial risks, such as exchange rates. Therefore, it is sensible for these companies to hedge their exposure to financial risks and not take a view on the volatility and direction of exchange rates (ibid. 12). In conclusion, researchers seem to consider derivatives as practical instruments for hedging purposes rather than speculation, at least in non-financial companies. In consequence of several famous financial disasters in the 1990s which were influenced by the use of derivatives, also investors disapproved speculating with derivatives (Campbell et al. 2019, 49-50).

While derivatives can be useful in hedging FX risk, their use also sets requirements and challenges for companies. In prior scientific research, there seems to be a clear shared perception that derivatives are highly complex financial instruments (see Bartram et al. 2009, 191; Campbell et al. 2019, 44, 53; Chang et al. 2016 among others). Consistent with this, the accounting and financial reporting of these instruments is also challenging and complex (Campbell et al. 2019, 44-45; Chang et al. 2016, 584). Chang et al. (2016, 585) focus on the viewpoint of the users of financial reports, and state that complexity means that the users may have difficulties “in understanding the mapping of economic transactions and reporting standards into financial statements”.

One of the challenges is limitations in resources, such as personnel. Typically, future revenues and expenses must be forecasted in order to be able to hedge cash flows. Forecasting revenues and expenses enables companies to determine the FX exposure that needs to be hedged. Obtaining forecasts usually requires cooperation between different units and members of organisation, and smaller firms often face difficulties in forecasting exposures due to staffing and resource limitations. (Dhargalkar & Anderson 2014, 12-13.) Bartram´s (2019, 9) statement that financial derivatives are used especially in large companies is in line with this.

Bezzina and Grima (2012) used a sample of 420 users and controllers of derivatives and found mixed results on how valuable derivatives are seen in risk management, if the users´ expertise is sufficient also in complex situations and if risk management controls are given proper attention. The researchers consider worth noting that, contrary to the overall results, some respondents did not see the value of derivatives, did not consider their expertise sufficient in complex situations and did not give proper attention to risk management control (ibid. 429). Dhargalkar and Anderson (2014, 13), for their part, argue that management´s perception on the purpose and value of hedging has an impact on FX hedging programs. Vu et al. (2020, 814) highlight the importance of the qualifications and quality of personnel working with derivatives, while Campbell et al. (2019, 45) argue that the financial crisis in 2008 highlighted the extensive lack of knowledge about derivatives and their accounting. In summary, staffing limitations, cooperation between personnel, personnel´s skills and knowledge with regard to derivatives and management´s view on the value of hedging have been argued to have great importance in derivative use.

There have been fairly many losses, failings and even bankruptcies due to losses in derivatives, and renowned investor Buffett (2003, 15) has called derivatives “financial weapons of mass destruction”. An example of significant losses with a connection to currency hedging is Kashimo Oil´s losses of 1,5 billion U.S. dollars on currency derivatives in 1994 (Dunne & Helliar 2002, 27). Dhanani et al. (2008, 55) mention financial instruments as a primary ingredient in the widely publicised collapse of Enron whereas Jankensgård et al. (2020, chapter 5) mention the derivative scandal of Metallgesellschaft in 1993. On a larger scale, Bartram (2019, 10) states that the use of derivatives by financial institutions played a role in the recent financial crisis. Bartram, Brown and Conrad (2011, 968) argue that the derivatives that caused most harm in the financial crisis of 2008-2009 were those held by financial companies, whereas derivatives held by non-financial firms caused relatively little harm. However, as can be noticed from the few examples mentioned above, derivatives have caused significant losses and bankruptcies in non-financial firms, too.

To sum up, derivatives are used to hedge FX risk since their value moves to the opposite direction from the value of the hedged FX risk exposure (Campbell et al. 2019, 45). An empirically proven phenomenon is that derivatives are widely used around the world and

in Europe (see Bartram et al. 2009; Carroll et al. 2017; Jankensgård 2015 among others). Therefore, it can be argued that derivatives are of great importance to many companies. However, derivatives and their accounting are generally considered complex (see Campbell et al. 2019, 44-45; Chang et al. 2016, 584 among others), and the lack of knowledge about derivatives and their accounting as well as the importance of the quality of people working with derivatives have been highlighted in several research papers (see Bezzina and Grima 2012, 429; Campbell et al. 2019, 45; Vu et al. 2020, 814 among others).

2.2 IFRS Standards

This section provides a short introduction to IFRS standards and particularly the financial statements prepared in accordance with them. This is crucial so that the accounting rules which are applied for FX hedges as well as the interaction between different financial statements can be understood.

In Finland, companies must prepare their financial statements in accordance with either IFRS or accounting rules described in Finnish legislation, particularly in the Accounting Act and Accounting Decree. Adherence to IFRS is required from companies that have their securities admitted to trading in a regulated market in the European Economic Area. These companies are primarily required to prepare their consolidated financial statements in accordance with the standards. If they are not required to prepare consolidated financial statements, their individual financial statements must be prepared in accordance with IFRS. Other companies are also allowed to use IFRS instead of accounting rules in national legislation if they fulfil the requirements described in Finnish Accounting Act. However, using IFRS is not required from them. (Finnish Accounting Act 1997/1336 7a.)

IFRS regulation consists of IFRS and IAS Standards, IFRS for SMEs Standard, IFRIC and SIC Interpretations and Conceptual Framework (IFRS Standards and IFRIC Interpretations 2020; List of IFRS Standards 2020). The importance of balance sheet and investors´ need for information are emphasized in IFRS regulation. The standards

improve possibilities for international comparison of financial statements, especially within Europe. (Haaramo et al. 2020, chapter 1.)

IFRS standards are distinctively principles-based and they offer a set of accounting choices for certain transactions (Carmona & Trombetta 2008, 456; De George, Li & Shivakumar 2016, 918). Being principles-based means that the role of specific criteria is not as big as in rules-based standards. Therefore, a fundamental understanding about transactions and economic events is important when making accounting choices. (Carmona & Trombetta 2008, 456.) The idea behind IFRS regulation is to focus on the essence of a transaction instead of a set of inflexible rules when preparing financial statements (De George et al. 2016, 918). One example of accounting choices offered in IFRS is the possibility to apply hedge accounting for financial instruments instead of the general accounting rules described in IFRS 9.

A complete set of financial statements must be presented at least annually under IFRS. Comparative amounts for the preceding year must be included. An entity can only describe financial statements as complying with IFRS if all requirements of the standards are fulfilled. A financial statement prepared in accordance with IFRS must contain a statement of financial position, a statement of profit and loss and other comprehensive income (OCI), a statement of changes in equity, a statement of cash flows and notes. (IAS 1 Summary 2020.)

There are no obligatory financial statement templates in IAS 1. Instead, the Standard includes minimum requirements for the statement of financial position and the statement of profit and loss and OCI. (Haaramo et al. 2020, chapter 2.) The accrual basis of accounting is used in all statements apart from the statement of cash flows. This means that items are recognized when they meet the criteria described in IFRS standards, which consequently means that recognition is usually based on the occurrence of a transaction instead of the receipt or payment of cash. (PKF Iternational Ltd. 2019, chapter 3.)

Key financial statements in the reporting of FX hedges

The statement of financial position and the statement of profit and loss and OCI are central when reporting FX hedges. Thus, those are the most relevant financial statements for this

research. The three statements are briefly presented below focusing on the important characteristics and items in terms of this research.

The statement of financial position is a similar statement to balance sheet under Finnish Accounting Act. The statement includes the entity´s assets, liabilities and equity. Assets and liabilities are recorded either at cost or at fair value, depending on the specific standard regulating given item. The reporting entity shall disclose when its assets and liabilities are expected to be realised. In the case of financial assets and liabilities, such as derivatives, this means information on their maturity. (Haaramo et al. 2020, chapter 2; PKF Iternational Ltd. 2019, chapter 4.)

The statement of profit and loss is a similar statement to income statement under Finnish Accounting Act. The components of the statement can be classified by the nature or function of expense. Financial statement users, especially investors and creditors, pay considerable attention to the statement of profit and loss. Consequently, management must pay attention to it, too. The statement has an important role in presenting a view of the reporting entity´s prospects. (Haaramo et al. 2020, chapter 2; PKF Iternational Ltd. 2019, chapter 5.)

OCI includes incomes and expenses that are not recognized in reporting period´s profit or loss in accordance with IFRS. It can be presented as a separate statement or combined with the statement of profit and loss as a single statement. International Accounting Standards Board, the body that develops IFRS Standards, prefers a one-statement approach where the statement of profit and loss and OCI are presented as a single statement. If presented separately, OCI begins with the profit or loss presented in the statement of profit and loss. (Haaramo et al. 2020, chapter 2; PKF Iternational Ltd. 2019, chapter 5.)

Items presented in OCI must be classified as items that are subsequently recognized in profit or loss when certain conditions are met, and as items that are never recognized in profit or loss (IAS 1:82A, in IASB et al. 2019). The moment at which items previously recognized in OCI are to be reclassified to the statement of profit and loss is specified in the standard regulating each item. These reclassified amounts are called reclassification adjustments. (Haaramo et al. 2020, chapter 2; PKF Iternational Ltd. 2019, chapter 5.) All

components of profit and loss and OCI are combined in comprehensive income which has been defined as the change in equity during the reporting period that has arisen from non-owner sources (IAS 1:7, in IASB et al. 2019).

As can be seen, the three statements presented above are intertwined and provide complementary information. The statement of financial position includes assets, liabilities and equity. Incomes and expenses are increases or decreases in assets or liabilities that result in changes in equity (Conceptual Framework 4.68-4.69, in IASB et al. 2019). In other words, comprehensive income items are changes in equity during the reporting period. Incomes and expenses that are recognized in reporting period´s profit or loss are presented in the statement of profit and loss, whereas incomes and expenses that do not affect profit or loss during the reporting period are presented in OCI. The items recognized in OCI might later impact profit or loss. In summary, the statement of financial position includes various items and changes in these items are recognized in comprehensive income, in other words in the statement of profit and loss or in OCI.

2.3 FX hedges in IFRS financial statements

This section sets out the relevant parts of IFRS regulation that apply to hedges, more precisely derivatives. Relevant parts of IFRS regulation that apply to foreign currency transactions are also presented because foreign currency cash flows are the type of hedged risk exposure that is central to this research. It is important to understand the accounting entries generated by hedges so that the analysis and estimation of these entries can be studied and interpreted from the viewpoint of management accountants. First, general information about accounting for hedges under IFRS is presented. More detailed information about the general accounting principles is presented in subsection 2.3.1. An alternative accounting method called hedge accounting is presented last in subsection 2.3.2.

As mentioned earlier in section 2.1.3, accounting and financial reporting for derivatives is generally considered complex (Campbell et al. 2019, 44-45; Chang et al. 2016, 584). Campbell et al. (2019, 45) state that this is caused by many factors, one of them being the

fact that firms may use derivatives for hedging but also for speculation. The second reason they mention is that firms may hedge an existing or potential risk that may or may not be recognized in their accounting system. The researchers also mention that derivatives may not hedge risk exposure perfectly and that this perfection or imperfection is difficult to measure, which, according to them, is one reason for the complexity of accounting for derivatives. Both risk and derivative use are endogenous by nature which makes it difficult to identify the impact derivatives have on risk as well as risk without this impact (ibid. 49).

Regarding the financial reporting of derivatives, Chang et al. (2016, 585) describe that "[f]irms use considerable judgment to apply elaborate reporting standards to intricate transactions that often have widely varying fact patterns." Although their research concerns U.S. GAAP instead of IFRS, the characteristics of transactions hold true. Also, as described in section 2.2, IFRS standards are principles-based and they offer accounting choices for certain transactions (Carmona & Trombetta 2008, 456; De George et al. 2016, 918). This also applies to derivatives because firms can choose whether they want to apply hedge accounting. In other words, firms use judgment when applying IFRS standards to transactions involving derivatives. Therefore, the statement of Chang et al. (2016, 585) can be argued to be applicable to IFRS, too.

Both the financial crisis of 2008-2009 and the exponential increase in the use of derivatives over the last few decades have led to significant developments in the regulation and accounting of derivatives (Bartram et al. 2011, 967; Bartram 2019, 16; Campbell et al. 2019, 44). Indeed, IFRS regulation on derivatives and other financial instruments is extensive and it has been divided into several standards. The most essential ones with respect to derivatives in financial statements are IFRS 9 Financial Instruments (IFRS 9) and its predecessor, IAS 39 Financial Instruments: Recognition and Measurement (IAS 39). The scope of IFRS 9 is wide and the standard establishes accounting principles for the recognition, measurement and information disclosure of financial assets and liabilities. IFRS 9 has been effective since the beginning of 2018 when it replaced IAS 39. (PKF Iternational Ltd. 2019, chapter 24; Ramirez 2015, 1.)

IFRS 9 interacts with other IFRS standards. The most essential ones, as far as hedging is concerned, are IAS 21 The Effects of Changes in Foreign Exchange Rates (IAS 21), IAS

32 Financial Instruments: Presentation (IAS 32) and IFRS 13 Fair Value Measurement (IFRS 13). For example, IAS 21 includes regulation on the reporting of foreign currency transactions. (Ramirez 2015, 1.) In other words, the standard regulates how hedged foreign currency cash flows are to be reported.

The purpose of this section is to provide a basic understanding of FX hedges in financial statements prepared in accordance with IFRS. A detailed examination of all the standards that regulate derivatives and foreign currency cash flows either directly or indirectly is not considered necessary for this research. This is because a basic understanding can be achieved by focusing on the fundamentals of IFRS regulation on hedges. The limits set for a master´s thesis also affect how extensively the regulation can be presented. Therefore, only the requirements and possibilities for accounting that are considered most relevant and important for this research are presented in this section.

IAS 39 was generally considered complex and difficult to understand. IFRS 9 is more principles-based compared to IAS 39 which is considered to make the classification, recognition and reclassification of financial instruments simpler. However, also IFRS 9 has been described as complex. (PKF Iternational Ltd. 2019, chapter 24; Ramirez 2015, 1.) For example, Hewa, Mala and Chen (2020, 2588) state that complexity is a well-known feature of IFRS 9. Thus, where complexity is often associated with derivatives (see Bartram et al. 2009, 191; Campbell et al. 2019, 44, 53; Chang et al. 2016 among others), the same feature can be observed in the standard regulating said instruments.

Under IFRS, financial instrument is any contract which is a financial asset to one entity and a financial liability or an equity instrument to another entity. Derivative instruments correspond with the definition of a financial instrument. (IAS 32:11 & AG15, in IASB et al. 2019.) More specifically, derivative is a financial instrument or other contract that has all three of the characteristics described below:

1) its value changes when the value of the underlying changes
2) it does not require an initial net investment, or the initial net investment is smaller than in other types of contracts which can be expected to response similarly to changes in market conditions
3) it is settled at a future date. (IFRS 9 Appendix A, in IASB et al. 2019.)

The case company of this research uses forwards and swaps to hedge FX risk. Thus, the possible accounting rules that are specific for futures and options are not considered in this section. In any case, most of the accounting rules in IFRS 9 are common to all types of derivative contracts.

For a derivative to be an equity instrument, a fixed amount of cash or other financial assets should be exchanged to a fixed number of shares under the contract (Haaramo et al. 2020, chapter 6). In FX derivative contracts, specifically forwards and swaps, amounts denominated in different currencies are exchanged. Therefore, FX derivatives are not equity instruments but are recognized as assets or liabilities in the statement of financial position. Consequently, the accounting practices for equity instruments are not considered in this theoretical framework.

2.3.1 General principles

Financial assets and liabilities are initially recognized in the statement of financial position when the reporting entity becomes party to the contractual provisions of the instrument (IFRS 9:3.1.1, in IASB et al. 2019). For example, forward contracts are recognized as assets or liabilities on the commitment date and not on the date when settlement takes place (PKF Iternational Ltd. 2019, chapter 24). The classification and measurement rules for both financial assets and financial liabilities are presented below.

Financial assets

A reporting entity must classify a financial asset into one of three categories. This classification is done based on both the entity´s business model for managing the asset and the asset´s contractual cash flow characteristics. Depending on which category the asset is classified into, it is measured either at amortized cost or at fair value. The classification also determines whether incomes and expenses from the asset are recognized in the statement of profit and loss or in OCI. If the business model for managing financial assets changes, all affected assets must be reclassified. (IFRS 9:4.1.1 & 4.4.1, in IASB et al. 2019.) However, situations where reclassification is needed are expected to be very rare (Haaramo et al. 2020, chapter 6).

The first category includes financial assets that meet both of the following conditions:

- the asset is held within a business model whose objective is to hold assets in order to collect contractual cash flows; and
- the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

These assets are measured at amortised cost. (IFRS 9:4.1.2, in IASB et al. 2019.)

The second category consists of assets that meet the following criteria:

- the financial asset is held within a business model whose objective is achieved by both collecting contractual cash flows and selling financial assets; and
- the contractual terms of the financial asset give rise on specified dates to cash flows that are solely payments of principal and interest on the principal amount outstanding.

These assets are measured at fair value through OCI (FVTOCI). (IFRS 9:4.1.2A, in IASB et al. 2019.)

Derivative assets belong to the third category (Haaramo et al. 2020, chapter 6). It is a residual category which means that it includes all assets that do not meet the criteria of the two above mentioned categories. These assets are measured at fair value through profit or loss (FVTPL). IFRS 9 also gives entities a possibility to classify and measure a financial asset at FVTPL at initial recognition. This possibility is often referred to as fair value option. The decision is irrevocable, and it can be made if doing so the entity can eliminate or significantly reduce a measurement or recognition inconsistency, in other words accounting mismatch. (IFRS 9:4.1.4-4.1.5, in IASB et al. 2019.) Even if an entity made this decision for a financial asset, it is not required to make the same decision consistently with similar assets (PKF Iternational Ltd. 2019, chapter 24).

Financial liabilities

All financial liabilities are measured at amortised cost with a few exceptions. The exceptions are measured at FVTPL and they include derivatives. Fair value option applies

not only to financial assets but also to financial liabilities. Unlike financial assets, financial liabilities cannot in any case be reclassified after initial recognition. (IFRS 9:4.2.1-4.2.2 & 4.4.2, in IASB et al. 2019.)

To summarize, a general principle under IFRS 9 is that all derivatives are measured at FVTPL. This applies both to derivatives that are financial assets and to the ones that are financial liabilities. In terms of accounting entries, being measured at FVTPL means that the fair value of a derivative contract is presented in the statement of financial position. When first recognizing a forward contract, the fair value is usually zero as the fair values of both the right to receive a certain amount of a certain currency and the obligation to deliver a certain amount of a different currency are equal. When this fair value or the fair value of any type of derivative contract changes as a result of a change in the underlying variable, the change must be recognized in the statement of profit and loss. (Haaramo et al. 2020, chapter 6.) This means that when the fair value of an FX derivative changes as a result of a change in the underlying exchange rate, the entity´s profits for the accounting period will be impacted.

Hedged FX risk exposure

It is important to note that derivatives are not the only component of an FX hedge that have an impact on financial statements. The hedged FX risk exposure, for example a sale or a purchase denominated in a foreign currency, will ultimately cause accounting entries, too. While derivatives are recognized as assets or liabilities on the commitment date, payables and receivables from ordinary business activities are not entered in the books at the moment of the contract. Instead, they are recognized in the statement of financial position when goods are delivered, or services are performed. (Haaramo et al. 2020, chapter 6.) Consequently, this can lead to a situation where a derivative and its fair value changes are being recognized in financial statements before the hedged cash flow is included in financial figures.

When foreign currency transactions, in other words purchases or sales denominated in foreign currencies are initially recorded, the amounts are translated to reporting currency at spot rate at the date of the transaction. If a purchase or sale has resulted in a monetary item such as a receivable or a payable which remains unsettled at the end of a reporting

period, these foreign currency monetary items are translated to reporting currency at the closing exchange rate. Exchange rate differences from monetary items arising on settlement and on each reporting period between the transaction date and date of payment are recognized in profit or loss. (Haaramo et al. 2020, chapter 6; IAS 21:21& 23 & 28-29, in IASB et al. 2019; PKF International Ltd. 2019, chapter 23.)

To summarize the accounting entries for a hedged risk exposure, a foreign currency transaction will be initially recorded at spot rate at the transaction date. If the transaction gives rise to a receivable or payable, it can cause accounting entries for exchange rate differences when these receivables or payables are recorded at closing exchange rates at each reporting date. Finally, when the monetary item is settled, there might be exchange rate differences which must be recognized. All exchange rate differences are recognized in profit or loss. When hedge accounting is not applied, the accounting entries for an FX derivative and a hedged foreign currency transaction are treated separately.

2.3.2 Hedge accounting

When an entity accounts for its hedges in accordance with the general principles of IFRS, there may be mismatches in the accounting for derivatives and hedged risk exposures. Since derivatives are generally recognized earlier than hedged cash flows, changes in the fair values of derivatives may not be recognized in the same period as changes in the fair values of hedged risk exposures. Entries for derivatives may also be recognized in a different line item in financial statements than entries for hedged risk exposures. (Jankensgård et al. 2020, chapter 6; PKF International Ltd. 2019, chapter 24.) Reducing variability is the logic and practical reason behind hedging (Campbell et al. 2019, 48; Froot et al. 1993, 1630; Joseph & Hewins 1997, 152) and, thus, the use of derivatives. However, it may be concluded that accounting mismatches result in derivatives being inefficient in reducing variability in financial statements.

To solve the problem caused by accounting mismatch, companies can choose to apply hedge accounting (Jankensgård et al. 2020, chapter 6). Hedge accounting is a voluntary accounting method for financial instruments presented in IFRS 9 (Haaramo et al. 2020, chapter 6). Its objective is to represent the impact of a reporting entity´s risk management

activities in financial statements (IFRS 9:6.1.1, in IASB et al. 2019). In fact, hedge accounting can be considered a hedging method (Haaramo et al. 2020, chapter 6).

When IFRS 9 is first applied, a reporting entity can choose to continue applying the hedge accounting requirements of IAS 39 instead of those of IFRS 9 to its hedging relationships (IFRS 9 Summary 2020). The case company applies the hedge accounting requirements of IFRS 9. Thus, the requirements of IAS 39 are not included in this theoretical framework.

When hedge accounting is applied, a hedging relationship is designated between two elements: a hedged item and a hedging instrument (IFRS 9 Summary 2020). Hedged item can be a recognized asset or liability, an unrecognized firm commitment, a highly probable forecast transaction or a net investment in a foreign operation (IFRS 9:6.3.1 & 6.3.3, in IASB et al. 2019). In short, it is "the item that exposes the entity to a market risk(s)" (Ramirez 2015, 24). A sales price denominated in a foreign currency is an example of a possible hedged item in an FX hedge.

Hedging instrument, on the other hand, is an element that is used to hedge a risk exposure (Ramirez 2015, 24). Derivatives are often designated as hedging instruments (Haaramo et al. 2020, chapter 6). To qualify for hedge accounting, only derivative contracts with an external party can be designated as hedging instruments (IFRS 9:6.2.3, in IASB et al. 2019). An important point to take into account is that in the case of forward contracts, IFRS 9 allows reporting entity to choose whether it wants to designate the entire forward contract or only the change in the value of its spot element as a hedging instrument. This possibility to exclude a forward element, in other words forward points, from a hedging relationship is an exception to the basic rule, which requires the entirety of a qualifying instrument to be designated as a hedging instrument. (IFRS 9:6.2.4, in IASB et al. 2019.) Forward elements are included in designated hedging instruments in the case company. Therefore, IFRS regulation for situations where forward elements are excluded are not given attention in this theoretical framework.

There are three types of hedging relationships that qualify for hedge accounting: fair value hedge, cash flow hedge and hedge of a net investment in a foreign operation (IFRS 9 Summary 2020). As stated earlier in section 1.2, only cash flow hedges are relevant in

this thesis. Therefore, the specific hedge accounting rules for the other two types of hedging relationships are not presented. Cash flow hedges are hedges "of the exposure to variability in cash flows that [are] attributable to a particular risk associated with … a recognized asset or liability … or a highly probable forecast transaction, and could affect profit or loss" (IFRS 9 Summary 2020). Binding transactions denominated in foreign currencies are a typical example of a forecast transaction (Haaramo et al. 2020, chapter 6).

The criteria that needs to be met to be able to apply hedge accounting is strict, and it reaches the whole lifespan of a hedging relationship (Ramirez 2015, 25). The three main requirements are that the hedging instruments and hedged items of a hedging relationship are eligible, there is a formal designation and documentation of the hedging relationship at the inception and that the hedging relationship meets specific hedge effectiveness requirements (IFRS 9:6.4.1, in IASB et al. 2019). The criteria is not presented in more detail in this thesis as the focus is on presenting the entries FX derivatives can generate on financial statements.

When the hedged item in a cash flow hedge has not yet been recognized in financial statements, the bookkeeping impacts of a hedge are only those arising from changes in the value of the hedging instrument (Haaramo et al. 2020, chapter 6). Hedge accounting enables the recognition of gains and losses on the hedging instrument in profit or loss in the same period as offsetting gains and losses on the hedged item are recognized. In cash flow hedges, this is carried out by "deferring recognized gains and losses in respect of the hedging instrument on the balance sheet until the hedged item affects earnings". (Ramirez 2015, 24.)

Under hedge accounting for a cash flow hedge, a separate cash flow hedge reserve in equity is adjusted to be the lower of the following amounts:

- the cumulative gain or loss on the hedging instrument from inception of the hedge
- the cumulative change in fair value of the hedged item from inception of the hedge. (IFRS 9:6.5.11a, in IASB et al. 2019.)

Change in the fair value of a derivative is divided into an effective and an ineffective part (Ramirez 2015, 27). The effective part is the portion that is offset by the change in the

cash flow hedge reserve. Correspondingly, the possible remaining portion is the ineffective part. (IFRS 9:6.5.11b & 6.5.11c, in IASB et al. 2019.)

The effective and ineffective parts are recognized in different financial statements. The effective part is recognized in OCI (IFRS 9:6.5.11b, in IASB et al. 2019). Therefore, it does not impact the reporting period´s profits. In other words, as far as a hedge is effective, change in the value of a hedging instrument that has arisen during the reporting period is recognized in OCI. The accumulated change in the value of a hedging instrument is recognized in cash flow hedge reserve in equity, in other words in the statement of financial position. (Haaramo et al. 2020, chapter 6.) As for the ineffective part, the gain or loss on the hedging instrument is recognized in profit or loss (IFRS 9:6.5.11c, in IASB et al. 2019). Therefore, it has an impact on the reporting period´s profits.

The accumulated amount in cash flow hedge reserve is accounted for as follows:

- The amount is removed from the cash flow hedge reserve and included in the initial cost or other carrying amount of an asset or a liability if the hedged item is a forecast transaction which will result in the recognition of a non-financial asset or liability, or a firm commitment for which fair value hedge accounting is applied (IFRS 9:6.5.11d, in IASB et al. 2019).
- For all other cash flow hedges, the amount in equity is reclassified to profit or loss in the same period or periods during which the hedged cash flow impacts profit or loss (IFRS 9:6.5.11d, in IASB et al. 2019). Thus, the amount reclassified from cash flow hedge reserve offsets the impact that the hedged cash flow has on profit or loss to the extent that the hedge is considered effective. In practice, this means that if an entity has hedged an export sale, the reclassification from cash flow hedge reserve is recognized within sales in the statement of profit and loss. This adjusts said line item. (Ramirez 2015, 28-29.)
- If the amount accumulated in equity is a loss that is not expected to be recovered in part or in full in future periods, the amount that is not expected to be recovered must be reclassified immediately to profit or loss (IFRS 9:6.5.11d, in IASB et al. 2019).

An entity must assess a hedging relationship´s compliance with hedge effectiveness requirements on an ongoing basis. The assessment must be done at least at each reporting

date or upon any significant change in circumstances, and it is based on expectations about hedge effectiveness. Should a hedging relationship fail to meet the hedge effectiveness requirements, but the risk management objective for that hedging relationship remains the same, rebalancing is required. Rebalancing means that an entity must adjust the designated quantities of a hedged item or a hedging instrument. Ineffectiveness of a hedging relationship is determined and recognized before making adjustments. If a hedge is rebalanced and, consequently, part of a derivative becomes undesignated, that part is accounted for at FVTPL. (IFRS 9:6.5.5 & B6.4.12 & B6.5.7-B6.5.8 & B6.5.16, in IASB et al. 2019.)

If a hedging relationship or part of it does not meet the qualifying criteria of hedge accounting anymore, the hedging relationship in question must be discontinued in part or in its entirety. An example of a situation in which discontinuation is necessary is when the hedging instrument matures or is executed. (IFRS 9:6.5.6, in IASB et al. 2019.) The accounting for the amount accumulated in cash flow hedge reserve depends on whether the hedged future cash flow is still expected to occur. If it is, the amount remains in equity until the cash flow occurs or until the accumulated amount is a loss that is not expected to be recovered in the future. Instead, if the future cash flow is not expected to occur, the amount must be reclassified immediately to profit or loss. (IFRS 9:6.5.12, in IASB et al. 2019.)

To sum up hedge accounting for a cash flow hedge, a hedging relationship is designated between a hedging instrument, in other words a derivative, and a hedged item. Change in the fair value of a derivative is divided to effective and ineffective parts. The ineffective part is recognized in profit or loss immediately, while the effective part is recognized in profit or loss only when the hedged cash flow is also recognized. Until then, the accumulated amount is recognized in cash flow hedge reserve in equity. Rebalancing and discontinuing a hedging relationship might also result in entries in financial statements.

To conclude, accounting for FX derivatives under IFRS 9 is quite complex and it includes points of consideration and possibilities to choose between alternative accounting methods. Under IFRS 9, all derivatives are accounted for at fair value in the statement of financial position, regardless of whether they are financial assets or liabilities and whether they are designated as part of a hedging relationship or not. However, the accounting

treatment for fluctuations in the fair value of a derivative depends on whether hedge accounting is applied or not. Fluctuations are recognized either in profit or loss or in OCI, and IFRS 9 regulates when this recognition must be done. It could be argued that an understanding of what causes accounting entries for FX hedges and where they are recorded is needed so that these entries can be analysed and controlled in firms. For example, identifying which entries are recognized in OCI and which in profit or loss could be important because the amounts recognized in OCI do not affect reporting period´s profits while profit and loss lines do.

2.4 Management accounting and hedging

This section combines the viewpoint of management accountants with the understanding that has been created through the previous sections. The role and tasks of management accountants as well as the relation between management accounting and risk management are presented briefly. In addition, this section discusses factors related to derivatives and risk management that may be considered relevant to management accountants.

Management accountants´ role in organisations has received attention in academic literature for over a decade (Rieg 2018, 183). It has been suggested that a long-term change in the role of management accountants has shifted the orientation from "number crunching" and maintaining accounting systems to a more business-oriented role in which management accountants act as business partners (Järvenpää 2007, 100; Lepistö & Ihantola 2018, 107; Rieg 2018, 183). Järvenpää (2007, 100) defines the business-orientation of management accounting as "the willingness and ability of management accounting to provide more added value to the management (decision-making and control) of the companies". Similarly, Rieg (2018, 183) highlights involvement in managerial decisions and strategic tasks as characteristics of a business partner, whereas Lepistö and Ihantola (2018, 107) mention participation in organisational issues as a characteristic of a business-oriented role. Järvenpää (2007, 100) highlights relevant accounting systems, personal competences of management accountants as well as business knowledge as the factors that impact management accountants´ ability to provide added value to management.

Relevant and timely information is required in business world. This means that instead of focusing only on past events, forward-looking information is also needed. (Appelbaum et al. 2017, 30.) Nielsen (2018, 180) states that analytics literature has repeatedly emphasized the importance of having management accountants´ focus on predictions and forecasts, that is, the future. Also, in the case company of Järvenpää´s (2007) empirical research, forecast information was considered very important. Instead, looking at actual figures was not considered as important in proactive business management. (Järvenpää 2007, 118.) Overall, a forward-looking approach appears to be an important part of the role and tasks of management accountants.

Looking more closely at management accounting research in relation to risks, Bhimani (2009, 3) states that the interdependency between management accounting, corporate governance and risk management has not been widely addressed in management accounting research. In a similar fashion, Soin and Collier (2013, 82) highlight the scarcity of attention that has been paid to "the interrelation between risk, risk management and management accounting and control practices." The researchers state that little is known about the effects of risk management from management accounting´s viewpoint in accounting literature (ibid. 84). Even though the statements of both Bhimani (2009, 3) and Soin and Collier (2013, 82) were made about a decade ago, especially research about the relationship between management accounting and specific risks and risk management practices continues to appear scarce. Indeed, based on the literature review done for this thesis, scientific research about the relationship between management accountants and FX derivatives seems to be very limited.

Derivatives have been studied especially in finance. Fundamental topics such as the determinants of firms that use derivatives have been particularly central in studies in the finance field. On the other hand, in accounting, the emphasis has been on the effects of derivative accounting and disclosures. Overall, derivative use is a relatively understudied area in accounting research. (Campbell et al. 2019, 45-46, 48.)

Although derivatives are an understudied area in accounting (Campbell et al. 2019, 48), and thus also in management accounting, the importance of internal control, monitoring and analysing practices concerning derivatives has been emphasized in previous studies.

For example, Hogan (1997) evaluates implications for corporate governance from the 1995 collapse of Barings plc in his research paper. Hogan (1997, 14) states that the use of derivatives was of minor importance in the collapse. Instead, he sees management´s failure in monitoring and analysing trading activities and associated risks as a major reason for the failure. Similarly, Jayaraman and Shrikhande (1997, as cited in Dunne & Helliar 2002, 27) point out the failure of corporate governance practices in the case of Metallgesellschaft´s loss on derivatives, a case also Jankensgård et al. (2020, chapter 5) mention as an example of derivative scandals. Although these observations by Hogan (1997) and Jayaraman and Shrikhande (1997) are roughly twenty years old, knowledge about the internal control and monitoring systems of derivatives remains little based on the literature review done for this thesis. The importance of internal control and monitoring procedures regarding derivatives has been underlined in research papers after the 1990s, too (see Dunne & Helliar 2002; Helliar & Dunne 2004 among others).

Dhanani et al. (2008, 55) describe that many regulators around the world have stressed the importance of internal control and monitoring of derivatives activity. The researchers state that this has been an attempt to protect shareholders because of the many corporate collapses in history that have been caused or at least affected by the use of derivatives and other financial instruments. Better control can encourage managers to improve their risk management techniques and corporate governance practices (Cadbury 1992, as cited in Dhanani et al. 2008, 55). To put it another way, by controlling and monitoring the derivative contracts used in a company, the internal techniques and practices that relate to the use of derivatives can possibly improve in return. This suggests that managing current derivatives well can act as a reference for future developments in derivative use.

Moving on from the internal control, monitoring and analysis of derivatives specifically to the relationship between management accountants and the entries generated by FX hedges, academic literature and, consequently, knowledge and understanding is presumably very limited, if not non-existent. Derivatives and hedged cash flows generate accounting entries to several financial statements, as described earlier in section 2.3. Management accountants have been described as having a role in providing value to management for decision-making and control purposes (Järvenpää 2007, 100), and considering and predicting future has been highlighted as an important part of their work (Nielsen 2018, 180). Thus, it can be argued that in order to fulfil their role in these

respects, management accountants should understand and be able to analyse and estimate accounting entries for FX hedges. The importance of internal monitoring and analysis of derivatives, which has been highlighted by both researchers and regulators (see Dhanani et al. 2008, 55; Hogan 1997, 14 among others) also suggests so.

Hong et al. (2019, 298) state that "[t]he value of hedging lies not only in hedging activity itself but also in hedging outcome". Since the outcome is important and part of the value hedging brings to companies, analysing and estimating the outcome can be reasoned to be important. However, current scientific literature focuses heavily on the reasons behind hedging decisions and the characteristics of companies that hedge their financial risks versus those who do not (Blomvall & Ekblom 2018, 36). These two topics have been rather thoroughly examined (Zhou & Wang 2013, 295). In other words, the emphasis has been on the phases before the hedging activity.

Based on the literature review of this research, what happens in companies after they have entered into derivative contracts and how hedging impacts their financial figures and financial statements appear to be much less researched areas. Hong et al. (2019, 298) call the monetary outcome of hedging "a critical but neglected area" in empirical studies, suggesting that the monetary impact of hedging is an important issue to consider. There is prior research about the impact derivative use has on a firm´s risks and value (see Allayannis & Weston 2001; Bartram et al. 2011 among others). However, hedging outcome and issues related to it such as the internal analysis and estimation of the monetary impact of derivatives are presumably relatively unknown topics in previous scientific research.

One of the few studies that has focused on FX risk management practices in Finland is the study of Hakkarainen, Kasanen and Puttonen (1997). Their most relevant findings in terms of this research are the criteria for defining the success of FX risk management. The two most common criteria were the difference between FX gains and losses and the difference between returns on foreign currency denominated activities if those would have been hedged completely and if those would not have been hedged at all. The avoidance of losses, the maintenance of profitability in business and in projects and the difference between realised and budgeted cash flows from foreign currency denominated activities were also disclosed as important criteria. (Hakkarainen et al. 1997, 37.) It should

be noted that at the time of the study, Finland had not adopted euro and, therefore, the FX risk environment was quite different from that of today´s. However, their findings may provide clues as to what kinds of monetary outcomes companies might expect from hedging. Consequently, this could mean that gains and losses, profitability in business and the difference between realised and budgeted cash flows can be factors management accountants pay attention to when analysing and estimating entries for FX derivatives.

Hedging has a significant impact on corporate earnings (Hong et al. 2019, 299), and it is rather surprising that how the collection of these earnings is monitored and estimated in companies and what is the role of management accountants in it appears to be an understudied area. A company´s risk management policy should include adequate reporting processes and operational controls, among other functions. This enables the obtainment and communication of "relevant and timely information covering derivative activities to directors and senior management to enable them to monitor the achievement of objectives and strategies for using derivatives". (Dunne & Helliar 2002, 27.) Appelbaum et al. (2017, 30) highlighted that future-orientation is important in information that is relevant and timely. This suggests that estimates may be relevant when management monitors derivatives. Soin and Collier (2013, 82) highlight the increased attention that is paid to evaluating the effectiveness of risk management and state that it is one of the reasons for organisational practices being increasingly risk-centred.

To conclude, management accountants have been argued to have a business-oriented role (Järvenpää 2007, 100; Lepistö & Ihantola 2018, 107; Rieg 2018, 183). Considering and predicting future has been highlighted as an important part of their tasks (Nielsen 2018, 180). The importance of the monetary outcome of hedging as well as internal monitoring and analysing practices on derivatives have been highlighted in scientific research (see Dhanani et al. 2008, 55; Hogan 1997, 14; Hong et al. 2019, 298; Jayaraman and Shrikhande 1997, as cited in Dunne & Helliar 2002, 27 among others). This suggests that analysing and estimating entries generated by derivatives which will add up to the hedging outcome would be important. However, accounting research on derivatives is scarce (Campbell et al. 2019, 48), and no research papers concerning precisely this were found.

2.5 Summary of theoretical framework

The purpose of this research is to study the analysis and estimation of accounting entries for FX hedges from the viewpoint of management accountants. With derivatives being an understudied topic in accounting research in general (Campbell et al. 2019, 48), no studies could be found that would particularly focus on this topic. However, a few points can be highlighted from prior literature that can be concluded to be potentially key factors in the topic of this research. These points are summarized below.

Financial risk has been widely defined to be any variability in outcome or performance (Helliar et al. 2002, 167; Jankensgård et al. 2020, chapter 1; Knight 1921, as cited in Dhanani et al. 2008, 53-54). FX risk is one of the most significant financial risks for companies regarding their international business activities (Bartram 2019, 23), and the risk has been described to impact the profitability of firms (Chong et al. 2014, 179; Dhargalkar & Anderson 2014, 11-12). Exchange rates are prone to extreme volatility (Dhargalkar & Anderson 2014, 14), and it is generally believed that they cannot be forecasted based on their historical performance (Fabling & Grimes 2015, 323). FX derivatives are a commonly used instrument to hedge FX risk exposure (Carroll et al. 2017, 687; Hong et al. 2019, 298), and empirical studies have found them to be widely used around the world and in Europe (Bartram et al. 2009; Carroll et al. 2017; Jankensgård 2015). The use of derivatives for hedging purposes is even further increasing (Hong et al. 2019, 298).

Derivatives are considered highly complex financial instruments (Bartram et al. 2009, 191; Campbell et al. 2019, 44, 53; Chang et al. 2016). In line with this, the extensive lack of knowledge about derivatives and their accounting (Campbell et al. 2019, 45), and the importance of the qualifications and quality of personnel working with derivatives (Vu et al. 2020, 814) have been highlighted in prior studies. Consistent with the complexity of derivatives, also the accounting and financial reporting of these instruments are considered challenging and complex (Campbell et al. 2019, 44-45; Chang et al. 2016, 584). Hewa et al. (2020, 2588) state that complexity is a well-known feature of IFRS 9, which is a central standard in terms of IFRS regulation on derivatives.

Hedging reduces variability in cash flows and earnings (Campbell et al. 2019, 48; Froot et al. 1993, 1630; Joseph & Hewins 1997, 152), and derivatives are applicable for hedging because their value moves in the opposite direction of the value of the hedged risk exposure (Campbell et al. 2019, 45). These changes in value result in accounting entries. Foreign currency cash flows are the hedged FX risk exposures that are central to this research. Both the hedged cash flows and the FX derivatives that are used as hedging instruments generate accounting entries to different financial statements (IFRS 9 & IAS 21, in IASB et al. 2019).

Overall, there are many events that result in accounting entries either for the hedged cash flow or for the FX derivative. Statement of financial position, statement of profit and loss and OCI are central financial statements when reporting FX hedges. If hedge accounting is not applied, changes in the fair value of derivatives are recognized in profit or loss (IFRS 9:4.1.4 & 4.2.1a, in IASB et al. 2019). Similarly, changes in the fair value of receivables or payables from hedged cash flows are also recognized in profit or loss (IAS 21:28-29, in IASB et al. 2019). Instead, when hedge accounting is applied, changes in the fair value of derivatives are divided to ineffective and effective parts. The ineffective part is recognized in profit or loss while the effective part is parked in equity until the hedged cash flow is recognized. (IFRS 9:6.5.11, in IASB et al. 2019.) In addition to changes in fair value, rebalancing and discontinuing a hedging relationship are also examples of events that can result in entries. In sum, many events can cause entries for FX hedges, and the impact of these entries can be visible in many financial statements.

It has been suggested that management accountants have a more business-oriented role today, and they are often expected to support management in decision-making (Järvenpää 2007, 100; Lepistö & Ihantola 2018, 107; Rieg 2018, 183). Relevant and timely information, including forward-looking information, has been highlighted as a requirement in business (Appelbaum et al. 2017, 30). It has been repeatedly emphasized in scientific literature that it is important for management accountants to focus on predictions and forecasts (Nielsen 2018, 180).

Derivatives have caused significant losses both in financial and in non-financial companies. The importance of monitoring and analysing derivative use has been emphasised several times in that context. (see Hogan 1997, 14; Jayaraman & Shrikhande

1997, as cited in Dunne & Helliar 2002, 27 among others.) In addition, Dhanani et al. (2008, 55) describe that many regulators have stressed the importance of internal control and monitoring of derivatives activity. Better control has been argued to possibly lead to improved risk management techniques and corporate governance practices (Cadbury 1992, as cited in Dhanani et al. 2008, 55). Dunne and Helliar (2002, 27) also argue that appropriate reporting processes and operational controls can enable the communication of relevant and timely information on derivatives to managers so that they can monitor whether the objectives of derivative use have been achieved.

Hedging outcome has been stated to be part of the value that hedging brings and an important but understudied area in empirical studies (Hong et al. 2019, 298). Overall, the shortage of studies on topics that are central to this research is apparent. Bhimani (2009, 3) and Soin and Collier (2013, 82) highlight the scarcity of attention that has been paid to the connection between management accounting and risk management in scientific research. Campbell et al. (2019, 48), for their part, state that derivatives are an understudied area in accounting research.

Forecasting has been described to be important when defining the FX risk exposure that needs to be hedged (Dhargalkar & Anderson 2014, 12-13). However, presumably, the estimation of the financial impacts of derivatives has not received attention in previous studies.

3 CONDUCTING THE RESEARCH

This chapter presents the case organisation as well as the research methods used in this research. First, the case company is presented focusing on the factors that are relevant to this research. Second, data collection and analysis methods are presented. Finally, the reliability of the research is discussed.

3.1 Introduction to the case company

The case company is a Finnish publicly listed company operating in technology industry. Its annual sales are measured in billions, and the company does business all over the world. The company has several business lines, and this thesis focuses specifically on one of them. The business line in question is further divided into several business units. The business line´s business is distinctively project-based. Projects can differ significantly from each other, for example in terms of duration. Some projects take up to several years.

Since the company operates internationally, a considerable portion of its sales and purchases are denominated in foreign currencies. According to the company´s treasury policy, all open FX risk must be hedged, and derivatives are not used for speculation. Thus, hedging and FX derivatives, particularly forwards and swaps, are widely used in the company and in the business line on which this thesis focuses. Hedging is usually done as early as possible. The amounts and currencies hedged differ significantly between projects.

The purpose of FX hedging is to reduce the impact changes in exchange rate have on profit or loss. Thus, the risk on profitability is mitigated with FX derivatives. Variance in project margins, whether positive or negative, is not desired. In other words, FX derivatives are used to secure project margins so that in the end the margin is what it was expected to be, at least when it comes to the impact of FX risk.

The company is currently undergoing an ERP system change. Along with that, also several other systems are changed or introduced, including a calculation model system which generates automated hedging postings. In addition to introducing new systems, the accounting policy for FX hedges is slightly changed. Relevant points of the accounting for FX hedges in the case company are presented next.

Accounting for FX hedges

In the past, the impact FX hedging has on net sales and COGS has been visible indirectly in these figures, and all profit or loss entries for FX derivatives have been recorded in OIE. Therefore, accounting entries for FX derivatives have not directly affected project-level figures. However, with the new accounting policy, entries for the spot elements of FX derivatives are ultimately recorded in net sales and COGS. Entries for forward elements, on the other hand, are booked to OIE as was done before. The change was made because variance in hedged cash flows due to changes in exchange rates is recorded in net sales and COGS, that is, in project-level figures. If all accounting entries for FX derivatives had been recorded in OIE, all margins between project level and OIE, particularly gross margin, would have been subject to considerable variance. Instead, presenting some of the profit and loss impact of derivatives in net sales and COGS mitigates variation at project level.

Although the new accounting policy mitigates the variation of profits and losses in projects, difference in the timing of entries for derivatives and hedged cash flows is still expected to cause some variance in the statement of profit and loss in the case company. This problem of accounting mismatch was discussed in section 2.3, and it is apparent especially if hedge accounting is not applied. The case company applies hedge accounting widely to hedges of significant size, whereas smaller hedges are usually accounted for at FVTPL. While accounting mismatch can cause variation in figures during project execution, the net result of the entries for hedged cash flow and derivative should eliminate all variance once the cash flow and the derivative have been fully recognized. Naturally, this is the case only if everything has gone as planned and the hedge has been effective.

There are two revenue recognition methods in the case company. The first one is called *point in time*. In accordance with this method, revenue and COGS are recognized all at once when the benefits and risks of a project have been transferred to the customer. The second method is called *over time,* and it allows the recognition of revenues already during project execution. In accordance with this method, revenue and COGS are recognized based on a percentage of completion (POC), which is determined by calculating the ratio of actual costs to total estimated costs. Over time method is especially challenging in terms of variance in profits and losses because FX variance, that is the variance due to changes in exchange rates, in hedged cash flows is recognized continuously. To address this issue, the case company concluded that POC is also used to allocate FX gains and losses on derivatives to net sales and COGS when the derivative in question is used to hedge sales price. This mitigates variance in project-level figures. Instead, for derivatives on a purchase hedge, the allocation percentage is a ratio of realised purchase hedges to all purchase hedges per currency per project.

Another change in the accounting policy for FX hedges in the case company is that, in the future, the forward element of a derivative will be included in a hedging relationship when hedge accounting is applied. In practice, this means that entries for forward elements will be first booked to cash flow hedge reserve, and later to OIE in the statement of profit and loss. Thus, these entries will be recorded in the same way as the entries for spot elements. The only difference is the line item in the statement of profit and loss where the entries are ultimately recorded, as the entries for spot elements are recorded in net sales and COGS instead of OIE.

Currently, data on accounting entries for FX derivatives are only available at a high level. Accounting entries for derivatives that are subject to hedge accounting and those that are accounted for in accordance with the general principles of IFRS 9 cannot be identified separately from the data. There are currently no reports in use to analyse or estimate these entries at business line level, and the possibilities for this analysis and estimation are therefore very limited. Implementation of the new ERP system is in a beginning stage and new reports or analysis and estimation processes have not yet been defined. However, the new ERP system and new business intelligence tools enable the examination of more detailed data compared to previously used systems and tools.

3.2 Data collection and analysis

3.2.1 Data collection

According to Tuomi and Sarajärvi (2018, chapter 3), different methods to collect data can be used in a qualitative research either alternatively or in combination. Several data collection methods and data sources, more specifically interviews, internal documents and informal discussions with the case company´s employees, were combined to collect the empirical data of this research. The use of more than one data source and data collection method is called triangulation (Saunders et al. 2019, 218).

Five semi-structured interviews form the basis of the empirical data of this research. Interview is one of the most common methods for collecting data in a qualitative research (Tuomi & Sarajärvi 2018, chapter 3). It is a good data collection method when there is not much research on the topic and when the objective is to deepen the collected information and knowledge (Hirsjärvi & Hurme 2008, 35). Both the scarcity of prior research and the objective to deepen the knowledge hold true in this research, which is why interview was considered an applicable method for data collection. In addition, Tuomi and Sarajärvi (2018, chapter 3.1) state that an interview is a sensible data collection method when the attempt is to find out what a person thinks. The attempt of this research is to find out what needs the interviewees identify for analysing accounting entries for FX hedges and what possibilities they identify to estimate these entries. In other words, the focus is on the interviewees´ thoughts. Consequently, interview is a justified choice for the data collection method.

As stated above, the interviews were conducted as semi-structured interviews. The basis of a semi-structured interview is a set of central and pre-selected themes, and the interview questions are based on these themes (Tuomi & Sarajärvi 2018, chapter 3.1.1). The central themes in the interviews were derived from the research questions, and they were the needs for analysis and possibilities for estimation regarding accounting entries for FX hedges. According to Hirsjärvi and Hurme (2008, 47), semi-structured interviews are characterized by some but not all aspects of the interview being fixed. Interview

questions and their order were the same for all interviewees. However, answers were not fixed as no answer options were given. The interview questions were sent to the interviewees in advance, which has been considered justified in order to successfully collect as much information as possible in the interviews (Tuomi & Sarajärvi 2018, chapter 3.1). The interview questions can be found in appendix 1 in English and in appendix 2 in Finnish.

Each of the five interviews had a different interviewee, which allowed the interviewees to reflect on the topics discussed from their own individual viewpoint. Tuomi and Sarajärvi (2018, chapter 3.4) emphasize that the selection of interviewees must be considered and appropriate instead of random in a qualitative research. The number of interviewees was selected based on the resources available as well as the number of people in the case organisation who were assumed to have an understanding or insight into the research topic. The assumption was made because the interviewees were known to consider entries for FX hedges in their work, or the entries were known to impact their work, at least to some extent. Tuomi and Sarajärvi (2018, chapter 3.4) mention both the limitations of resources and the knowledge of the interviewees as typical and important criteria when selecting people to participate in a research.

In addition to the criteria mentioned above, the interviewees were also selected from different levels and positions in the case company so that the research topic could be examined from different viewpoints. Senior Business Controller and Manager, Group Accounting work in the head office and consider company-wide financial figures in their work. Instead, Business Controllers 1, 2 and 3 consider and are responsible for financial figures at business line and business unit level. The difference between these two groups was thought to provide a more multifaceted and comprehensive view to the research topic. Collecting data from different groups of people can also be considered as one form of triangulation (Denzin 1978, as cited in Tuomi & Sarajärvi 2018, chapter 6.5).

The interviews were conducted during November 2020. The fourth interview was conducted face-to-face, and the other four were conducted through Microsoft Teams. The interviews were recorded with the permission of the interviewees, and a total of 216 minutes of material was accumulated. The researcher was familiar with all five interviewees due to her role in the case company. Therefore, time did not have to be spent

on introductions, but the research topic could be focused on from the very beginning. This explains why none of the interviews lasted an hour. The third interview was conducted in English, while the other four were conducted in Finnish. Information on the interviews is summarized in table 1.

Table 1 Interviews

Date	Title	Name in thesis	Length
12.11.2020	Senior Business Controller	Senior Business Controller	51 min
16.11.2020	Manager, Group Accounting	Manager, Group Accounting	32 min
17.11.2020	Business Controller	Business Controller 1	51 min
19.11.2020	Business Controller	Business Controller 2	41 min
19.11.2020	Business Controller	Business Controller 3	41 min

Due to the researcher´s role in the case company, also other sources of information were available throughout the research process. The purpose of using other sources of information, more specifically internal documents and informal discussions with the case company´s employees, was to gather information and understanding about FX hedging and the accounting practices used for FX hedges in the case company. This was considered necessary in order to understand and analyse the primary data, that is the interviews, at a deeper level. The internal documents used were training materials from the case company´s internal trainings. Using documents as a data collection method is common in a qualitative research (Tuomi & Sarajärvi 2018, chapter 3).

3.2.2 Data analysis

Audio recordings allow for the transcribing of interviews, which is perceived to be helpful in analysing the data collected (Saunders et al. 2019, 420, 648). Thus, the recordings of each interview were transcribed. The transcriptions were written word for word and, thus, in the language in which the interviews were conducted. Consequently, four of the transcriptions were in Finnish and one in English. The researcher translated the answers given in Finnish into English when analysing the empirical data. A total of 36 pages of transcribed material were obtained from the interviews.

The philosophical assumptions of a research affect the analysis of data, among other phases of the research project (Saunders et al. 2019, 639). As described in section 1.3, this research includes features of interpretivism. Saunders et al. (2019, 639) state that it is typical for an interpretivist researcher to conduct the research following the flow of the empirical data. According to them, it is expected that the empirical data reflects differences in participants´ perspectives. These differences need to be welcomed instead of trying to reconcile them. Sensitivity to variability is important for the analysis to be meaningful. (ibid. 639.) Therefore, the analysis of the empirical data of this research sought to take into account the perspectives and points raised by different interviewees.

Thematic analysis was used, where applicable, to analyse the data collected. In thematic analysis, the data is used to identify views that describe a particular theme (Tuomi & Sarajärvi 2018, chapter 4.1). The themes and patterns that are identified relate to the set research questions (Saunders et al. 2019, 651). Thus, the themes identified in this research related to the needs for analysis and the possibilities for estimation with regard to accounting entries for FX hedges. The number of views related to a particular theme does not necessarily matter in thematic analysis (Tuomi & Sarajärvi 2018, chapter 4.1). This allows for the consideration of different perspectives, which was described above as being important for the analysis to be meaningful (Saunders et al. 2019, 639).

In this research, the themes emerged from the empirical data. In other words, data-driven analysis was used, where applicable. In data-driven analysis, the purpose of the research guides the analysis instead of previous findings and theories (Tuomi & Sarajärvi 2018, chapter 4.2). The number of previous findings that can be considered relevant to this research is small and, consequently, the purpose of this research and the data collected have a significant role. Therefore, data-driven analysis can be considered justified in this research.

3.3 Trustworthiness of the research

Trustworthiness is an essential feature to be evaluated in a research. The concepts reliability and validity are often central to this. Consistency and repeatability are central

components of reliability. Validity, in turn, refers to whether the research has examined the promised issue and whether the measures and analysis have been appropriate and accurate. The concepts have been developed within the framework of quantitative research and, consequently, using reliability and validity to evaluate the trustworthiness of a qualitative research has often been criticized and considered problematic. As a result, there are different views on issues related to the trustworthiness of research within the scope of qualitative research. (Saunders et al. 2019, 213-214, 216-217; Tuomi & Sarajärvi 2018, chapter 6, 6.2).

Tuomi and Sarajärvi (2018, chapter 6.3) highlight that although there are no unambiguous guidelines for assessing the trustworthiness of qualitative research, a detailed description of the research process and the data collection and analysis methods is important. Sufficient information on the conduct of the research makes the research results clearer and more understandable and allows readers to evaluate the research results (ibid. chapter 6.3). Consequently, an attempt has been made to describe the research process as comprehensively as possible in this report. The process is described from the object and purpose of the research through data collection all the way to data analysis.

In addition to a comprehensive description of the research process, also other matters can be raised about the trustworthiness of this research. As presented earlier in section 3.2.1, triangulation was used in this research. The purpose of triangulation is to "confirm the validity/credibility/authenticity of research data, analysis and interpretation" (Saunders et al. 2019, 218). Therefore, the use of more than one data source, data collection method and group of people interviewed can be considered to impact the trustworthiness of this research positively.

Sections 4.1 and 4.2 in which the interviewees´ answers are presented was sent to the interviewees before the publication of this thesis. They had the opportunity, if they so wished, to review the sections and correct any factual errors. As four of the interviews were conducted in Finnish and the researcher translated the answers into English for this research report, reading sections 4.1 and 4.2 also gave the interviewees the opportunity to review the translations made by the researcher. Allowing the interviewees to review the two sections was done to improve the trustworthiness of this research. All five

interviewees took advantage of the opportunity, and no factual errors or errors in translations were found.

4 EMPIRICAL FINDINGS

The empirical findings of the research are presented in this chapter. The empirical findings with regard to the first research question, that is the needs for analysis, are presented first in section 4.1. Second, section 4.2 presents the empirical findings with regard to the second research question, that is the possibilities for estimation. A summary of the key empirical findings is made in the last section. This chapter includes quotations from the interviewees´ answers. The researcher has translated the answers given in Finnish into English.

4.1 Identified needs for analysis

General needs for analysis

> We in management accounting and business controlling must understand that this [the entries] is not pure accounting and the resulting impact that we just have to live with … but that we need to invest in this [analysing the entries] (Business Controller 2).

The analysis of accounting entries for FX hedges was considered extremely important by all interviewees. Since the treasury policy in the case company requires that all FX risk must be hedged, the amounts hedged and, consequently, the entries these hedges generate are significant in size. The importance was seen to increase when the new ERP system and new accounting practices are taken into use since the entries will impact project revenues and COGS in addition OIE. (Business Controller 1; Business Controller 3; Manager, Group Accounting; Senior Business Controller.) Majority of other entries are analysed in detail in business units, but the same attention has not been paid to the entries for FX hedges (Business Controller 1). However, the entries for FX hedges impact financial figures just like any other item so having expertise and knowledge about the entries and what generates them was considered crucial (Business Controller 3).

All interviewees thought that management accountants, especially controllers, in business line finance have a key role in executing the analysis at project level. Their knowledge about projects and the hedges that have been entered into for different projects was considered a reason why controllers should execute the analysis. Instead, a more high-level analysis is performed at a group level. (Manager, Group Accounting.) Senior Business Controller highlighted that since every entity has impacts from FX risk in their statement of profit and loss, and the number of accounting entries for FX hedges is massive, controllers need to understand and analyse the entries instead of leaving the analysis to group accounting professionals. FX hedges and the entries they generate were generally considered to be complex topics that require in-depth knowledge and expertise. Consequently, Business Controller 2 highlighted that all management accountants should understand the topic to some extent, but some people should have an expertise role in the topic.

A common theme in all the interviews was the need for an increased competence and understanding among management accountants about the accounting entries FX hedges generate and the overall logic behind the entries. This was brought up with regard to both the analysis and estimation of entries for FX hedges. Manager, Group Accounting told that, at a theoretical level, the entries for FX hedges are clear and straightforward, but in business line finance understanding the entries on a practical level can be found difficult. Indeed, Business Controllers 1, 2 and 3 all highlighted that common knowledge about FX hedges and the entries they generate is low in business line finance, especially regarding the new ERP system and the new accounting practices. Business Controller 3 called the entries for FX hedges “a complete mystery, a black hole”.

> At the moment, we have very little information available about what has happened there, and the organisation also has very little understanding of what hedges cause and how they are included in our figures and so on (Business Controller 3).

Increased understanding was considered important among a large proportion of professionals. In the past, the analysis of FX hedges and the entries they generate has been considered the responsibility of treasury department or group accounting professionals. However, everyone who uses the information of the statement of profit and loss or is responsible for profits should understand and analyse the entries in the future.

FX variance and derivatives cannot be a subject that is ignored and excluded from the analysis because it is considered too difficult. (Senior Business Controller.)

According to Business Controller 3, accounting entries for FX hedges cause confusion in the organisation because the entries cause variation in the statement of profit and loss during project execution. However, reducing variance is precisely the reason why FX derivatives are used, and this raises questions (Business Controller 3).

Better analysis was considered to benefit a large amount of people from project level to top management. Project managers and their supervisors (Manager, Group Accounting), business controllers (Business Controller 1; Business Controller 2), business unit management (Business Controller 1; Business Controller 3), business line management (Manager, Group Accounting; Business Controller 3), business area organisations (Manager, Group Accounting) and corporate business controlling team (Business Controller 2) were all mentioned as benefiting from the information provided by the analysis. Senior Business Controller thought that anyone who uses the information provided by the statement of profit and loss and its analysis or is responsible for financial results will benefit from better analysis. Overall, the analysis was considered to provide value to management at different levels.

All interviewees mentioned that there is a need to do the analysis on a monthly basis alongside other financial reporting and analysis. Unrealised exchange rate differences are recognized at each month end which is why a more frequent analysis would not be necessary (Manager, Group Accounting). Regular analysis was considered useful instead of analysing the entries only if there are considerable variations or problems. Regular analysis provides a constant clear understanding and an up-to-date view on the entries and keeps the professionals executing the analysis in touch with the analysing process. Instead, analysing only considerable variations and problematic situations was considered to happen too late and be inefficient as those situations often need to be solved quickly. Also, the analysis process might not be as clear if it is not done regularly. (Business Controller 2.)

Business Controller 2 thought that the monitoring and analysis of accounting entries for FX hedges should be done at business unit level. However, in his opinion, the data that

are analysed should be at project level so that more in-depth analysis is possible when looking at the figures. Business Controller 3 also highlighted that the analysis should start at a higher level and a more detailed analysis should be done at project level if needed. Analysis of different timelines, such as daily or annual data, was also considered important, although monthly data should be the main focus (Business Controller 2).

What needs to be analysed?

Senior Business Controller thought that it is important to identify and separate the impact of FX hedges from other factors that impact profit or loss because then business units cannot blame FX risk for all negative development in project margins. When the impact from FX hedges has been analysed and there is a clear understanding about it, management accountants can separate which part of the change in margins has been caused by FX risk and which has been caused by other factors in projects (Senior Business Controller).

> FX variance or derivatives [should not] categorically [be] an area which people find uncomfortable, but that everyone understands it and can clearly identify that this here is FX risk and these are its components, … and the impact on our statement of profit and loss or business unit is this, and then can separate the FX impact from other items that impact the statement of profit and loss, and not so that FX becomes a residual category (Senior Business Controller).

Separating entries for the spot and forward elements of FX derivatives was considered important in terms of the analysis. Business Controllers 2 and 3 found it important to analyse the entries caused by both spot element and forward points. Correspondingly, Manager, Group Accounting mentioned both groups of entries when talking about the analysis. In particular, Business Controller 2 highlighted that the analysis must be divided into two parts: the impact from forward points and that from spot element, including both realised and unrealised changes in fair value. Manager, Group Accounting also brought up the need to analyse the entries for both realised and unrealised changes in fair value and to understand the difference between these two types of entries.

A general observation that has been made in the case company is that accounting entries for forward points appear to come on a fairly linear basis. Entries for spot elements, on the other hand, fluctuate a lot as they depend on changes in exchange rates. (Business

Controller 2; Manager, Group Accounting; Senior Business Controller.) Accounting entries for forward points depend on currency, current interest rate level and whether the hedged cash flow is a purchase or a sales price. (Business Controller 2.)

Based on the interviews, an extensive number of accounting entries are considered important to analyse. Manager, Group Accounting and Business Controller 1 stated that it is important to analyse all entries. However, both interviewees focused specifically on the accounting entries in the statement of profit and loss in their answers. Senior Business Controller and Business Controllers 2 and 3 explicitly underlined the significance of entries that impact profit and loss. Therefore, the entries that have profit and loss impacts were unanimously considered central in terms of analysis.

Business Controller 2 stated that although the entries in the statement of profit and loss should be central in the analysis, the link from the statement of financial position must be understood and considered, too. This is because all accounting entries that are recorded there will eventually affect profit or loss (Business Controller 2). Overall, the statement of financial position and the accounting entries recorded there received relatively little attention in the interviews when it came to the analysis that should be performed.

Variance in the statement of profit and loss due to FX hedges during project execution was considered a crucial issue to be analysed. Senior Business Controller stressed that management accountants need to analyse how the new accounting practices affect profit and loss and how this effect differs from the effect that the previously used accounting practices would have had. He described that the outcome of the new accounting practices will never be the same as with the old ones during project execution. In the end, the outcome should be the same but there will be some variance before all sales, purchases and derivatives have been fully recognized (Business Controller 2; Manager, Group Accounting; Senior Business Controller).

> It is expected that [the new] requirements will not lead to the same outcome as [the previously used accounting practices]. We do it as well as we can but there will be some variance in the statement of profit and loss. At the end of the project … we will end up with the right outcome but during the project there will be some variance and this variance must be able to be identified and understood. (Senior Business Controller.)

Based on the interviews, there are five components of the variance in profit and loss caused by FX hedges that need to be understood and considered in the analysis. The identified components are the following:

- The cause of an entry
- The line item in a financial statement to which an entry is recorded
- The timing of an entry
- The size of an entry
- The direction of an entry

The first component, that is the cause of an entry, was specifically brought up by Business Controller 3. She considered it important that controllers understand where the entries come from. Senior Business Controller, for his part, stated that in case there is a large variance in profits and losses, the cause of that variance must be analysed. This suggests that management accountants must understand what kinds of events and transactions result in accounting entries for FX hedges. As described in section 2.3, the cause of an entry can be, for example, change in the fair value of a derivative when the derivative contract is open or the occurrence of ineffectiveness in a determined hedging relationship.

Senior Business Controller and Business Controller 3 told that it is important to understand where the accounting entries are recorded. As described earlier in section 2.3, certain entries for FX derivatives are recognized in OCI and in the cash flow hedge reserve in the statement of financial position, while others are recognized straight in the statement of profit and loss. Entries that affect profit or loss are recorded to either net sales, COGS or OIE in the case company. The impact on project margins was a recurring theme and a central issue in all interviews and, distinctly, an important point of interest in the organisation. Therefore, it can be argued that the specific line item of each type of entry needs to be understood because sales and COGS entries affect project margins whereas OIE entries do not. Thus, in addition to financial statement, also the specific line item can be concluded to matter with respect to the analysis. Business Controller 3 also mentioned that it is important to identify the projects whose figures include impact from FX hedges.

The timing of entries was brought up by Manager, Group Accounting and Business Controllers 1 and 2. The timing aspect can be seen to be closely related to the cause of an entry because the timing of an entry depends on what has caused it. Estimating the future was also highlighted with respect to understanding the timing of entries, as understanding the logic behind these entries allows management accountants to understand when they can expect some entries to occur (Business Controller 1).

The size of the entries for FX hedges and, consequently, the magnitude of variance in the statement of profit and loss due to these hedges was also considered important in terms of analysis. It was considered important to analyse how much variance FX hedges have caused and to understand what factors influence the size of the entries. (Business Controller 2; Manager, Group Accounting; Senior Business Controller.) Lastly, Manager, Group Accounting found it important that management accountants understand why the entries have moved in a certain direction, that is, why they impact financial figures positively or negatively.

To summarize, understanding what causes an accounting entry for an FX hedge, where it is recorded and when, and what affects the size and direction of it were all considered important in terms of the analysis. Simply put, the interviewees highlighted the need for management accountants to understand the logic behind accounting entries for FX hedges. In addition to that, Senior Business Controller and Business Controllers 1, 2 and 3 highlighted that also the impact of different scenarios needs to be understood. Business Controller 1 emphasized the importance of recognizing different scenarios and understanding their impact in general. She mentioned the prolongation of hedges and the recognition of 100% of project revenues as examples of the scenarios that might affect how FX hedges impact the statement of profit and loss.

Senior Business Controller and Business Controllers 1 and 3 all brought up the same example of a scenario whose impacts need to be understood. This was a decision to purchase materials and equipment for a project in a different currency than was originally planned. Since cash flows are hedged in the case company at an early stage, purchases are already likely to be hedged in the original purchase currency. This means that the original hedges must be discontinued, and new derivative contracts must be entered into, which results in accounting entries in the statement of profit and loss. The interviewees

emphasized that changing purchase currency can be a valid decision but the impacts of said decision must be understood. (Business Controller 3; Senior Business Controller.)

Desired results of the analysis

Based on the interviews, one of the desired results of the analysis is to recognize large variances and if the entries indicate any abnormalities, deviations, or defects. Senior Business Controller highlighted that it is important to identify large variances and understand where they are coming from. Similarly, Manager, Group Accounting stressed that events in markets can cause big changes which must be recognized when analysing FX variances. She described that the reasonability of entries can be evaluated by analysing the causes of entries and recognizing how exchange rates have changed during the reporting period. Adding to that, Business Controller 1 found it important to analyse whether the entries look normal, and that mistakes and big deviations can be identified when analysing the entries.

> I can´t say that there is something special exactly that I would say we should check. I think it´s more to see that it looks … OK. (Business Controller 1.)

Manager, Group Accounting described that she compares figures from different months and different entities to identify abnormalities. Business Controller 2, for his part, found graphs to be a useful tool in analysing the entries for FX hedges. He highlighted that trends can be noticed if the entries are presented as graphs. Business Controller 2 used the entries for forward points as an example and pointed out that graphs show whether the entries occur linearly as expected or whether there is some variation in them.

If the impacts different scenarios will have on profit or loss were understood, the mitigation of costs or other impacts could become possible (Business Controller 1). Senior Business Controller also thought that by conducting the analysis, management accountants can find ways to minimize the impact FX derivatives have on the statement of profit and loss. One desired result of the analysis and understanding of the impacts of different scenarios was to identify which projects are critical and require close monitoring in terms of the entries for FX hedges, taking into account the possible scenarios that may occur in those particular projects (Business Controller 1).

> If you have the analysis, you know … these two projects could be really critical whatever happens with them. Then we know … we have those two projects and depending on if we need to prolong some hedges or … if we come to 100% recognition or whatever that what could happen then. And then we know … we will have an impact like this … because then it´s easier for us to understand how to mitigate if there is a cost. (Business Controller 1.)

The interviewees also thought that the analysis will benefit the actual hedging process. Falsely or poorly hedged sales or purchases could be identified through analysing variances (Senior Business Controller). Overall, the entries affect profitability. Therefore, analysing the entries was considered an important area to pay attention to so that the knowledge can be extended to understand and develop the hedging process and, consequently, minimize the variance in that respect. (Business Controller 2.)

The last desired result of the analysis was to help with making business unit financial estimates more accurate. Analysing entries and concluding what kinds of entries can be expected in the future can help in making decisions about business unit level estimates. (Business Controller 1; Business Controller 3.) This desired outcome combines both components that are central to this thesis: analysis and estimation.

4.2 Identified possibilities for estimation

When talking about estimating the entries for FX derivatives, the interviewees made a clear division between the spot and forward elements. With regard to entries for the spot element, estimating was considered difficult and even unnecessary. This is because the entries result from changes in exchange rates which were considered unpredictable. (Business Controller 2; Business Controller 3; Senior Business Controller.)

Although the accounting entries for spot elements were considered impossible to estimate, the interviewees highlighted that understanding the logic of these accounting entries could help in getting some sort of a view of the future. Business Controller 1 thought that there should be an understanding of the timing of the impacts from FX hedges. Business Controller 2, for his part, brought up the need to understand what affects

the entries and their size and where they are recognized in the statement of profit and loss. He particularly mentioned the entries from hedge reserve and the entries from accounts payables and accounts receivables as ones that need to be understood. Thus, both entries for a derivative and for a hedged cash flow were considered relevant. Business Controller 2 also highlighted that management accountants should understand what kinds of impacts changes in exchange rates have in terms of accounting entries. In conclusion, understanding the logic of accounting entries for FX hedges, which was considered central with regard to analysis, was considered important with regard to estimating the entries for spot elements and hedged cash flows, too.

The entries for forward components, on the other hand, were considered stable enough so that estimation could be possible, at least at a rough level (Business Controller 2; Manager, Group Accounting; Senior Business Controller). Senior Business Controller told that the entries that result from forward points seem linear in a big picture. The number of forward points is fixed when a derivative contract is entered into, and they are recorded linearly over the validity of the contract (Senior Business Controller). Senior Business Controller has, in fact, estimated the entries for forward points based on the statement of profit and loss in the company´s reporting system. He said that the estimates have been rough, but they have seemed to perform well at a high level.

The number of forward points was mentioned as a piece of information that is needed so that estimating entries for forward elements would be possible (Manager, Group Accounting; Senior Business Controller). Manager, Group Accounting said that front office has information on the number of forward points for each project and each hedge as they are the ones who enter into derivative contracts. Knowledge of how projects are progressing was also considered important in order to estimate how forward points impact the statement of profit and loss (Business Controller 2).

Other factors that were mentioned to make the estimation possible in general were information on projects and their open hedges (Business Controller 1; Business Controller 3), hedged cash flow amounts, in other words the nominal amounts of hedges (Manager, Group Accounting), changes in exchange rates (Business Controller 2; Business Controller 3) and the maturity of derivative contracts (Business Controller 3). Business Controller 2 also highlighted that, with regard to revenue recognition, the percentages that

are used to transfer cumulative amounts from cash flow hedge reserve to profit or loss as well as the amount of accounts receivables and accounts payables arising from hedged cash flows are important factors to take into account.

It was also noted that the final sales and cost amounts can be predicted as they should be the hedged amounts after both the hedged cash flows and the hedging instruments have been fully recognized (Senior Business Controller). Naturally, this only applies if the hedges have been effective and there have been no changes in the hedges during project execution. In addition, Manager, Group Accounting thought that the volume of entries for unrealised fair value changes can be somewhat estimated.

> If you have hedges that were made at the beginning of a project and they start to materialise in a year or two, you can estimate at least the volume quite well. Of course, you do not know how exchange rates will change, but you can use volume to make some estimates of what you expect from unrealised [changes in fair value]. (Manager, Group Accounting.)

The interviewees mentioned a significant number of factors that make estimation difficult. The most mentioned factor was the unpredictability of changes in exchange rates (Business Controller 2; Manager, Group Accounting; Senior Business Controller). The large number of hedges and, consequently, transactions was another factor that was mentioned (Business Controller 3; Senior Business Controller). According to Senior Business Controller, a detailed analysis and estimation requires an unreasonable amount of work due to the large number of accounting entries. Business Controller 2 also highlighted that a detailed analysis and estimation can only be done at project level and not for all the entries. Business Controller 1 mentioned changes in projects as a factor that could affect estimation and make it more difficult. The same factor was also mentioned to affect the analysis, as described earlier in section 4.1.

An important factor that was considered to affect the possibilities to estimate accounting entries for FX hedges was data and possibilities to obtain it. Business Controller 3 pondered whether the data is available centrally and in the correct format for estimation, and whether the data makes it possible to estimate all entries. Business Controller 2 brought up the percentages that are used to transfer amounts from cash flow hedge reserve to profit or loss. He said that there is data available for the estimated revenue recognition

percentage but not for the percentage that is used for the amounts from purchase hedges. This makes estimation more difficult. Manager, Group Accounting also brought up the data issue and told that the functioning and logic of the company´s new calculation model system can be found difficult to understand at first.

The interviewees found the current level of competence among management accountants to be insufficient for estimation. Senior Business Controller described that FX hedges and their accounting has previously been viewed as an area that is the responsibility of only a small number of professionals. Business Controller 1 highlighted the need for training on the entries and more help and support from those who are responsible for entering into derivative contracts and recording the accounting entries. Business Controller 3 emphasized that management accountants need more competence before they are able to estimate the entries, but that it would be possible.

> We have a lot of work to do before we get to the point where we have data collected and people understand these things. So, I would say that the possibilities for estimation are currently zero in our group. But if we had proper templates and practices and systems, we could do anything. (Business Controller 3.)

In a similar fashion, also Manager, Group Accounting and Senior Business Controller considered management accountants´ possibilities for estimation to be good, at least at a rough level, after they have familiarized themselves with the logic of the accounting entries and have the data and information needed available. Senior Business Controller highlighted that the limitations that had been discussed earlier must naturally be considered when discussing management accountants´ possibilities for estimation. This was concluded to mean the limitations in, for example, predicting changes in exchange rates.

Business Controller 2 described that in-depth analysis and reporting development is needed so that management accountants can easily estimate the accounting entries for FX hedges. With regard to reporting development, Business Controller 1 emphasized the need for a common way of working and a common report template which can be used in estimation.

4.3 Key empirical findings

4.3.1 Identified needs for analysis

First and foremost, the analysis of accounting entries for FX hedges was considered needed and extremely important in the case company. The importance was considered to increase because the entries will impact project-level figures in the future. In other words, there appears to be a relation between the impact FX hedges have on projects and the necessity of the analysis in an organisation where the business is project-based. Management accountants, such as controllers, in the business line and business units were considered to have a key role in the analysis because of their knowledge about projects. The large number of transactions was also considered a factor which makes the analysis needed at business unit level instead of a higher level. Better analysis was considered to benefit management at different levels. This suggests that managers are an important stakeholder in the analysis of entries for FX hedges. Therefore, it may be necessary to consider their needs when conducting the analysis and presenting its results.

The interviewees mentioned several specific needs for the analysis of accounting entries for FX hedges. The needs mentioned reflect three different themes and can therefore be divided into three categories. The categories are presented in figure 2 and each category is presented separately below.

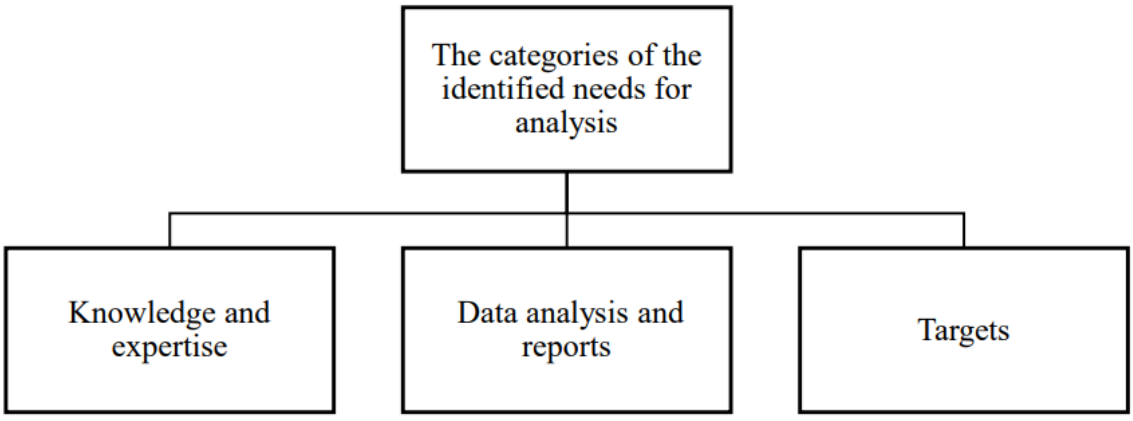

Figure 2 The categories of the identified needs for analysis

Knowledge and expertise

An overarching theme in the interviews was the need to increase the knowledge and expertise of management accountants in business line finance on FX hedges and related accounting entries. Knowledge and understanding of FX hedges and their accounting was widely considered to be limited and even non-existent in business line finance. The topic has previously been considered the responsibility of treasury department or group accounting professionals, suggesting that expertise in FX hedges and their accounting has not been as needed in business line finance. It was emphasized that entries for FX hedges cannot be ignored and excluded from analysis because the topic is considered too difficult. Thus, an increased knowledge and understanding among management accountants in business line finance can be considered a requirement for the success of the analysis.

Based on the interviews, five components of the accounting entries were identified that management accountants need to understand. These were the cause, location, timing, size and direction of an entry. In terms of location, the three aspects that were mentioned in the interviews were the project that has caused entries, as well as the financial statement and line item in which the entries are recorded. As a conclusion, the components that need to be paid attention to when increasing management accountants´ expertise in the entries FX hedges generate are the triggers for entries, when and where the entries are recorded, and what impacts their size and direction.

In addition to the five components of the accounting entries, the interviewees also highlighted the need for an increased understanding of different scenarios and their impacts. Purchasing materials and equipment for a project in a different currency than was originally planned was most often cited as an example whose impacts need to be understood. The prolongation of hedges and the recognition of 100% of project revenues were also mentioned as scenarios that may occur in projects and the impacts of which need to be understood.

It can be argued that understanding the five components mentioned above can help to understand the impact of different scenarios and decisions made in projects. For instance, if purchases are made in a different currency than was originally planned, the

ineffectiveness of already existing hedges may result in accounting entries. Understanding when and where these entries are recorded, what is the size of these entries and whether the entries have a positive or negative impact on the statement of profit and loss can provide an understanding of the impacts of said scenario. It is therefore concluded that the five components can be considered as the basis for the knowledge and understanding management accountants need to have. These components are presented in figure 3.

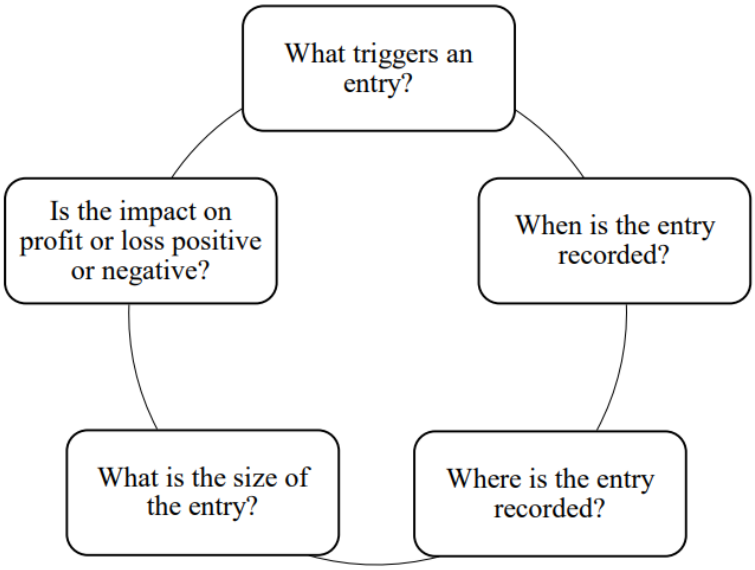

Figure 3 Knowledge and expertise

Data analysis and reports

The interviewees mentioned several needs for the data and reports to be used for the analysis. The needs for data analysis and reports are considered so interrelated that they are presented together.

According to the interviewees, accounting entries in the statement of profit and loss are the entries that management accountants need to analyse. In particular, the variance in profits and losses during project execution was considered to require analysis. Overall, the purpose of hedging in the case company is to minimize the impact FX risk has on the statement of profit and loss. It can therefore be considered justified and not surprising that the entries affecting profit or loss were identified as central to the analysis.

Based on the interviews, a central need for the analysis is to recognize large variances and abnormalities when analysing the profit and loss impacts of FX hedges. The interviewees mentioned two measures that can help to identify large variances and abnormalities. The first measure was comparison between different months and different entities. This suggests that different levels of data would be needed. The second measure that was mentioned was to use graphs to notice variability and trends. This also suggests that it would be important to have data at different levels and particularly different time periods. A conclusion can be made that graphs would be especially helpful in recognizing large variances and abnormalities in accounting entries for forward elements since those are expected to be recorded on a fairly linear basis. Instead, entries for the fair value changes in spot elements and in the receivables and payables related to hedged cash flows are prone to more variability. This suggests that for spot elements, receivables and payables, graphs may be helpful in identifying which variances are large, but they may not be as useful in identifying whether the entries reflect any abnormalities.

Overall, it was considered important that the profit and loss impacts of FX hedges are separated from the impacts of other factors. This way FX hedges cannot be used as a residual category which is blamed for all unwanted impacts in profit and loss, especially in project margins. A conclusion can be made that the data and reports used for analysing these entries must present the entries for FX hedges separately so that the impact of other factors does not confuse the analysis.

With the new accounting practices used in the case company, certain entries for FX derivatives will be recorded to net sales and COGS in addition to OIE in the statement of profit and loss. The impact FX hedges will have on project margins in the future was a matter of interest for all the interviewees. A conclusion can be made that the entries that are booked to project-level figures need to be separated from those that are booked to OIE. This is an identified need for data and reports.

When discussing the entries for FX hedges, the entries for derivatives were dominant in the interviewees´ answers. However, variance in the statement of profit and loss was a major issue and central point of interest brought up in the interviews. If hedge accounting is not applied, accounting mismatches due to differences in the timing of entries for the

hedged cash flow and the hedging instrument may cause variance in the statement of profit and loss (Jankensgård et al. 2020, chapter 6; PKF International Ltd. 2019, chapter 24). Senior Business Controller also mentioned that if FX hedges have been done correctly, variance during project execution arises purely from the difference in the timing of entries for the hedged cash flow and the FX derivative. A conclusion can be made that a central need for the analysis is to separate the entries for the hedged cash flow and for the hedging instrument. Thus, the data and reports used should make it possible for management accountants to identify these entries separately so that analysing the variance is possible.

The need to analyse and understand the difference between entries for both realised and unrealised changes in fair value was also considered important. The accounting for realised and unrealised changes in fair value differ from each other because the entries for unrealised fair value changes are recognized at the end of each reporting period and retracted at the beginning of the next reporting period. Therefore, these two types of entries need to be identifiable and separated in the data and reports, too. Separating the impact from spot and forward elements was also considered an important need for the analysis. The entries for forward elements have been noted to usually occur linearly, whereas the entries for spot elements are prone to bigger variances.

One need that was brought up in the interviews was the availability of different levels of data. All interviewees found that monthly analysis on monthly data is necessary. Daily and yearly data were also mentioned in one interview as supplementary levels of data that could be helpful in the analysis for certain situations. Business unit-level was mentioned as the main level of analysis. However, project-level analysis was considered important in situations where a more detailed analysis is needed. A conclusion can be made that while the analysis should be mainly based on monthly data at business unit level, the reports should also enable the examination and analysis of project-level, daily and yearly data, if needed.

It was considered important to understand what has caused the large variances once they have been identified. Identifying the reasons behind entries and variances was seen to be a way to evaluate the reasonability of entries. While a monthly business unit-level analysis was considered to be the main need, a more detailed analysis, for example at

project level, was considered to be needed in some cases. As the identification of abnormalities and large variances and, consequently, identifying the reasons behind them were considered crucial, a conclusion is made that considerable variations and abnormalities are the factors that need to be analysed more closely.

To summarize the needs for data and reports that were identified in the interviews, there are several components that need to be identifiable separately from the data and reports, as well as a need for different levels of data. First, it is necessary to identify how the impact of FX hedges is divided to project-level figures and OIE. Second, the impacts of derivatives and hedged cash flows need to be identifiable from project-level figures and OIE. In addition, entries for spot and forward elements as well as for realised and unrealised changes in fair value in these elements need to be separable. Monthly business unit-level analysis is the main analysis needed, but project-level analysis of daily data should be possible for big variances and abnormalities. Needs for data and reports are summarized in figure 4. The interviewees expected the entries for forward points to be quite stable, and they are coloured grey in the figure. Entries for spot elements and hedged cash flows, on the other hand, were assumed to be more variable. Those are marked with a dashed line in the figure.

Targets

A needed result from the analysis was to identify which projects are critical in terms of accounting entries for FX hedges. Understanding the impacts of different scenarios was highlighted with regard to this. Another need the interviewees identified for the target of analysis was to identify how the profit and loss impacts from FX hedges can be minimized. Again, understanding the logic of the accounting entries can be concluded to be critical since management accountants must understand what impacts the entries and which of those components can be impacted and minimized. The third needed result was the development of the hedging process so that the variance that can be impacted by doing something differently during the hedging phase can be reduced. The fourth and final needed result was to adjust business unit financial estimates based on the understanding that has been created through analysing the entries for FX hedges.

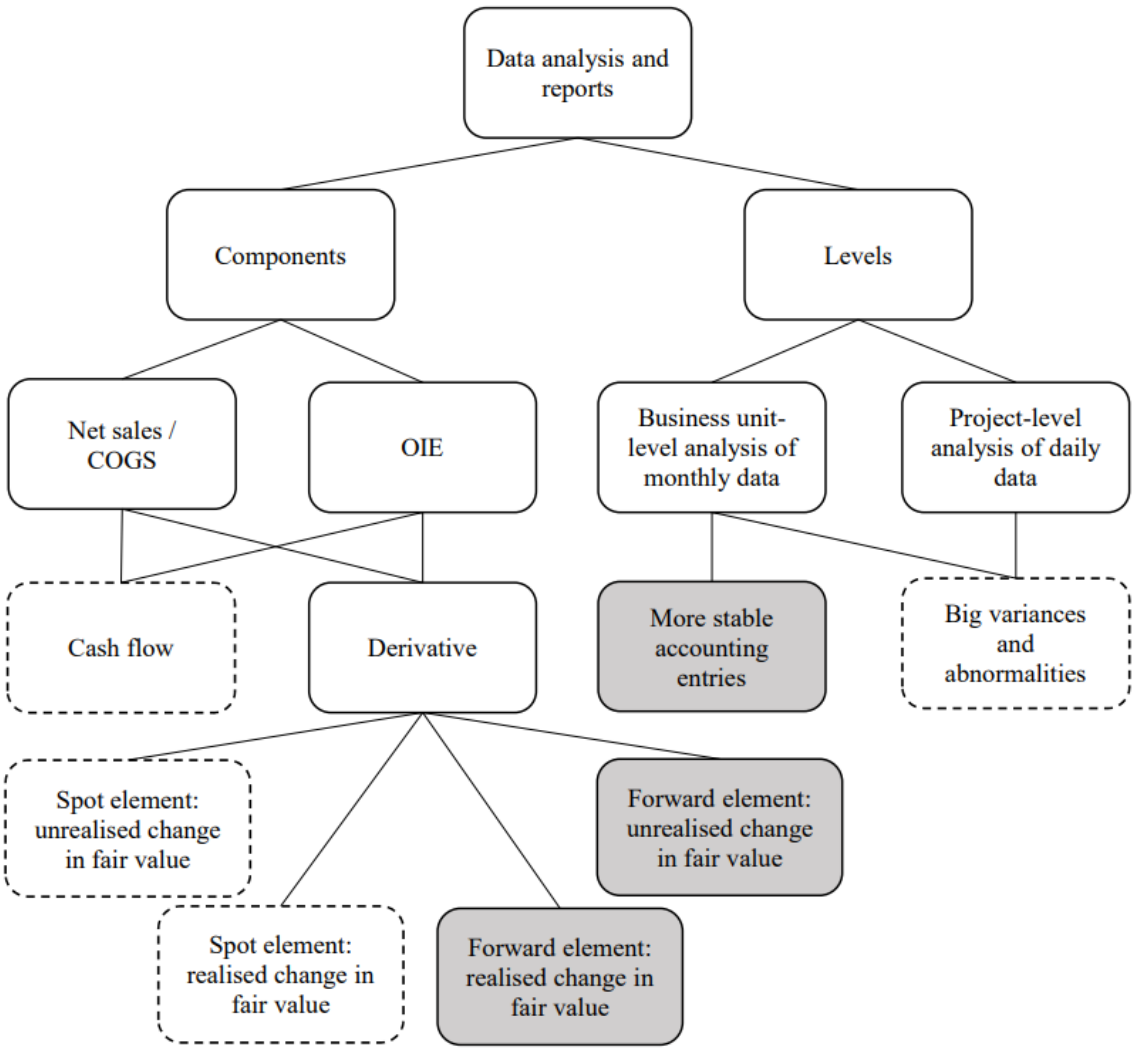

Figure 4 Data analysis and reports

To sum up, improving the knowledge and expertise level of management accountants in business line finance was considered an important requirement and a precondition for the analysis. Management accountants need to understand the logic of the entries for FX hedges and, consequently, the profit and loss impacts of different scenarios. In addition to knowledge, there are also needs regarding the data and reports the analysis is based on. Management accountants need to be able to identify and separate different entries from each other. Monthly and business unit level analysis was the main need that was brought up in the interviews, although the data and reports need to enable the analysis of more detailed data at project and daily level.

According to the interviewees, a central need for the analysis is to identify large variances and abnormalities and the reason behind them. A conclusion can be made that the analysis should mainly be focused on monthly data at business unit level, and management accountants should identify large variances and abnormalities from this data. Consequently, more detailed analysis, which could be done on daily data and at project level if needed, should focus on identifying the reasons behind these variances or other figures that are not viewed as normal. As a conclusion, these two levels of analyses with different focus could help management accountants increase their understanding and knowledge further about the profit and loss impacts of FX hedges. Consequently, this understanding could make it possible to achieve the targets of the analysis, in other words the identification of critical projects, ways to minimize profit and loss impacts of the entries and possibilities to develop hedging process as well as the adjustment of business unit financial estimates to take these entries better into account. All the key needs for the analysis and their relation to each other are shown in figure 5 below.

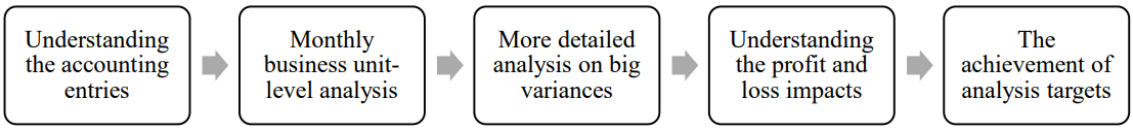

Figure 5 The achievement of analysis targets

4.3.2 Identified possibilities for estimation

Overall, possibilities for estimating entries for FX hedges were considered rather poor with the current level of knowledge and expertise. Several interviewees highlighted the need to increase knowledge about the accounting of FX hedges among management accountants as a precondition for estimation. The current understanding of FX hedges and the accounting entries they generate was found to be quite poor. However, some possibilities for estimation were identified to be there after management accountants have familiarized themselves with the accounting for FX hedges. With regard to the entries, especially the timing, location, size and cause, such as changes in exchange rates, were highlighted as components that management accountants need to understand for estimation to be possible. A conclusion is made that, in addition to analysis, improving

management accountants´ expertise in the accounting entries for FX hedges is a precondition for estimation, too.

Estimating accounting entries for the spot elements of FX derivatives was considered difficult and even unnecessary. Anticipating changes in exchange rates was considered impossible, and this issue was highlighted as a limiting factor in the estimation of the entries for spot elements. However, increasing understanding about the logic of these entries was considered to enable getting some sort of a view of the future entries. As a conclusion, while changes in exchange rates cannot be predicted, understanding the impacts changes in exchange rates or any other possible scenario have on the entries could give management accountants some idea of the possible financial impacts.

The identification of possible scenarios and their potential impacts can be considered to take place at a fairly detailed level. Projects and their FX hedges may differ materially in the case company and the business line studied. Consequently, the scenarios that are possible in one project might not be expected in another project. The interviewees did not consider a detailed estimation to be reasonable for all entries, because the number of hedges and transactions is massive. It is therefore concluded that estimating the accounting entries for the spot elements of all FX hedges in every project is not reasonable.

The interviewees considered it possible to estimate the accounting entries for forward points at a rough level, because the entries have appeared to be rather linear when looking at the big picture. The estimation that had earlier been done in the case company´s head office was also described as successful at a rough level. In conclusion, there are possibilities for estimating the entries for forward points at business unit or business line level. With regard to this estimation, it was considered important to know how projects are progressing. Thus, taking into account the current project portfolio is important in the estimation. The interviewees also mentioned the number of forward points as a key information that would allow for estimation. This information was disclosed to be available within the organisation. In addition to entries for forward points, final sales and cost amounts as well as volumes from unrealised changes in fair value were also considered as components that contain possibilities for estimation.

Although the interviewees did not directly bring up the time horizon of estimation, some conclusions of that can be made. The interviewees highlighted many sorts of information that needs to be available and considered so that the estimation would be possible and accurate. The necessary information mentioned was, for example, information on projects and their hedges, the nominal amounts of hedges and information on the progress of different projects. The longer the time horizon, the more inaccurate and unreliable such information becomes in a project-based business where new projects begin and old ones end continuously, and different projects progress at different paces. Thus, it is concluded that there are better possibilities for estimating the accounting entries in a shorter time frame, such as the next quarter. Instead, estimating the accounting entries that are expected in a year´s time, for instance, is more difficult and unreliable.

5 CONCLUSIONS AND DISCUSSION

The purpose of this research was to study the needs for analysis and possibilities for estimation of accounting entries for FX hedges in the case company. The research objective was pursued through the following research questions:

1. What needs are identified in the organisation for the analysis of accounting entries for FX hedges?
2. What possibilities are identified in the organisation for the estimation of these entries?

The research was conducted as a qualitative case study which included features of interpretivism and was placed close to the action-oriented approach developed by Neilimo and Näsi (1980). The case organisation was a Finnish publicly listed company operating in technology industry. Several needs for the analysis of accounting entries for FX hedges were identified from the empirical data, and these needs could be divided into three categories: knowledge and expertise, data analysis and reports and targets. The identified possibilities for estimation were scarcer, although some possibilities were identified mainly with regard to the entries for forward points. Overall, the practical contribution of this research was to provide an overview and understanding of the current situation, views and state of mind in the case company. In addition, this research was able to identify issues and points that can be taken into account when developing the analysis and estimation processes.

The remainder of this chapter is organised as follows. Section 5.1 draws conclusions and discusses the academic contribution of this research, that is how the results of this research contribute to previous studies. The limitations of this research are discussed at the end of the chapter in section 5.2 along with providing a few suggestions for future research.

5.1 Conclusions and academic contribution

Needs for analysis

In this empirical research, the analysis of accounting entries was found to be very important. The apparent importance of the analysis suggests that while the internal control, monitoring and analysis practices regarding derivatives have been highlighted in relation to major losses or collapses in which derivatives have had a significant role (see Dhanani et al. 2008; Hogan 1997; Jayaraman & Shrikhande 1997 among others), in practice, analysis is seen important in terms of the profit and loss impacts in general. Especially profit and loss impacts in projects was found to be a factor that increases the necessity of the analysis. The statement of Hong et al. (2019, 298) about the importance of hedging outcome is, indeed, apparent in the case company.

Management accountants were considered to have a central role in analysing the accounting entries for FX hedges and the analysis was considered to benefit management at different levels. Thus, the business-oriented and business partner role of management accountants in which management accountants are expected to provide added value to management (Järvenpää 2007, 100; Lepistö & Ihantola 2018, 107; Rieg 2018, 183) was found to be central in the analysis.

The lack of expertise and the importance of competence regarding derivatives and their accounting was highlighted in this research with regard to the analysis of the entries for FX hedges. It is a familiar topic also in prior scientific research. Campbell et al. (2019, 45) cited the 2008 financial crisis as an event that highlighted the extensive lack of knowledge about derivatives and their accounting. Vu et al. (2020, 814), for their part, underlined the importance of the qualification of personnel who work with derivatives. Personal competence has been described as one of the components of management accountants´ ability to provide added value to management, in other words their ability to have a more business-orientated role (Järvenpää 2007, 100).

IFRS 9 has been described to be well-known for its complexity (Hewa et al. 2020, 2588). Chang et al. (2016, 585) described that the complexity of financial reporting for derivatives may result in financial report users having difficulties in understanding how

economic transactions and reporting standards are reflected in financial reports. Although the financial report users in the study by Chang et al. (2016) were analysts, difficulties in understanding the logic of the accounting entries was also brought up in this research where the focus was on management accountants. Although the complexity of derivative accounting as well as the lack of knowledge and expertise with regard to it have been highlighted in prior scientific research, the research papers included in the theoretical framework of this research did not provide precise information on the components that need to be better understood. This research was able to bring insight to this by identifying five components of the accounting entries for FX hedges that were considered important to understand.

It was found in this research that accounting entries in the statement of profit and loss and particularly the variance in these figures need to be analysed by management accountants. Financial statement users such as investors and creditors pay considerable attention to the statement of profit and loss as the statement presents a view of the reporting entity´s prospects (Haaramo et al. 2020, chapter 2; PKF International Ltd. 2019, chapter 5). In addition, Hakkarainen et al. (1997, 37) found in their empirical research on FX risk management practices in Finland that the avoidance of losses and the maintenance of profitability in business and in projects are important criteria for defining the success of FX risk management. Variability is the widely-used definition of financial risk (Helliar et al. 2002, 167; Jankensgård et al. 2020, chapter 1; Knight 1921, as cited in Dhanani et al. 2008, 53-54). Directing management accountants´ analysis to the entries that are recorded in the statement of profit and loss and especially the variance they cause is consistent with these statements and empirical findings.

Presumably, prior scientific research does not provide descriptions of the needs for data analysis and reports and the needed targets and results with regard to the analysis of accounting entries for FX hedges. This research was able to contribute to the literature by identifying these needs in the case company. The identified needs for data analysis and reports were diverse and clearly reflected the widely recognized complexity of derivatives and their accounting and financial reporting (Bartram et al. 2009, 191; Campbell et al. 2019, 44-45, 53; Chang et al. 2016). Four needs for analysis results were also identified. One of them was the development of hedging process based on the insight created through analysis. This can be seen as confirming Cadbury´s (1992, as cited in Dhanani et al. 2008,

55) argument that better control can encourage the improvement of risk management techniques.

Possibilities for estimation

Overall, in this empirical research, the possibilities for estimating entries for FX hedges were considered fairly poor with the current level of knowledge and expertise among management accountants. The lack of knowledge about derivatives and their accounting as well as the importance of the qualification of people working with derivatives, both of which have been highlighted in prior scientific research (Bezzina & Grima 2012; Campbell et al. 2019, 45; Vu et al. 2020, 814) and which were highlighted with regard to the analysis of the entries were, therefore, brought up with regard to the possibilities for estimation, too.

The impossibility of anticipating changes in exchange rates was found to be a central limiting factor in estimating accounting entries for spot elements. Indeed, there is a general understanding that exchange rates follow a random walk and cannot be predicted based on their historical performance (Fabling & Grimes 2015, 323). However, it was found in this research that increasing the understanding of the accounting entries for FX hedges among management accountants could allow some kind of assessment of the future entries. In addition, the possibility to estimate entries for forward elements at a rough level was identified in this empirical research.

Presumably, the estimation of accounting entries for FX hedges from the viewpoint of management accountants is an unknown topic in prior scientific literature. This is although the importance of anticipating the future has been described as an important part of the role of management accountants (Nielsen 2018, 180) and the importance of relevant and timely information has been highlighted in the monitoring of the achievement of objectives and strategies for derivative use (Dunne & Helliar 2002, 27). The academic contribution of the results of this research is to begin filling this void in the academic literature.

5.2 Research limitations and future research

Research limitations

There are limiting factors in the results of this research. Firstly, the results are based on a single case company and specifically a single business line. It can be assumed that different companies have different characteristics with regard to, for example, FX hedging, accounting for hedges, organisational structure and management accountants. There are differences in some of the characteristics even between different business lines in the case company. Therefore, there is uncertainty about the applicability of the results of this research outside the case company and the researched business line. Drawing generalizable conclusions is not the aim of a case study (Eriksson & Koistinen 2005, 34), so this limitation is natural.

Although the interviewees were selected with care to ensure the most comprehensive and relevant results possible, the selected interviewees can be considered one of the limitations of this research. Presumably, the needs that the interviewees identified for analysis as well as the possibilities they identified for estimation include subjectivity. The limitations in resources such as time as well as the number of people in the case company who were assumed to have an understanding or insight into the research topic affected how many interviews were conducted. It is possible that there are other needs for analysis and identifiable possibilities for estimation among management accountants in the case company and the researched business line that did not emerge from the interviews that were conducted. This could impact the understanding that was created through the research results. However, the careful selection of interviewees and, for example, the inclusion of different organisational levels in the selection was an attempt to address these challenges.

Future research

Due to the newness of the topic of this research, there are multiple possibilities for future research. One possible research topic relates to the possible company specific needs for analysis and possibilities for estimation. Researching the topic of this thesis in different

organisations could provide an idea of which needs for analysis and possibilities for estimation are unique for different companies, and which can be considered more universal.

Another possible research topic relates to the purpose of derivative use. In addition to hedging, derivatives can also be used for speculative purposes. Unlike hedging, using derivatives for speculation increases risk exposure (Campbell et al. 2019, 48). Conducting a research on what kinds of impacts this has on the accounting entries derivatives generate and the needs for analysis and possibilities for estimation of these entries would also add a new aspect to the current understanding.

A third possible research topic relates to the results of this research. Multiple needs for the analysis of accounting entries for FX derivatives were identified. Future research could focus on finding ways to respond to these needs. For example, the identified targets for the analysis could be researched in more detail focusing on how these targets can be reached. A few possibilities for estimating the entries were also identified, and future research could focus on whether the identified possibilities allow for successful estimation in practice. Researching how the possibilities could be improved would also be an interesting topic for a future research since the possibilities were limited in some respects.

The last suggestion given for future research is a viewpoint instead of a precise research topic. The focus could be shifted from the needs and possibilities people identify to the viewpoint of data and accounting systems. Data and systems as well as the possibilities and limitations in them were mentioned by several interviewees in this research. In addition, the possibilities provided by the new ERP system impacted the case company´s willingness to commission this research. Thus, the viewpoint of data and different systems could provide an interesting basis for researching the analysis and estimation of accounting entries for FX derivatives. Based on this research, conducting a research focusing on the data and systems used for the analysis and estimation would be justified and needed. The possibilities for an exact research topic from this viewpoint are vast.

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APPENDIX 1: INTERVIEW FRAME IN ENGLISH

1. What is your role in analysing FX hedges?
2. How extensive is your experience in analysing FX hedges?
3. Which items are hedged from FX risk in this firm?
4. What is the purpose of hedging these items?
5. What entries in different financial statements do you expect from
    - derivatives that are not subject to hedge accounting?
    - derivatives that are subject to hedge accounting?
6. At what point in the hedging process do these entries occur?
7. Do you recognize any “blind spots” in the process of hedging? If so, where? Do these blind spots cause entries?
8. Which entries do you consider important to analyse?
9. Does this firm have any practices in use for analysing entries for FX hedges? If so, what are they? If not, why not?
10. How important do you consider the analysis of these entries?
11. How do you see the role of management accounting professionals in the analysis of entries for FX hedges?
12. How frequently, in your opinion, should the entries be analysed?
13. Who do you see benefiting from better analysis (the main users of more detailed information)?
14. What kind of information do you think these parties would benefit from?
15. Do you identify any other needs for analysing entries for FX hedges that have not yet been brought up?
16. Which entries for FX hedges do you think can be estimated?
17. What information is needed so that these entries could be estimated?
18. Which factors do you see as disruptive in terms of estimating these entries?
19. How do you assess management accounting professionals´ possibilities for estimation?
20. Is there something else that should be noted in this research?

APPENDIX 2: INTERVIEW FRAME IN FINNISH

1. Mikä on roolisi valuuttasuojien analysoinnissa?
2. Kuinka laaja kokemus sinulla on valuuttasuojien analysoinnista?
3. Mitä kohteita suojataan valuuttariskiltä tässä yrityksessä?
4. Mikä on näiden kohteiden suojaamisen tarkoitus?
5. Mitä kirjauksia odotat eri tilinpäätösraporteille
    - johdannaisista, joihin ei sovelleta suojauslaskentaa?
    - johdannaisista, joihin sovelletaan suojauslaskentaa?
6. Missä vaiheessa suojausprosessia nämä kirjaukset aiheutuvat?
7. Tunnistatko suojausprosessissa “sokeita pisteitä”? Jos kyllä, missä? Aiheuttavatko nämä sokeat pisteet kirjauksia?
8. Mitkä kirjaukset katsot tärkeiksi analysoida?
9. Onko tässä yrityksessä käytössä käytänteitä valuuttasuojien aiheuttamien kirjausten analysointiin? Jos kyllä, mitä ne ovat? Jos ei, miksi ei?
10. Kuinka tärkeänä pidät näiden kirjausten analysointia?
11. Millaisena näet johdon laskennan ammattilaisten roolin valuuttasuojauksista aiheutuvien kirjausten analysoinnissa?
12. Kuinka usein näitä kirjauksia tulisi mielestäsi analysoida?
13. Kenen näet hyötyvän paremmasta analysoinnista (yksityiskohtaisemman tiedon pääasialliset käyttäjät)?
14. Millaisesta tiedosta uskoisit näiden ryhmien hyötyvän?
15. Tunnistatko muita tarpeita valuuttasuojausten aiheuttamien kirjausten analysointiin, joita ei ole vielä tuotu esiin?
16. Mitä valuuttasuojauksista aiheutuvia kirjauksia uskot voitavan estimoida?
17. Mitä tietoa tarvitaan, jotta näitä kirjauksia voisi estimoida?
18. Mitkä tekijät näet häiritsevinä näiden kirjausten estimoinnin kannalta?
19. Millaisiksi arvioit johdon laskentatoimen ammattilaisten mahdollisuudet estimointiin?
20. Tulisiko tässä tutkimuksessa ottaa huomioon jotain muuta?