

# **The Effect of Founder Family Influence on Hedging and Speculation: Evidence from Danish, Medium-Sized, Manufacturing Firms**

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Tom Aabo\*, Jochen Kuhn\*\*, and Giovanna Zanotti\*\*\*

## **Abstract**

We investigate the effect of founder family influence on hedging and speculation in medium-sized, manufacturing firms in Denmark. On a crude measure of use / non-use of foreign exchange rate, interest rate, and commodity price derivatives we find only a weak indication of differences between founder family firms (firms in which the founder of the firm or members of his/her family are active in the management team, are present in the board of directors, and/or are shareholders of the firm) and other firms. Digging deeper into a subsample of users of foreign exchange derivatives and/or debt denominated in foreign currency, we find that founder family firms not only tend to hedge more extensively, they also tend to speculate more often than other firms. This surprising result is in line with founder families' lack of monetary diversification and their non-pecuniary investment in the firm (hedging) and in line with strands of the behavioral finance literature that emphasizes the better-than-average effect and self-serving bias (speculation). The results of the study are important 1) because the interaction between founder family influence and risk management has received limited attention in the literature and 2) because the founders or the founders' families or heirs control most of the firms in the world.

*Keywords:* Founder Family Firms, Hedging, Speculation, Medium-Sized Firms

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\* Aarhus School of Business, University of Aarhus, Fuglesangs Allé 4, DK 8210 Aarhus V, Denmark. Phone: +45 89 48 62 25. Fax: +45 8948 6660. E-mail: [taa@asb.dk](mailto:taa@asb.dk).

\*\* Group Finance, A.P. Moller - Maersk A/S, Esplanaden 50, 1098 Copenhagen K, Denmark. Phone: +45 3363 3628. Fax: +45 3363 3338. E-mail: [jochen.kuhn@maersk.com](mailto:jochen.kuhn@maersk.com).

\*\*\* SDA Bocconi, via Bocconi 8, 20135 Milano, Italy and Bergamo University, via Dei Caniana 2, 24127 Bergamo, Italy. Phone: +39 0258365953, Fax: +39 0357365920. E-mail: [giovanna.zanotti@unibocconi.it](mailto:giovanna.zanotti@unibocconi.it)

## 1. Introduction

The founders and the founders' families or heirs control most of the firms in the world (Burkart, Panunzi and Shleifer (2003)). This founder family influence mitigates the classic owner-manager conflict described by Berle and Means (1932) and Jensen and Meckling (1976). Founder families have substantial wealth at risk and tend to be more risk averse than non-family counterparts (Agrawal and Nagarajan, 1990). Furthermore, founder families regard the investment in the firm not just as a monetary investment but also as an investment in the reputation of their family (Anderson and Reeb, 2003a). However, founders (or their relatives) are individuals for whom Adam Smith (1776) notes tend to overestimate their own abilities and good fortune<sup>1</sup>. The better-than-average effect (Svenson, 1981) and self-serving bias (Miller and Ross, 1975) documented in the behavioral oriented finance literature (for a review see Subrahmanyam, 2008) may lead founder families to behave in a risk-seeking manner.

**The purpose of this study is to empirically investigate the effect of founder family influence on risk management in medium-sized manufacturing firms.** We investigate founder family influence in the form of managers, board of directors, and/or ownership. We investigate the effect of founder family influence on the usage / non-usage of exchange rate, interest rate and commodity price derivatives for the full sample of firms and we investigate the effect of founder family influence on the extent of foreign exchange rate hedging and speculation for a sub-sample of firms.

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<sup>1</sup> Adam Smith (1776) notes: "The overweening conceit which the greater part of men have of their own abilities is an ancient evil remarked by the philosophers and moralists of all ages. Their absurd presumption in their own good fortune has been less taken notice of. It is however, if possible, still more universal."

We focus on founder family influence because founder family influence is a common and global phenomenon. We focus on risk management because the interaction between founder family influence and risk management has received limited attention as opposed to the interaction between founder family influence and performance. We focus on medium-sized, non-listed firms because this group of firms has received limited attention (due to data constraints).

Following the reasoning of Graham, Harvey and Campbell (2001) we use the survey approach in order to balance between the benefits and problems of large sample analyses and clinical studies. Thus, we obtain and use information that would not be accessible in traditional, large sample analysis and, at the same time, we do not restrict ourselves to clinical studies that tend to produce unique results based on very small samples. Our results are based on a survey of medium-sized, manufacturing firms in Denmark and the responses of 215 such firms.

The results of the study show that the decision on usage / non-usage of foreign exchange, interest rate, and commodity price derivatives are only modestly affected by founder family influence. The usage / non-usage distinction is a crude measure and we investigate the relation between founder family influence and risk management more thoroughly by narrowing our focus to exchange rate risk and the firms that do use derivatives and/or debt denominated in foreign currency (foreign debt) to manage exchange rate exposures. Based on this subsample of firms, we find a marked and positive relation between being a founder family firm and the extent of hedging as well as speculation.

Our results confirm the traditional arguments for hedging by protecting under-diversified and non-pecuniary investors but also confirm the psychological aspect of overconfidence and good luck. At first glance, increasing hedging and increasing speculation at the same time seems a contradiction.

By including arguments from both the traditional finance literature as well as from the more behaviorally oriented finance literature, such contradiction loses its firm stance.

Our study is related to Anderson and Reeb (2003b) who investigate the relationship between founding family ownership and risk aversion in the U.S. for S&P 500 Industrial firms. Surprisingly, they find that family firms are less diversified. In terms of capital structure decisions they find no significant difference. Andersen and Reeb do not address the question of derivatives usage or foreign exchange risk management. In that respect our study is more narrowly related to Schmid, Ampenberger, Kaserer, and Achleitner (2008) who analyze publicly listed non-financial firms in Germany and the effect of family firms on among other things the use of currency hedging instruments. Schmid, Ampenberger, Kaserer, and Achleitner find that family firms are less likely to use currency hedging instruments. Our study differs from the above mentioned studies in three important ways: 1) we analyze medium-sized firms; 2) we analyze foreign exchange as well as interest rate and commodity price derivatives usage; 3) we go beyond the crude measure of usage / no usage and differentiate between the hedging and the speculation purpose.

Our study is structured as follows. The next section gives a short overview of the literature on risk management and founder family influence. The third section states the methodology of the study. The fourth section gives an overview of the founder family influence in our sample firms and provides descriptive statistics. The fifth section analyses the relation between founder family influence and the usage / non-usage of derivatives. The sixth section analyzes the relation between founder family influence and the extent of foreign exchange hedging and speculation. The seventh section explores the implications of various founder family firm definitions. The last section concludes.

## 2. Risk Management and Founder Family Influence

In this paper we investigate the influence of founder family on risk management. There is an extensive literature on the influence of family control on corporate performance<sup>2</sup>. Limited attention has so far been dedicated to the interaction between family control and risk management activities. Two exceptions are Anderson and Reeb (2003b) and Schmid, Ampenberger, Kaserer, and Achleitner (2008).

Most of the empirical literature on risk management focuses on the study of the way risk management can add value to firms and the way firms should be involved in risk management activities. In a context of market imperfections, risk management adds value because it increases firms' future cash flows. Levy and Sercu (1991) find that hedging reduces the costs of financial distress and augment future cash flows when product, labor and capital markets are imperfect. Froot, Scharfstein, and Stein (1993) show that in a context of imperfect capital markets, hedging increases the firm's ability to make value-adding investments. Smith and Stulz (1985) and Leland (1998) show that hedging leads firms to improve their debt capacity and take advantage of the interest rate tax-shield. Finally, hedging may reduce the risk of stakeholders' firm specific investments (Wang, Barney, and Jeffrey, 2003) and thus ultimately increase shareholders' firm value.

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<sup>2</sup> Among others Anderson and Reeb (2003a), Miller, Breton-Miller, Lester, and Cannella (2007), and Villalonga and Amit (2006) on the US; Cronquist and Nilson (2003) on Sweden; Gorriz and Fumas (2005) on Spain; Andres (2008) on Germany; and Barontini and Caprio (2008) on Europe.

Founder family firms are important economic objects. Burkart, Panunzi and Shleifer (2003) show that founders or the founders' families control most of the firms in the world. La Porta, Lopez and Shleifer (1999) find that the existence of a large shareholder (often a family) is a widespread phenomenon even among listed firms. There is an extensive literature on the differences between family firms and non-family firms. Founding families tend to hold large and non-diversified equity positions. Thus, family shareholders have significant wealth at risk and classical portfolio theory which states that shareholders can diversify the firm specific risk within their portfolio may not hold for families. As a consequence family controlled firms have an incentive to reduce risk beyond the optimal level of risk reduction for non-family firms. Furthermore, founding families consider the investment in the firm not just as a monetary investment but also as an investment in their reputation (Anderson and Reeb, 2003a). This further explains why family firms tend to be more risk averse than equivalent non-family firms and why they tend to have a longer term management approach (Lavery, 1986). Another difference between family and non-family firms is related to monitoring activities: founder families have higher incentives to effectively monitor the management team and mitigate the classical management-shareholders agency problem that characterize public firms (Grossman and Hart, 1980; Shleifer and Vishny, 1986). The management of family firms is driven not only by economic reasoning but also by family and emotional relations (Gomez-Mejia, Nunez-Nickel, and Gutierrez, 2001), and by family values and cultural influence (Bertrand and Schoar, 2006).

In this study we investigate whether founder family firms differ from other firms in terms of risk management activities. As explained above, founder families' lack of monetary diversification and large non-pecuniary investment in the firm are supposed to lead to more risk aversion and more

extensive hedging activities (and less speculation)<sup>3</sup>. In more broad risk management terms, Anderson and Reeb (2003b) find that family firms among large U.S. industrial firms are *less* diversified and have the same capital structure as other firms. Andersen and Reeb do not address the question of derivatives usage or foreign exchange risk management. Schmid, Ampenberger, Kaserer, and Achleitner (2008) analyze publicly listed non-financial firms in Germany and the effect of family firms (ownership and management participation of the founding family) on business segment / geographical diversification and the application of currency hedging instruments. Schmid, Ampenberger, Kaserer, and Achleitner find that family firms are less likely to use currency hedging instruments and they suggest that this finding is driven more by the founding family being active in the management team than by the size of the founding family's ownership stake in the firm.

In this study we investigate not only whether founder family firms differ from other firms in terms of hedging but also in terms of speculation. Stulz (1996) argues that speculation can be rational for firms only in two cases: financially distressed firms near to bankruptcy and firms that are major players in a market and have access to superior information<sup>4</sup>. In other cases speculation increases cash flows volatility and reduce firm value. Despite this theoretical framework, empirical evidence shows that many managers make their hedging choices based on their own view of market variables (Stulz, 1996). The majority of managers of a sample of Fortune 500 firms incorporate their own expectations on hedging choices (Dolde 1993). The same conclusions are reached by Bodnar, Hayt and Marston (1998) on a sample of 399 U.S. non-financial firms and Glaum (2002) on a sample of

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<sup>3</sup> However, lower agency costs in family firms may lead to a lower use of techniques for smoothing income and as a consequence to less hedging Schmid, Ampenberger, Kaserer, and Achleitner (2008) relate this topic to German family firms that are less likely to use foreign exchange derivatives.

<sup>4</sup> Brown, Crabb and Haushalter (2006) analyze corporate risk management policies of 44 gold mining firms - major players in a market and potential holders of superior information - and find that these firms successfully attempt to time market prices via adjusting hedge ratios. However, the economic gains are limited and no evidence suggests that this selective hedging leads to superior performance.

74 German non-financial firms. The phenomenon of overconfidence and good luck (Smith, 1776) may sustain such speculative activities.

Thus, empirically there is overwhelming evidence that managers in large listed firms do incorporate their own expectations (= speculate). In accordance with the agency theory, we would expect a dominating founder family shareholder to reduce such speculation as this shareholder realizes that speculation is a value reducing activity (at least when it is done by others) and at the same time has the economic motivation and strength to monitor and control the speculating manager. Aabo (2007) finds that individual-owners (often the founder or a descendant of the founder) tend to reduce the extent of foreign exchange speculation in a sample of 52 Danish non-financial, listed firms. However, in relation to medium-sized, non-listed firms the effect of such founder family influence is less clear. On the one hand we may expect to find the same speculation reducing effect as in the case of larger, listed firms in line with the arguments in the traditional finance literature. On the other hand we may expect to find a speculation enhancing effect in line with the arguments in the more behaviorally oriented finance literature because founding family members in these medium-sized firms will have a much more direct influence on the speculation activities in which case the overconfidence / good luck factors may dominate the more rational concerns.

Behavioral finance allows for explanations of financial phenomena based on non-rational behavior. Including behavioral finance is particularly useful when theories based on rational utility maximizers fail to fit empirical evidence. Thus, Subrahmanyam (2008) argues that there is a strong case to build upon theories that are consistent with empirical evidence rather than theories based on rational economics whose empirical support is quite limited.



Two main factors are prominent in leading to a potential increase in speculation activities in founder family firms as opposed to other firms: the better-than-average effect and the self-serving bias. The better-than-average effect implies that individuals tend to overstate their skills relative to a reference group. In a classic study Svenson (1981) shows how a majority of individuals in two groups regard themselves as more skillful and less risky than the average driver in each group respectively. The self-serving bias implies that individuals tend to take credit for success and deny responsibility of failures. A meta-study by Miller and Ross (1975) finds that people tend to attribute own success to internal factors such as knowledge and skills rather than external factors such as sheer luck. An example of such psychological mechanisms in a financial context is the case of CEO overconfidence and corporate investment as argued by Malmendier and Tate (2005).

Further enhancing the potential for currency speculation in founder family firms is the phenomenon of reference group neglect. Camerer and Lovallo (1999) suggest that excess firm entry decisions by individuals are much larger when the individuals know that payoffs depend on skill. Thus, the individuals seem to neglect that they are competing with a reference group composed of individuals that all think they are skilled. This reference group neglect is particularly important in our context of founders / heirs in medium-sized firms competing with skilled and resourceful personal in large financial institutions. As noted by Brown, Crabb, and Haushalter (2006) non-financial firms are unlikely to have superior information in the highly liquid markets for foreign exchange.

### 3. Methodology of study

This study is based on public information from WEB-DIRECT<sup>5</sup> and on responses to questionnaires sent to Danish, medium-sized, manufacturing firms. Denmark is a small, open economy with a currency of its own. Denmark is a long time member of the EU and the Danish Krone (DKK) is pegged to the Euro. Denmark's three main trading partners are Germany, Sweden, and the U.K.

We focus on Danish firms; that is we exclude firms that are subsidiaries of foreign firms<sup>6</sup>. We focus on medium-sized firms; we define medium-sized firms as firms fulfilling two criteria: 1) a balance sheet total of between DKK 50 million and DKK 500 million (EUR 6.7 million – EUR 66.7 million) and 2) a number of employees between 20 and 499<sup>7</sup>. We focus on manufacturing firms; we select firms with a NACE<sup>8</sup> industry code beginning with the letter “D”<sup>9</sup>. Furthermore, we restrict the population of firms to unlisted firms that are private limited companies<sup>10</sup> with accounting numbers available. The total number of firms in our population is 771 firms.

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<sup>5</sup> WEB-DIRECT is a comprehensive database from Experian A/S containing information on Nordic firms. In a Danish setting the database contains information on some 630,000 Danish firms. Information from WEB-DIRECT was obtained in 2007 covering accounting information from 2005.

<sup>6</sup> We furthermore exclude firms from Greenland and the Faeroe Islands.

<sup>7</sup> The European Commission defines medium-sized firms as firms that have a headcount of between 50 and 249 employees, and either a turnover of between EUR 10 million and EUR 50 million or a balance sheet total of between EUR 10 million and EUR 43 million. As can be seen, our definition of medium-sized firms is somewhat broader in both ends. We exclusively use figures on balance sheet total as almost half of our target firms do not report figures for their turnover.

<sup>8</sup> WEB-DIRECT employs the NACE code (Statistical Classification of Economic Activities in the European Community), which is a comparable and equivalent industry classification system as the American NAICS code (North American Industry Classification System).

<sup>9</sup> NACE divides industries into 17 main categories: (A) Agriculture, hunting and forestry; (B) Fishing; (C) Mining and quarrying; (D) Manufacturing; (E) Electricity, gas and water supply; (F) Construction; (G) Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods; (H) Hotels and restaurants; (I) Transport, storage and communication; (J) Financial intermediation; (K) Real estate, renting and business activities, consulting; (L) Public administration and defence; compulsory social security; (M) Education; (N) Health and social work; (O) Other community, social and personal service activities; (P) Activities of households; (Q) Extra-territorial organizations and bodies. We focus on (D) Manufacturing. The classification has recently been changed but the above classification was due during the data collection period.

<sup>10</sup> This corresponds to the Danish firm types “A/S” (“Aktieselskab”) and “ApS” (“Anpartsselskab”).

These firms were contacted in 2007 via email<sup>11</sup> and asked to complete an online, web-based questionnaire. The questionnaire was divided into three parts of which the first two parts relate to the present study. The questions in the first and second part of the questionnaire are shown in the Appendix. 215 firms responded to the first part of the questionnaire reaching an overall response rate of 27.9 percent. Of these 215 firms, 62 firms responded to the second part of the questionnaire which was intended exclusively for the firms that use derivatives or foreign debt to manage exchange rate exposures at least to some extent (please refer to the Appendix to see the structure of the Questionnaire).

Table I reports descriptive statistics for our sample firms. Our average sample firm has total assets of DKK 148 million (EUR 20 million), a gross profit divided by total assets of 39 percent, an equity ratio of 36 percent, a R&D ratio of 4.1 percent, and an export ratio of 48 percent. Our median sample firm has total assets of DKK 108 million (EUR 14 million), a gross profit divided by total assets of 35 percent, an equity ratio of 33 percent, a R&D ratio of 3.0 percent, and an export ratio of 50 percent.

\* Please insert Table I approximately here \*

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<sup>11</sup> Email addresses were obtained from the WEB-DIRECT database, and verified and completed, where necessary, by web search on the firms' internet homepages. For four firms no email address could be found and no attempt was made to contact those firms by alternative means. Firms were contacted initially by email to ask for the contact details of the financial manager. These emails were addressed to the common firm email address such as company@company.dk or info@firm.dk. These two first contact attempts were answered either positively by responding with the name and email address of the financial manager or negatively by either expressing that the firm did not want to take part in a survey or by not answering at all. At the same time, the firms' internet web pages were searched for usable contact details of the financial manager. The next contact approaches consisted of sending the survey link to the firms. The link to the online survey was directed directly to the financial manager when available. Otherwise, the email was directed to the firm's usual email address with the request of forwarding it to the financial manager. Firms that did not respond or that responded to the last request were contacted at least five times (including the initial contact emails).

The average firm in the population (771 firms) has total assets of DKK 135 million, a gross profit / total assets ratio of 40 percent, and an equity / total assets ratio of 36 percent. Tests for equality of means between the population firms and the sample firms show (not reported) that only the difference in means for total assets is significantly different from zero (at the 10 percent level). Thus, apart from the sample firms being marginally larger than the firms in the population, our sample firms seem to be representative for the population of medium-sized, manufacturing firms in Denmark. Subsequent regression analysis is performed using binary probit regression analysis, ordinary least squares regression analysis, and ordered probit regression analysis<sup>12</sup>.

#### **4. Founder Family Influence in Sample Firms**

This section illustrates the founder family influence in our sample firms and conducts univariate analysis on mean differences between founder family firms and other firms. Table II illustrates the founder family influence in our sample firms across three different measures of family influence: 1) active in the management team, 2) present at the board of directors, and 3) shareholder of the firm.

\* Please insert Table II approximately here \*

Table II shows that there are two dominating combinations of founder family influence. Thus, 87 firms (42%) are firms in which the founder family is active in the management team, is present at

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<sup>12</sup> Two regression analyses are performed with limited dependent variables (binary and ordered). Standard introductory discussion of these models can be found in Greene (2003). In the binary model, the dependent variable may take on only two values, 0 or 1. In the ordered model, the dependent variable may take on a number of ordered or ranked values, in this case 1, 2, 3, 4, and 5. Estimation is undertaken by maximum likelihood. Our models are binary or ordered probit models as opposed to logit models. The difference between the two approaches concerns the distribution of the error term, normal versus logistic. The interpretation of the coefficient values in the binary and the ordered model is complicated by the fact that the estimated coefficients cannot be interpreted as the marginal effect on the dependent variable. However, the direction of the effect is less ambiguous. Interpretation difficulties for probit and logit models are described in Hoetker (2007), among others.

the board of directors, *and* is a shareholder of the firm while 35 firms (17%) are firms in which the founder family is *not* active in the management team but is present at the board of directors and is a shareholder of the firm. All in all 136 firms (66%) experience some kind of founder family influence. We define these firms as Founder Family Firms (“*FF Firms*”). These firms are firms in which the founder of the firm or members of his/her family are active in the management team of the firm, are present in the board of directors of the firm, *and/or* are shareholders of the firm. This leaves behind 71 firms (34%) in which the founder of the firm or members of his/her family have no influence on the firm in terms of being active in the management team, being present in the board of directors, or being a shareholder. Further elaborating on the founder family influence, Table II shows that 95 firms (46%) are founder family *manager* firms in which the founder of the firm or members of his/her family are active in the management team of the firm; 124 firms (60%) are founder family *director* firms in which the founder of the firm or members of his/her family are present in the board of directors of the firm; and 132 firms (64%) are founder family *shareholder* firms in which the founder of the firm or members of his/her family are shareholders of the firm.

Table III reports univariate analysis on differences in mean values of variables between the 136 Founder Family Firms (FF Firms) and the 71 Other Firms. Table III shows that founder family firms are significantly smaller (Total Assets and TA) than other firms. This is consistent with the normal lifecycle of a firm. When the firm is fairly small, it is sufficient with capital and skills provided by the founder and his family. Once the firm grows, it needs capital and skills from outside the ranges of the founder family. The life cycle pattern is also a reasonable explanation why founder family firms tend to have less equity and more debt (EQTA) than other firms. In order to keep in control the founder family prefers to leverage the firm to a point beyond the optimal capital structure – optimal from a purely financial point of view. In terms of profitability (GPTA), research

& development (RD), and export (EXPORT) there is so significant difference between founder family firms and other firms.

\* Please insert Table III approximately here \*

Table IV reports correlation coefficients for our sample firms for variables used in subsequent regression analysis. Although some of the variables are significantly correlated, none of the correlations exceed 0.30 in absolute terms.

\* Please insert Table IV approximately here \*

## **5. Founder Family Firms and Derivates Usage / Non-Usage**

This section analyzes the effect of founder family influence on the usage / non-usage of foreign exchange derivatives, interest rate derivatives, and commodity price derivatives among our sample firms. Table V reports findings on the usage / non-usage of foreign exchange, interest rate, and commodity price derivatives among our sample firms taken as a whole and divided into founder family firms and other firms.

\* Please insert Table V approximately here \*

Table V shows that among the users of derivatives three groups of firms stand out. Thus, 38 firms (18%) use foreign exchange and interest rate derivatives, 33 firms (16%) only use foreign exchange derivatives, and 20 firms (10%) only use interest rate derivatives. All in all 112 firms (54%) use

foreign exchange derivatives, interest rate derivatives, and/or commodity price derivatives. This leaves behind 95 firms (46%) that do not use any of these three types of derivatives. Distinguishing between founder family firms and other firms, Table V shows that the proportion of derivatives users among founder family firms is marginally higher (57%) than the proportion of derivatives users among other firms (49%).

Further elaborating on the usage / non-usage of derivatives, Table V shows that 85 firms (41%) are exchange rate derivatives users, 70 firms (34%) are interest rate derivatives users, and 21 firms (10%) are commodity price derivatives users. The modest use of commodity price derivatives is in contrast to the perceived importance of commodity price risks among our sample firms<sup>13</sup>. While there is no difference between the proportions of exchange rate derivatives users in founder family firms and in other firms (both 41%), the proportion of interest rate derivatives users and the proportion of commodity price derivatives users are higher among founder family firms (38% and 12%) than among other firms (25% and 7%).

Our main interest in relation to the usage / non-usage of derivatives is the effect (if any) of founder family influence. Table V generally showed no effect from founder family influence on foreign exchange derivatives usage but a positive effect on interest rate derivatives and commodity price derivatives usage. However, the results of Table V may be a result of differences in size and/or capital structure between founder family firms and other firms as shown in Table III. In order to control for such interdependencies we employ a multivariate regression analysis in Table VI.

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<sup>13</sup> Responses to Question 6 in the Questionnaire (for the sake of brevity not reported) show that 47 percent of our sample firms find that foreign exchange risk is important or very important to their firms' operations. The corresponding numbers for interest rate risk and commodity price risk are 28 percent and 55 percent. Especially in relation to commodity prices there is a discrepancy between the perceived importance of commodity price risk and the very limited use of commodity price derivatives. One of the reasons for this discrepancy is likely to be a lack of targeted financial derivatives to cope with the vast line of commodity price exposures that face manufacturing firms as opposed to the well-developed OTC market for foreign exchange and interest rate contracts.

Based on the risk management literature and economic intuition we expect the relations listed below between the independent variables and the use of derivatives. Although we do not (yet) distinguish between different purposes of derivatives usage, our arguments below will follow the traditional reasoning in the risk management literature and focus on hedging arguments. For the sake of brevity we refer to the literature on exchange rate derivatives but generally similar reasoning (except for the export ratio) is valid for interest rate and commodity price derivatives.

1) Either a *positive* relation between the size of the firm (TA) and the use of foreign exchange derivatives based on the economies of scale argument or a *negative* relation based on the financial distress argument (small firms have disproportionately high financial distress costs). Nance, Smith, and Smithson (1993) find that firms with economies of scale in hedging activities are more likely to use foreign exchange derivatives.

2) A *negative* relation between the profitability (GPTA) of the firm and the use of foreign exchange derivatives based on the financial distress argument (profitable firms do not need to hedge as they have financial slack). Géczy, Minton, and Schrand (1997) find that firms with tighter financial constraints are more likely to use foreign exchange derivatives.

3) A *negative* relation between the solvency ratio (EQTA) of the firm and the use of foreign exchange derivatives based on the financial distress argument (solid firms in a capital structure sense do not need to hedge as they have financial slack). Nance, Smith and Smithson (1993) note that altering the debt-equity ratio is a substitute to the use of financial derivatives. Géczy, Minton, and Schrand (1997) find that firms with tighter financial constraints are more likely to use foreign exchange derivatives.



4) Either a *positive* relation between R&D expenses (RD) and the use of foreign exchange derivatives based on the growth option argument<sup>14</sup> (firms with high R&D expenses have growth options that they want to be sure to be able to finance in the future) or a *negative* relation based on the uncertainty argument (the more the value of a firm is tied to growth options as opposed to assets in place, the more uncertain the future cash flows, and the more likely it is that what was intended to be a hedge turns into a speculation because the underlying business rational disappears). Géczy, Minton, and Schrand (1997) find that firms with greater growth opportunities are more likely to use foreign exchange derivatives.

5) A *positive* relation between the export ratio (EXPORT) of the firm and the use of foreign exchange derivatives based on the exposure argument. Allayannis and Ofek (2001) find that the level of derivatives used is positively related to the firm's exposure through foreign sales and trade.

6) A *positive* relation between being a founder family firm (FF FIRM) and the use of derivatives based on the lack-of-diversification argument (Agrawal and Nagarajan, 1990) and the reputation of their family argument (Anderson and Reeb, 2003a).

The following binary probit regression is analyzed:

$$DERUSE_i = C_i + \lambda_1 TA_i + \lambda_2 GPTA_i + \lambda_3 EQTA_i + \lambda_4 RD_i + \lambda_5 EXPORT_i + \lambda_6 FFFIRM_i \quad (1)$$

where:

*DERUSE* is a binary variable coded as 1 if the firm is a user of derivatives and 0 otherwise (responses to Question 7). Depending on the model the use of derivatives is related to the use of foreign exchange derivatives, interest rate derivatives, and/or commodity price derivatives. In Model 5 *DERUSE* is an ordered variable.

*C* is a constant.

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<sup>14</sup> Our sample consists of unlisted firms. Thus, we cannot use Tobin's Q that has been used in earlier studies (e.g. Guay and Kothari, 2003; Kedia and Mozumdar, 2003) as a proxy for a firm's growth opportunities.

<i>TA</i>	is the logarithm of total assets of the firm.
<i>GPTA</i>	is the gross profit of the firm divided by the total assets of the firm.
<i>EQTA</i>	is the equity of the firm divided by the total assets of the firm.
<i>RD</i>	is the R&D expenses in percent of the turnover of the firm (responses to Question 4; midpoints of intervals and a max. of 30 percent used).
<i>EXPORT</i>	is the percentage of the firm's consolidated operating revenues in foreign currency (responses to Question 1; midpoints of intervals used).
<i>FF FIRM</i>	is a dummy coded as 1 if the founder of the firm or members of his/her family are active in the management team, are present in the board of directors, and/or are shareholders and coded as 0 otherwise (responses to Question 5a).

Table VI reports results of a binary regression analysis on the use of derivatives among our sample firms. The dependent variable is a binary variable coded as 1 if the firm is a user of foreign exchange (Model 1), interest rate (Model 2), commodity price (Model 3), foreign exchange, interest rate, or commodity price (Model 4) derivatives respectively and 0 otherwise (responses to Question 7).

\* Please insert Table VI approximately here \*

Table VI confirms our immediate observations from Table V in relation to the founder family influence on the usage / non-usage of various derivatives. Only in the case of interest rate derivatives does the founder family influence seem to matter in a statistically significant way. Thus, the coefficient for FF Firm is statistically significant at the five percent level. The coefficient for FF firm is also positive in relation to the use of commodity price derivatives but not significantly so.

In relation to the other independent variables, we first find a positive relationship between size (TA) and derivatives usage in line with the economies of scale argument. This relationship is only statistically significant in the case of interest rate derivatives usage. In relation to our profitability measure (GPTA) we get mixed directions but a positive (and significant) relation in the case of interest rate derivatives usage going against the financial distress argument. In relation to our equity ratio measure (EQTA), the coefficients are consistently negative thus confirming our financial distress argument but only significantly so in the case of commodity price derivatives. We get mixed directions for our R&D measure (RD) but a statistically significant positive relation in the case of commodity price derivatives thus confirming our growth option argument. Apart from the fact that commodity prices tend to be very volatile, we see no reason why the growth option argument should be particularly relevant in the case of commodity price derivatives usage.

The degree of export (EXPORT) is strongly correlated with foreign exchange derivatives usage. This is in line with the empirical literature and economic intuition. It is more surprising that the degree of export also seem to be highly correlated with interest rate derivatives usage. We see two explanations for this: 1) Once firms use foreign exchange derivatives because of export, the barrier for using interest rate derivatives is lowered (as opposed to a situation where the firm has never used derivatives before), and/or 2) once firms export they are also more inclined to use foreign debt and get exposed to foreign interest rates thus increasing the need for interest rate derivatives. Model 5 in Table VI is in line with the former reasoning. The dependent variable in Model 5 is an ordered variable coded as 0, 1, 2, or 3 dependent on how many different kind of derivatives the firm uses. In this model the FF Firm dummy is significant at the 10 percent level. This is the first indication that

we may be dealing with two more or less distinct questions - whether or not to use derivatives and the extent of such use once a decision on use has been made.

In summary, we can say that the above analysis lends only fairly weak support to the hypothesized, positive relation between founder family influence and derivatives usage / non-usage. The weakest support was found in the case of foreign exchange derivatives usage. However, the above analysis was based on a simple usage / non-usage of derivatives distinction. Such a distinction may prove too crude a measure for allowing a decent analysis of the interrelatedness between founder family influence and derivatives usage – as vaguely suggested by Model 5 in Table VI. Furthermore, we were not able to distinguish between alternative purposes for the use of derivatives. These two shortcomings – the use of a simple usage / non-usage measure and the lack of distinction between hedging and speculation – will be addressed for a sub-sample of firms in the next section.

## **6. Founder Family Firms and the Extent of FX Hedging and Speculation**

The purpose of this section is to elaborate on the interrelatedness between founder family influence and derivatives usage and go beyond the crude measure of usage / non-usage of derivatives. The empirical findings of Spanò (2007) in relation to hedging and Géczy, Minton and Schrand (2007) in relation to speculation support the view that 1) whether or not to use derivatives and 2) to what extent derivatives should be used once the fixed costs of derivatives operations have been paid, are two distinct questions. We elaborate by focusing on the use of exchange rate derivatives and debt denominated in foreign currency (foreign debt) and by focusing on the subsample of firms that at least to some extent use derivatives or foreign debt to manage exchange rate exposures. We divide our analysis into an analysis of foreign exchange derivatives and foreign debt used in relation to

hedging and an analysis of foreign exchange derivatives and foreign debt used in relation to speculation. We include foreign debt in the analysis because foreign debt is an important – and in exposure effect terms often indistinguishable - financial element in the management of exchange exposures in line with financial derivatives such as forward contracts and currency swaps<sup>15</sup>. The distinction between a hedging and a speculation motive is only possible because of our survey approach as information on derivatives use in publicly available financial statements is generally too limited to support this distinction.

Table VII reports findings on the extent of foreign exchange (FX) hedging using derivatives and/or foreign debt among the sub-sample of firms that at least to some extent use derivatives or foreign debt to manage exchange rate exposures (the 62 firms that responded to the second part of the Questionnaire). Foreign exchange hedging is divided into five categories of exposures: 1) Transaction Exposure (i.e. contractual commitments, such as payables and receivables), 2) Operating Exposure < 1 year (i.e. future, non-contracted cash flows anticipated to be realized within one year), 3) Operating Exposure > 1 year (i.e. future, non-contracted cash flows anticipated to be realized beyond one year), 4) Operating Exposure Indirect (i.e. indirect exposure caused by competitors that have a different foreign exchange set-up, also called competitive exposure), and 5) Translation Exposure (i.e. an accounting exposure caused by translation of foreign accounts). The extent of hedging is shown for founder family firms (FF Firms) and other firms as well as for the aggregate.

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<sup>15</sup> Whether e.g. a European firm sells forward US dollars against Euro (forward contract) or borrows in US dollars (foreign debt) instead of borrowing in Euro makes no difference in foreign exchange exposure terms. Elliott et al. (2003) analyze a sample of 88 US firms for the period of 1994-1997 and find that foreign debt is used for hedging purposes and that foreign debt substitutes for the use of derivatives in reducing currency risk. Kedia and Mozumdar (2003) examine the determinants of public debt issuance in ten major currencies by large U.S. firms and find strong evidence that firms issue foreign currency debt in order to hedge exchange rate exposures. Furthermore, both methods of hedging are widely used in a Danish context (Aabo, 2006).

\* Please insert Table VII approximately here \*

Table VII shows that founder family firms consistently hedge more than other firms of the various exchange rate exposures. This is in contrast to the non-existing support of a positive relation between founder family influence and exchange rate derivative usage in Table V and Table VI. It seems that once our sample firms have overcome the barrier of using derivatives, firms that are influenced by a founding family choose to hedge more than other firms. Univariate analysis on differences in means and medians show (not reported in a table) that founder family firms hedge significantly (at least at the five percent level) more than other firms in relation to operating exposure within one year, operating exposure beyond one year, and translation exposure but not in relation to transaction exposure and indirect operating exposure.

In order to control for interrelatedness and omitted variable bias, we employ a multivariate regression framework. Table VIII reports results of ordinary least squares regression analyses on the extent of foreign exchange hedging using derivatives and/or foreign debt. The dependent variable is the degree of hedging for the five categories of exchange rate exposures. The following ordinary least squares regression is analyzed:

$$HEDGE PCT_i = C_i + \lambda_1 TA_i + \lambda_2 GPTA_i + \lambda_3 EQTA_i + \lambda_4 RD_i + \lambda_5 EXPORT_i + \lambda_6 FFFIRM_i \quad (2)$$

*HEDGE PCT* is the degree of hedging (responses to Question 13; midpoints of intervals used) for the five categories of exchange rate exposures as explained in Table VII. Thus, the dependent variable in Model 1 is the degree of hedging transaction exposure, the dependent variable in Model 2 is the degree of hedging operating exposure within one year, the dependent variable in Model 3 is

the degree of hedging operating exposure beyond one year, the dependent variable in Model 4 is the degree of hedging indirect operating exposure (competitive exposure), and the dependent variable in Model 5 is the degree of hedging translation exposure. The explanation to the remaining variables in Equation 2 follows the explanation given previously in relation to Equation 1.

\* Please insert Table VIII approximately here \*

Table VIII shows that the coefficients for our founder family firm dummy (FF FIRM) are consistently positive across the five categories of exchange rate exposures. In the case of operating exposure within and beyond one year the coefficients for our founder family firm dummies are significant at the 1 percent level, in the case of indirect operating exposure at the 10 percent level, and in the case of translation exposure at the 5 percent level. The coefficient for our founder family dummy is not statistically significant in the case of transaction exposure.

Table VIII shows that the existence of founder family influence moves the hedging decision towards coverage of a longer time horizon (operating exposure within and beyond one year). Furthermore, Table VIII also shows that founder families tend to move the hedging decision towards a more extensive coverage of the translation exposure<sup>16</sup>.

In relation to the other independent variables, there is no consistent relationship between size (TA) and hedging. This seems to support either that the higher financial distress costs for small firms argument and the economies of scale argument offset each other or alternatively that none of them

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<sup>16</sup> The increased hedging of translation exposure is consistent with the founder family influence on the responses to Question 8 in the Questionnaire (for the sake of brevity not shown) which reported a significant and positive relationship between founder family influence and the aim of reducing accounting earnings volatility (the only such significant relationship detected in relation to Question 8).

are important. All the coefficients for the profitability measure (GPTA) are negative and statistically significant in two cases (transaction exposure and indirect operating exposure) thus confirming the financial distress argument. The coefficients for our equity ratio measure (EQTA), however, do not support the financial distress argument. The direction is dominated by positive coefficients and in the case of operating exposure the coefficient is statistically significant which may be caused by the potential endogeneity of hedging and leverage with respect to financial distress. Concerning our R&D measure (RD), we get mixed directions and no statistically significant coefficients. The coefficients for our export variable (EXPORT) are consistently positive thus supporting the exposure argument. However, only in the case of transaction exposure is the coefficient statistically significant.

Table VII and Table VIII focused on foreign exchange derivatives used for hedging. However, foreign exchange derivatives can be used for two purposes: hedging and speculation. In a corporate risk management perspective, foreign exchange speculation consists of positions based on the firm's own view or forecast of future developments in the foreign exchange markets. There is not consensus in the financial literature on the optimal hedge ratio in a corporate setting (Froot, 1994). As such, any impact of the firm's own view of future exchange rates can be viewed as speculative (Brown, 2001). Bartram, Dufey, and Frenkel (2005) define speculation as an action in view of an explicit or implicit forecast which deviates from the forecast of the market (e.g. forward rates).

Table IX reports findings on the extent of foreign exchange *speculation* using derivatives and/or debt denominated in foreign currency (foreign debt) among the sample of firms that at least to some extent use derivatives or foreign debt to manage exchange rate exposures. In line with the structure of Bodnar, Hayt and Marston (1998) foreign exchange speculation is divided into three categories: 1) alter the timing of a hedge because of own market view of exchange rates, 2) alter the size of a



hedge because of own market view of exchange rates, 3) actively take a position in foreign exchange derivatives or foreign debt because of own market view of exchange rates. The two former categories are in line with the practice called selective hedging by Stulz (1996). The extent of speculation is shown for founder family firms (FF Firms) and other firms as well as for the aggregate.

\* Please insert Table IX approximately here \*

Table IX shows no consistent pattern in relation to founder family influence and the degree of speculation across the three categories of speculation. Thus, the extent of speculation by altering the timing or the size of a hedge is more or less the same for founder family firms and other firms while the extent of speculation in relation to actively taking positions in the foreign exchange market (without underlying business rationale) is consistently more pronounced for founder family firms than other firms.

Géczy, Minton and Schrand (2007) also use the framework of Bodnar, Hayt and Marston (1998). However, Géczy, Minton and Schrand only define a firm as a speculator based on an active position in the currency markets (the last question of the three questions in Table IX). As such, they do not regard answers to the first two questions (timing and size) as properly indicating speculation because it allows for “confusion about whether *not hedging* is a form of speculation”. We continue analyzing all three questions in the multivariate regression framework below keeping in mind that Géczy, Minton and Schrand recommend a sole focus on the latter question.

Table X reports results of an ordered regression analysis on the extent of foreign exchange speculation using derivatives and/or foreign debt. The dependent variable is the frequency of speculation for the three categories of exchange rate speculation and is measured as an ordered variable coded as 1 = never, 2 = seldom, 3 = sometimes, 4 = often, and 5 = very often. The following ordered regression is analyzed:

$$SPECULATIONPCT_i = \lambda_1 TA_i + \lambda_2 GPTA_i + \lambda_3 EQTA_i + \lambda_4 RD_i + \lambda_5 EXPORT_i + \lambda_6 FFFIRM_i \quad (3)$$

*SPECULATIONPCT* is the degree of speculation (responses to Question 14) for the three categories of exchange rate speculation as explained in Table IX. Thus, the dependent variable in Model 1 is the degree of speculation in the form of altering the timing of a hedge because of own market view of exchange rates, the dependent variable in Model 2 is the degree of speculation in the form of altering the size of a hedge because of own market view of exchange rates, and the dependent variable in Model 3 is the degree of speculation in the form of actively taking positions in the foreign exchange market because of own market view of exchange rates. The explanation to the remaining variables in Equation 3 follows the explanation given previously in relation to Equation 1.

\* Please insert Table X approximately here \*

Table X supports the immediate observations from Table IX. The coefficient for our founder family firm dummy (FF FIRM) is only statistically significant in the case of speculation in the form of actively taking positions in the foreign exchange markets. In relation to the other independent variables, only equity ratio (EQTA) and export ratio (EXPORT) show some consistency in sign and

significance. The coefficients for the equity ratio are consistently positive and statistically significant in the case of speculation in the form of actively taking positions in the foreign exchange markets. The positive coefficients are in line with the financial distress argument. The coefficients for the export ratio are consistently positive and statistically significant in the cases of speculation in the form of altering the timing or the size of hedges. This makes intuitive sense since it is not possible to speculate by altering a hedge unless there is an underlying rationale for hedging (export).

These empirical results for Danish, medium-sized, manufacturing firms paint a picture of hedging and speculation as two distinct worlds. While hedging is per definition linked to the underlying business, speculation is exactly done when it is not related to hedging activities and thus the underlying business.

These results may seem surprising when taking into consideration what finance books prescribe about risk management at the top of the corporate ladder. However - and probably more relevant in this context – we are not surprised to see the same person buying insurance against e.g. damage to his/her house in the afternoon while going to the casino (or at least play the lottery) the same evening. Risk aversion is equivalent to a concave utility function in which a person prefers a certain outcome ( $z$ ) to any risky prospect with expected value  $z$ . Buying insurance is regarded by many as a strong evidence of such concavity (Kahneman and Tversky, 1979). However, expected utility theory has come under serious attack as a substantial body of evidence show that decision makers more or less systematically violate its basic tenets thus creating room for alternative perspectives on risk such as prospect theory (Tvesky and Kahneman, 1992). Barberis (2009) show that under cumulative prospect theory it makes sense for people to go to the casino as they use transformed

rather than objective probabilities (overweighting the tails of the distribution). Thus, in spite of loss aversion a person may still be willing to enter a casino that offers only zero expected value bets (e.g. 50:50 bets to win or lose a specified amount) since a person deciding to gamble as long as he/she is winning and to stop gambling if he/she starts accumulating losses will generate a positively skewed distribution of outcomes. The example from the casino is readily transferable to gambling (speculation) in the currency markets<sup>17</sup>.

## **7. Alternative Measures of Founder Family Influence**

In our previous regression analyses we have operated with one particular measure of founder family influence. Thus our distinction between founder family firms and other firms has been whether the founder of the firm or members of his/her family are active in the management team of the firm, are present in the board of directors of the firm, and/or are shareholders of the firm. This may, however, not be the most relevant distinction in relation to the decision process on the use of derivatives for hedging and speculation. For large, listed firms (the preferred object of study in the existing literature) one may argue that the distance from the shareholder and maybe also the director to the actual decisions on hedging and speculation in the finance department is prohibitively long for the founder family influence to really matter. Thus, one may argue that the existence of the founder

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<sup>17</sup> Also regret theory can be applied to currency hedging decisions and supports deviations from the traditional expected utility and loss aversion models. According to Michenaud and Solnik (2008) regret is “a cognitively mediated emotion of pain and anger when agents observe that they took a bad decision in the past and could have taken one with better outcome”. Michenaud and Solnik point out that most models predict a non-participation in currency risk exposure (either a 100 percent hedge of an underlying business exposure or alternatively a non-participation in the currency markets where no underlying business exposure exists) while a model based on regret theory opens up for active participation in the currency markets even without an underlying business rationale. Thus, a regret averse investor will not only look at the actual portfolio but also compare with other portfolios that could have been chosen and as such feel regret based on the ex post best forgone alternative.

family as an active part in the management team is the crucial distinction for founder family influence<sup>18</sup>.

However, we are here dealing with medium-sized and unlisted firms where such reasoning may not be valid due to the shorter distance between e.g. the shareholder and the actual decisions taken in such firms. In order to test the robustness of our previous results and in order to examine the empirical question of the relevant founder family influence distinction, Table XI reports the results of four alternative measures of founder family influence employed in the regression analyses of Table VI, Table VIII, and Table X. For the sake of brevity we only show the results for the coefficients (and their statistical significance) for the alternative measures of founder family influence. That is we do not show the coefficients (and their statistical significance) for the remaining independent variables.

\* Please insert Table XI approximately here \*

Table XI shows in general that the four alternative measures of founder family influence support our previous conclusions. Where ever we found a significant influence from founder family influence using our “old” measure of founder family firms, we also find the same direction of influence from our alternative measures of founder family firms although with varying degrees of significance.

When interpreting the results of Table XI, the restrictions in terms of numbers and overlap that is evident from Table II should be kept in mind. Although we are in principle operating with a total of

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<sup>18</sup> In a performance perspective and analyzing a sample of 275 German exchange listed firms, Andres (2008) finds that a superior performance of family businesses only exists in firms in which the founding family is still active on either the executive or the supervisory board – simple ownership is not sufficient.

five distinct measures of founder family influence, we are in an empirical sense primarily operating with two distinct measures. Thus, there is limited empirical distinction between our 136 founder family firms, our 124 founder family director firms, and our 132 founder family shareholder firms (please refer to Table II). Only very few firms separate these three groups because few firms (only two) have a founder family manager without also having either a founder family director or a founder family shareholder and because fairly few firms ( $0+6+2+4=12$ ) have a founder family director without also having a founder family shareholder or the other way around. Likewise there is limited empirical distinction between our 87 founder family MDS firms (manager, director, *and* shareholder) and our 95 founder family manager firms (please refer to Table II) because only eight ( $0+6+2$ ) firms have a founder family manager while not at the same time having both a founder family director and a founder family shareholder. Thus, we are in an empirical sense primarily distinguishing between 1) a narrowly defined group of founder family firms which has a founder family manager (founder family MDS firms and founder family manager firms) and 2) a more broadly defined group of founder family firms which does not necessarily involve a founder family manager (founder family firms, founder family director firms, and founder family shareholder firms). These general conclusions are also valid when we go from an investigation of the whole sample in Table VI (usage / non-usage of derivatives) to an investigation of the subsample in Table XIII and Table X (foreign exchange hedging and foreign exchange speculation respectively).

Table XI shows that in general the coefficients for the broadly defined group of founder family firms are more significant than the coefficients for the more narrowly defined group of founder family firms. This supports the notion that in the context of medium-sized firms it is not necessary

to be part of the management team of the firm in order to affect the risk management decisions in the firm. Being a shareholder<sup>19</sup> and present at the board of directors is sufficient.

## 8. Conclusions

We analyze the effect of founder family influence on risk management for a representative sample of medium-sized manufacturing firms in Denmark. We investigate the influence from founder family through being active in the management team, through being present in the board of directors, and through being a shareholder of the firm. We focus on medium-sized, non-listed firms - a group of firms that has hitherto received limited attention.

On a crude measure of usage / non-usage of foreign exchange, interest rate, and commodity price derivatives we find only a modest effect from founder family influence (and actually none in the case foreign exchange derivatives usage). Elaborating on the risk management practices of the medium-sized, manufacturing firms in Denmark that do use foreign exchange derivatives or foreign debt, we are able to quantify the extent of derivatives / foreign debt usage and distinguish between the purpose of such usage. We find that once firms do use derivatives and/or foreign debt to manage exchange rate exposures there is a marked and positive relation between being a founder family firm and the extent of hedging in line with the arguments for hedging in the traditional finance literature. However, we also find a marked and positive relation between being a founder family firm and the extent of speculation in the form of actively taking positions in the foreign exchange market. This is in contrast to rational behavior and the hypothesized large risk aversion of founder

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<sup>19</sup> In our sample – and likely to be the case in other samples of medium-sized firms – we find that in the overwhelming majority of cases where the founder or members of his/her family is a shareholder of the firm, the founder or a member of his/her family is the *largest* shareholder of the firm. Thus, out of the 132 founder family shareholder firms in Table II the founder or a member of his/her family is the largest shareholder in 116 (88%) of these firms (responses to Question 5b, for the sake of brevity not shown).

family firms but in line with the more behaviorally based finance literature and thus in line with Adam Smith's words (1776) on men's belief in not only their own skills but also their belief in their good fortune. It seems that this self-confidence and belief in good luck translate into speculation in medium-sized founder family firms because of the short distance between owners, directors and managers in these firms.

The results of the study are important because the majority of firms in the world are influenced by founder families and because the relation between founder family influence and corporate risk management has received limited attention. The results of this study are based on a sample of medium-sized manufacturing firms in Denmark but we expect the results to be transferable to medium-sized firms in other geographical areas. While the extent of e.g. hedging related to exchange rate risk may be lower for firms in more closed economies like the U.S., the general conclusions of this study are expected to hold true. That remains, however, an empirical question to be addressed.



## Appendix

### Part I and II of Questionnaire:

#### I. INTRODUCTION: COMPANY CHARACTERISTICS, FINANCIAL RISKS, AND GENERAL USE OF DERIVATIVES

##### 1. Approximately what percentage of your company's consolidated operating revenues and costs are in foreign currency?

(Please choose the option closest to your estimate)

	0%	1-20%	20-40%	40-60%	60-80%	80-99%	100%
▪ Consolidated revenues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
▪ Consolidated costs	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

##### 2. To how many currencies is your company significantly exposed, and which are the three most important ones?

(Please choose appropriate option)

2a)	0	1-2	3-5	6-9	> 9
▪ Number of currencies significantly exposed to	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

(Please choose one option per row, or write the currency in the field provided)

2b)	€ Euro	\$ Dollar	£ Pound	SEK	NOK	¥ Yen	other
▪ Most important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If other, please state:	Currency 1: _____						
▪ 2 <sup>nd</sup> most important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If other, please state:	Currency 2: _____						
▪ 3 <sup>rd</sup> most important	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
If other, please state:	Currency 3: _____						

##### 3. Does your company have subsidiaries abroad?

(Please choose appropriate option)

	0	1-2	3-5	6-9	> 9
▪ Production subsidiaries abroad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
▪ Sales subsidiaries abroad	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

##### 4. What are your company's expenses for R&D (research & development) as percentage of turnover / total sales?

**Explanation:** This question is used to analyze dependencies between (internal) growth opportunities and risk attitudes.

(Please choose the option closest to your estimate)

	0%	1-5%	5-10%	10-15%	15-20%	20-25%	> 25%
▪ R&D expenses (% of turnover)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

##### 5. What are the characteristics of the management and ownership structure of your company?

(Please choose one option per row)

5a)	Yes	No
	<input type="checkbox"/>	<input type="checkbox"/>

▪ Is the founder of your company or members of his/her family <b>active in the management team</b> of your company?	<input type="radio"/>	<input type="radio"/>
▪ Is the founder of your company or members of his/her family <b>present in the board of directors</b> of your company?	<input type="radio"/>	<input type="radio"/>
▪ Is the founder of your company or members of his/her family <b>shareholder(s) of your company</b> ?	<input type="radio"/>	<input type="radio"/>

<b>5b)</b>	<b>Founder or his/her family</b>	<b>Other person<sup>1</sup></b>	<b>Financial institution<sup>2</sup></b>	<b>Industrial foundation</b>	<b>Other (industrial) firm</b>
▪ Who is the <b>largest shareholder</b> in your company (according to the number of votes)?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

<sup>1</sup> Other person (not founder or member of his/her family)

<sup>2</sup> Financial institution, such as investment or equity funds, or similar financial investors

**6. In general, which financial risks are important to your company's operations?**

(Please choose one option per row)

	<b>Very important</b>	<b>Important</b>	<b>Somewhat important</b>	<b>Less important</b>	<b>Not important</b>
▪ Foreign exchange (FX) risk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
▪ Interest rate risk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
▪ Commodity price risk	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**7. Has your company used derivatives (financial instruments such as forwards, swaps, options, or futures) during the last year? (Forwards = *termiskontrakter* in Danish)**

(Please choose one option per row)

	<b>Yes</b>	<b>No</b>
▪ Foreign exchange (FX) derivatives	<input type="radio"/>	<input type="radio"/>
▪ Interest rate derivatives	<input type="radio"/>	<input type="radio"/>
▪ Commodity price derivatives	<input type="radio"/>	<input type="radio"/>

**→ Please continue with the following 9 questions, if your company is using derivatives or foreign debt to manage exchange rate exposures at least to some extent:**

## II. USE OF DERIVATIVES AND FOREIGN DEBT IN MANAGING FOREIGN EXCHANGE EXPOSURES

**Explanation for Foreign debt:** debt (loans) denominated in another currency than Danish Kroner

**8. What is, according to your company's point of view, the relative importance of each financial objective below when using derivatives or foreign debt to manage foreign exchange exposures?**

(Please choose one option per row)

<i>Classify each objective with:</i>	Very important	Important	Somewhat important	Less important	Not important
▪ Reduce cash flow volatility <b>to maintain stability</b> (avoidance of fluctuations)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
▪ Reduce cash flow volatility <b>to avoid cash shortfalls</b> (worst case elimination)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
▪ Reduce accounting earnings volatility	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
▪ Stabilize market value of the firm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
▪ Managing balance sheet accounts	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
▪ Trading for profit	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
▪ Other reason: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**9. What are your main concerns when considering the use of derivatives or foreign debt for financial risk management purposes?**

(Please choose one option per row)

<i>Classify each reason with:</i>	Very important	Important	Somewhat important	Less important	Not important
▪ Difficulty in <b>quantifying underlying exposure</b> from operations	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
▪ <b>Lack of knowledge</b> about the overall handling of derivatives / foreign debt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
▪ <b>Concerns about accounting treatment</b> , tax implications, and legal issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
▪ Overall costs, such as <b>transaction costs</b> , or <b>administrative costs</b> (e.g. monitoring + evaluating hedging positions)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
▪ <b>Concern about the perception</b> of derivatives / foreign debt by investors and the public	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
▪ Other concern: _____	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**10. How much foreign debt in relation to total debt does your company approximately have?**

(Please choose appropriate option)

	0%	1-20%	20-40%	40-60%	60-80%	80-99%	100%
▪ Foreign debt ratio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**11. In general, do you consider foreign debt as a substitute to the use of derivatives?**

(Please choose appropriate option)

	Yes	No
▪ Foreign debt is a substitute:	<input type="radio"/>	<input type="radio"/>

**12. For foreign exchange risk management purposes, which financial instrument – derivatives or foreign debt – is most important in your company (as measured by net outstanding amount in foreign currency)?**

(Please choose appropriate option)

	Derivatives much more important	Derivatives more important	Both equally important	Foreign debt more important	Foreign debt much more important
▪ Relative importance of derivatives and foreign debt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**13. What percentage of the following types of foreign exchange exposures do you typically hedge using derivatives and foreign debt?**

(Please choose one option per row)

<b>Extent of hedging each FX exposure:</b>	0%	1-20%	20-40%	40-60%	60-80%	80-99%	100%
<b>Transaction Exposure</b> (i.e. contractual commitments, such as payables and receivables)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Operating Exposure</b> (i.e. future non-contracted cash flows)							
▪ Anticipated transactions <1 year (identifiable cash flows)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
▪ Anticipated transactions >1 year (identifiable cash flows)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
▪ Competitive exposure (indirect exposure caused by competitors that have a different FX exposure setup)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<b>Translation Exposure</b> (i.e. translation of foreign accounts, such as equity)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**14. How often does your market view of exchange rates (future price movements) cause you to change your derivative or foreign debt positions?**

(Please choose one option per row)

<b>Impact of market view on hedging positions:</b>	Very often	Often	Sometimes	Seldom	Never
▪ Alter the timing of the hedges	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
▪ Alter the size of the hedges	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
▪ Actively take positions in currency derivatives or foreign debt	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## References

- Aabo T. (2007). The impact of individual-owners on currency speculation: the case of Danish non-financial firms. *International Journal of Managerial Finance* 3, pp. 92-107
- Aabo T. (2006). The Importance of Corporate Foreign Debt in Managing Exchange Rate Exposure in Non-Financial Companies. *European Financial Management* 12, pp. 633-649.
- Agrawal, A. and Nagarajan, N.J. (1990). Corporate Capital Structure, Agency Costs, and Ownership Control: the Case of All-Equity Firms. *Journal of Finance*. 45, pp. 1325-133.
- Allayannis, G. and Ofek, E. (2001). Exchange rate exposure, hedging, and the use of foreign currency derivatives. *Journal of International Money and Finance* 20, 273-296.
- Anderson, R. C. and Reeb, D. M. (2003a). Founding-Family Ownership and Firm Performance: Evidence from the S&P 500. *Journal of Finance* 58, pp.1301-1328.
- Anderson, R. C. and Reeb, D. M. (2003b). Founding-family ownership, corporate diversification, and firm leverage. *Journal of Law and Economics* 46, 653-684.
- Andres C. (2008). Large shareholders and firm performance – an empirical examination of founding-family ownership. *Journal of Corporate Finance* 14, 431-445.
- Barberis, N.C. (2009). A Model of Casino Gambling. *National Bureau of Economic Research Working Paper* 14947, pp. 1-48.
- Barontini, R. and Caprio L. (2006). The effect of family control on firm value and performance. *European Financial Management* 12, 689-723.
- Bartram, S.M., Dufey, G., and Frenkel, M.R. (2005). A primer on the exposure of non-financial corporations to foreign exchange rate risk. *Journal of Multinational Financial Management* 15, pp. 394-413.
- Bennedsen, M. K., M. Perez-Gonzalez, F. and Wolfenzon D. (2007). Inside the family firm: The role of families in succession decisions and performance. *Quarterly Journal of Economics* 122, pp. 647-691.
- Berle, A. and Means, G. (1932). *The Modern Corporation and Private Property*, Harcourt, Brace, & World, New York.
- Bertrand, M. and Schoar A. (2006). The role of family in family firms. *Journal of Economic Perspectives* 20, pp. 73-96.
- Bodnar, G. M., Hayt, Gregory S., and Marston, R. C. (1998). Wharton survey of financial risk management by U.S.nonfinancial firms. *Financial Management* 27, pp. 70-91.
- Brown, G.W., Crabb, P.R., and Haushalter, D. (2006). Are Firms Successful at Selective Hedging?. *Journal of Buiness* 79, pp. 2925-2949.

- Brown, G.W. (2001). Managing foreign exchange risk with derivatives, *Journal of Financial Economics* 60, pp. 401-448.
- Burkart, M., Panunzi, F. and Shleifer, A. (2003). Family Firms. *Journal of Finance* 58, pp. 2167-2201.
- Camerer, C. and Lovo, D. (1999). Overconfidence and Excess Entry: An Experimental Approach. *American Economic Review* 89, pp. 306-318.
- Cronqvist, H. and Nilsson M. (2003). Agency costs of controlling minority shareholders. *Journal of Financial and Quantitative Analysis* 38, pp. 695-719.
- Elliott, W.B., Huffman, S.P. and Makar, S.D. (2003). Foreign-denominated debt and foreign currency derivatives: complements or substitutes in hedging foreign currency risk?. *Journal of Multinational Financial Management* 13, pp. 123-139.
- Froot, K. A. (1994). Comments on Exchange Rates and Corporate Strategic Management. In Yakov Amihud & Richard M. Levich (eds.), *Exchange Rates & Corporate Performance*, Irwin Professional Publishing, pp. 253-255.
- Froot, K.A., Scharfstein, D. and Stein, J. (1993). Risk management: coordinating corporate investment and financing policies. *Journal of Finance* 48, pp. 1629-58.
- Géczy, C., Minton, B. A., and Schrand, C. (1997). Taking a View: Corporate Speculation, Governance, and Compensation. *Journal of Finance* 62, pp. 2405-2443.
- Géczy, C., Minton, B. A., and Schrand, C. (1997). Why Firms Use Currency Derivatives. *Journal of Finance* 52, pp. 1323-1354.
- Gomez-Mejia, L. Nunez-Nickel, M. and Gutierrez I. (2001). The role of family ties in agency contracts. *Academy of Management Journal* 44, pp. 81-95.
- Gorriz, C. and Fumas V. (2005). Family ownership and performance: the net effects of productive efficiency and growth constraints. *ECGI Working Paper* No. 66/2005.
- Graham, J.R. and Harvey, C.R. (2001). The theory and practice of corporate finance: evidence from the field. *Journal of Financial Economics* 60, pp. 187-243.
- Greene, William H. (2003). *Econometric Analysis*. Fifth Edition. Prentice Hall: New Jersey.
- Grossmann, S. and Hart O. (1980). Takeover bids, the free-rider problem, and the theory of the corporation. *Bell Journal of Economics* 11, pp. 42-64.
- Guay, Wayne and Kothari, S.P. (2003). How much do firms hedge with derivatives?. *Journal of Financial Economics* 70, pp. 423-461.

Hoetker, G. (2007). The Use of Logit and Probit Models in Strategic Management Research: Critical Issues. *Strategic Management Journal* 28, pp. 331-343.

Jensen, M. C. and Meckling, W. H. (1976). Theory of the Firm: Managerial Behaviour, Agency Costs and Ownership Structure. *Journal of Financial Economics* 3, pp. 305-360.

Kahneman, D. and Tvesky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. *Econometrica* 47, pp. 263-291.

Kedia, S. and Mozumdar, A. (2003). Foreign Currency-Denominated Debt: An Empirical Examination, *Journal of Business* 76, pp. 521-546.

La Porta, R., Lopez-de-Silanes, F. and Shleifer, A. (1999). Corporate ownership around the world. *Journal of Finance* 54, pp. 471-517.

Laverty K. (1996). Economic "short-termism": The debate, the unresolved issues, and the implications for management practice and research. *The Academy of Management Review* 21, pp. 825-860.

Leland, H.E. (1998). Agency costs, risk management, and capital structure. *Journal of Finance* 53, pp. 1213-43.

Levi. M.D. and Sercu, P. (1991). Erroneous and valid reasons for hedging foreign exchange exposure. *Journal of Multinational Financial Management* 1, pp. 335-44.

Malmendier, U. and Tate, G. (2005). CEO Overconfidence and Corporate Investment. *Journal of Finance* 60, pp. 2661-2700.

Michenaud, S. and Solnik, B. (2008). Applying regret theory to investment choices: Currency hedging decisions. *Journal of International Money and Finance* 27, pp. 677-694.

Miller, D., Breton-Miller, I.L., Lester, R.H., and Cannella, A.A. (2007). Are family firms really superior performers?. *Journal of Corporate Finance* 13, pp. 829-858.

Miller, D.T. and Ross M. (1975). Self-serving biases in the attribution of causality: fact or fiction?. *Psychological Bulletin* 82, pp. 213-225.

Nance, D.R., Smith, C.W. Jr., and Smithson, C.W. (1993). On the Determinants of Corporate Hedging. *Journal of Finance* 48, pp. 267-284.

Schmid, T., Ampenberger, M., Kaserer, C and Achleitner, A. (2008). Family firms, agency costs and risk aversion – Empirical evidence from diversification and hedging decisions. *Center for Entrepreneurial and Financial Studies Working Paper* No. 2008-13

Shleifer, A. and Vishny R. (1986). Large shareholders and corporate control, *Journal of Political Economy* 94, pp. 461-488.

Smith, A. (1776). *An Inquiry into the Nature and Causes of the Wealth of Nations*. London.

- Smith, C.W. and Stulz, R.M. (1985). The determinants of firms' hedging policies. *Journal of Financial & Quantitative Analysis* 20, pp. 391-405.
- Spanò, M. (2007). Managerial Ownership and Corporate Hedging. *Journal of Business Finance and Accounting* 34, pp. 1245-1280.
- Stulz, R.M. (1996). Rethinking Risk Management. *Journal of Applied Corporate Finance* 9, pp. 8-24.
- Subrahmanyam, A. (2008). Behavioural Finance: A Review and Synthesis. *European Financial Management* 14, pp. 12-29.
- Svenson, O. (1981). Are we all less risky and more skillful than our fellow drivers?. *Acta Psychologica* 47, pp. 143-148.
- Tversky, A. and Kahneman, D. (1992). Advances in Prospect Theory: Cumulative Representation of Uncertainty. *Journal of Risk and Uncertainty* 5, pp. 297-323.
- Villalonga, B. and Amit R. (2006). How do family management, ownership and control affect firm value. *Journal of Financial Economics* 80, pp. 385-417.
- Wang, Heli, Jay B. Barney, and Jeffrey J. Reuer (2003). Stimulating Firm-specific Investment through Risk Management. *Long Range Planning* 36, pp. 49-59.



**Table I**      **Descriptive Statistics for Sample Firms**

This table reports descriptive statistics for the 215 sample firms. The information is obtained from WEB-DIRECT and from responses to the Questionnaire (Appendix). Variables used in subsequent regression analysis are in capital letters. *Total Assets* is the total assets of the firm measured in million DKK. *TA* is the logarithm of *Total Assets*. *GPTA* is the gross profit of the firm divided by the total assets of the firm. *EQTA* is the equity of the firm divided by the total assets of the firm. *RD* is the R&D expenses in percent of the turnover of the firm (responses to Question 4; midpoints of intervals and a max. of 30 percent used). *EXPORT* is the percentage of the firm's consolidated operating revenues in foreign currency (responses to Question 1; midpoints of intervals used).

	<u>Mean</u>	<u>Median</u>	<u>Maximum</u>	<u>Minimum</u>	<u>Std. Dev.</u>
Total Assets (million DKK)	148	108	489	50	106
TA	4.79	4.68	6.19	3.91	0.62
GPTA	39%	35%	128%	-15%	19%
EQTA	36%	33%	92%	-12%	19%
RD	4.1%	3.0%	30.0%	0.0%	3.6%
EXPORT	48%	50%	100%	0%	31%

**Table II Founder Family Influence in Sample Firms**

This table reports information on the founder family influence in the 215 sample firms. 207 firms responded to the relevant questions in the Questionnaire (Appendix). Founder family firms are firms in which the founder of the firm or members of his/her family are active in the management team of the firm, are present in the board of directors of the firm, *and/or* are shareholders of the firm (responses to Question 5a). Founder family manager firms are firms in which the founder of the firm or members of his/her family are active in the management team of the firm (responses to Question 5a). Founder family director firms are firms in which the founder of the firm or members of his/her family are present in the board of directors of the firm (responses to Question 5a). Founder family shareholder firms are firms in which the founder of the firm or members of his/her family are shareholders of the firm (responses to Question 5a).

Founder family influence:			<u>Number of firms</u>	
<u>Manager (M)</u>	<u>Director (D)</u>	<u>Shareholder (S)</u>		
YES	YES	YES	87	42%
YES	YES	NO	0	0%
YES	NO	YES	6	3%
NO	YES	YES	35	17%
YES	NO	NO	2	1%
NO	YES	NO	2	1%
NO	NO	YES	4	2%
NO	NO	NO	<u>71</u>	<u>34%</u>
			<u>207</u>	<u>100%</u>
Founder family manager (M) firms			95 (46%)	
Founder family director (D) firms			124 (60%)	
Founder family shareholder (S) firms			132 (64%)	
Founder family firms (M, D or S)			136	66%
Other firms (none of the above)			<u>71</u>	<u>34%</u>
Total			<u>207</u>	<u>100%</u>

**Table III Comparison of Mean Values between Founder Family Firms and Other Firms**

This table reports univariate analysis (t-statistics) on differences in mean values of variables between two sub-samples of the 207 sample firms: Founder family firms (FF Firms) and Other firms as defined in Table II. 207 firms responded to the relevant questions in the Questionnaire (Appendix). Information on variables is obtained from WEB-DIRECT and from responses to the questionnaire (Appendix). Variables used in subsequent regression analysis are in capital letters. *Total Assets* is the total assets of the firm measured in million DKK. *TA* is the logarithm of *Total Assets*. *GPTA* is the gross profit of the firm divided by the total assets of the firm. *EQTA* is the equity of the firm divided by the total assets of the firm. *RD* is the R&D expenses in percent of the turnover of the firm (responses to Question 4; midpoints of intervals and a max. of 30 percent used). *EXPORT* is the percentage of the firm's consolidated operating revenues in foreign currency (responses to Question 1; midpoints of intervals used). \*, \*\*, \*\*\* indicate significance at the 10 percent, 5 percent, and 1 percent levels respectively.

	<u>Founder Family</u> <u>Firms (FF Firms)</u> (136 firms)	<u>Other</u> <u>Firms</u> (71 firms)	<u>Mean</u> <u>difference</u>	
Total Assets (million DKK)	137	176	-38	**
TA	4.72	4.96	-0.24	***
GPTA	0.38	0.40	-0.02	
EQTA	0.34	0.39	-0.05	*
RD	0.04	0.04	0.00	
EXPORT	0.49	0.45	0.04	

**Table IV Correlation Coefficients for Variables Used in Regression Analysis**

This table reports correlation coefficients for the 215 sample firms for variables used in regression analysis. Information on variables is obtained from WEB-DIRECT and from responses to the Questionnaire (Appendix). *TA* is the logarithm of total assets of the firm. *GPTA* is the gross profit of the firm divided by the total assets of the firm. *EQTA* is the equity of the firm divided by the total assets of the firm. *RD* is the R&D expenses in percent of the turnover of the firm (responses to Question 4; midpoints of intervals and a max. of 30 percent used). *EXPORT* is the percentage of the firm's consolidated operating revenues in foreign currency (responses to Question 1; midpoints of intervals used). ., \*, \*\*, and \*\*\* indicate significance at the 10 percent, 5 percent, and 1 percent levels respectively.

	TA	GPTA	EQTA	RD	EXPORT
TA	1.00				
GPTA	-0.30 ***	1.00			
EQTA	0.08	0.08	1.00		
RD	0.15 **	-0.01	0.14 **	1.00	
EXPORT	0.17 **	-0.16 **	0.10	0.30 ***	1.00

**Table V Founder Family Firms and Derivates Usage / Non-Usage**

This table reports findings on the usage / non-usage of derivatives among the 215 sample firms. Information on variables is obtained from responses to Question 7 in the Questionnaire (Appendix). The usage / non-usage of derivatives is divided into usage / non-usage of foreign exchange, interest rate, and commodity price derivatives respectively. The usage / non-usage is shown for all sample firms for which responses are available (207 firms) as well as divided into founder family firms (FF firms) and other firms (defined in Table II).

Derivatives usage:			Number of firms:					
<u>FX</u>	<u>Interest</u>	<u>Commodity</u>	<u>FF firms</u>		<u>Other Firms</u>		<u>All firms</u>	
YES	YES	YES	8	6%	2	3%	10	5%
YES	YES	NO	26	19%	12	17%	38	18%
YES	NO	YES	3	2%	1	1%	4	2%
NO	YES	YES	2	1%	0	0%	2	1%
YES	NO	NO	19	14%	14	20%	33	16%
NO	YES	NO	16	12%	4	6%	20	10%
NO	NO	YES	3	2%	2	3%	5	2%
NO	NO	NO	<u>59</u>	<u>43%</u>	<u>36</u>	<u>51%</u>	<u>95</u>	<u>46%</u>
			<u>136</u>	<u>100%</u>	<u>71</u>	<u>100%</u>	<u>207</u>	<u>100%</u>
FX derivatives users			56 (41%)		29 (41%)		85 (41%)	
Interest rate derivatives users			52 (38%)		18 (25%)		70 (34%)	
Commodity price derivatives users			16 (12%)		5 (7%)		21 (10%)	
Derivative users (FX, interest, <i>or</i> com.)			77	57%	35	49%	112	54%
Derivative non-users (none of the above)			<u>59</u>	<u>43%</u>	<u>36</u>	<u>51%</u>	<u>95</u>	<u>46%</u>
Total			<u>136</u>	<u>100%</u>	<u>71</u>	<u>100%</u>	<u>207</u>	<u>100%</u>

**Table VI Regression Analysis on Founder Family Firms and Derivates Usage/Non-Usage**

This table reports results of binary regression analysis (Model 5 = ordered regression analysis) on the usage / non-usage of derivatives among the 215 sample firms. Information on variables is obtained from WEB-DIRECT and from responses to the Questionnaire (Appendix). The dependent variable is a binary variable coded as 1 if the firm is a user of foreign exchange (Model 1), interest rate (Model 2), commodity price (Model 3), and at least one of these three kinds of derivatives (Model 4) respectively and 0 otherwise (responses to Question 7). The dependent variable in Model 5 is an ordered variable coded as 0, 1, 2 or 3 dependent on how many different kind of derivatives the firm uses (responses to Question 7). *C* is a constant. *TA* is the logarithm of total assets of the firm. *GPTA* is the gross profit of the firm divided by the total assets of the firm. *EQTA* is the equity of the firm divided by the total assets of the firm. *RD* is the R&D expenses in percent of the turnover of the firm (responses to Question 4; midpoints of intervals and a max. of 30 percent used). *EXPORT* is the percentage of the firm's consolidated operating revenues in foreign currency (responses to Question 1; midpoints of intervals used). *FF Firm* is a dummy coded as 1 if the founder of the firm or members of his/her family are active in the management team, are present in the board of directors, and/or are shareholders and coded as 0 otherwise (responses to Question 5a). \*, \*\*, and \*\*\* indicate significance at the 10 percent, 5 percent, and 1 percent levels respectively.

	<u>Model 1</u> (FX)	<u>Model 2</u> (Interest)	<u>Model 3</u> (Com.)	<u>Model 4</u> (All)	<u>Model 5</u> (Ordered)
C	-1.33 (0.1331)	-4.02 *** (0.0000)	-2.05 * (0.0769)	-2.06 ** (0.0240)	
TA	0.15 (0.3659)	0.59 *** (0.0006)	0.17 (0.4265)	0.35 ** (0.0399)	0.39 *** (0.0059)
GPTA	-0.59 (0.1859)	0.86 * (0.0579)	-0.10 (0.8754)	-0.25 (0.5637)	0.10 (0.7977)
EQTA	-0.01 (0.9914)	-0.71 (0.1868)	-1.77 ** (0.0367)	-0.36 (0.4686)	-0.56 (0.2250)
RD	-0.67 (0.7998)	-1.41 (0.6089)	8.41 *** (0.0077)	1.83 (0.5150)	2.06 (0.3644)
EXPORT	1.35 *** (0.0000)	0.81 ** (0.0145)	0.15 (0.7450)	0.99 *** (0.0022)	1.00 *** (0.0004)
FF FIRM	-0.00 (0.9954)	0.53 ** (0.0151)	0.13 (0.6447)	0.26 (0.2005)	0.33 * (0.0724)
N = 0	117	128	176	91	91
N = 1	84	69	20	103	54
N = 2					39
N = 3					10
N	201	197	196	194	194
McFadden R <sup>2</sup>	0.0963	0.0939	0.1069	0.0860	
Pseudo R <sup>2</sup>					0.0659
LR statistic	26.32 ***	23.97 ***	13.81 **	23.05 ***	30.35 ***
Prob. (LR statistic)	0.0002	0.0005	0.0318	0.0008	0.0000

**Table VII Founder Family Firms and the Extent of FX Hedging**

This table reports findings on the extent of foreign exchange (FX) hedging using derivatives and/or debt denominated in foreign currency (foreign debt) among the sub-sample of firms (62 firms) that at least to some extent use derivatives or foreign debt to manage exchange rate exposures. Information on the extent of hedging is obtained from responses to Question 13 in the Questionnaire (Appendix). Foreign exchange hedging is divided across 5 subcategories of exposures: 1) Transaction Exposure (i.e. contractual commitments, such as payables and receivables), 2) Operating Exposure < 1 year (i.e. future, non-contracted cash flows anticipated to be realized within one year), 3) Operating Exposure > 1 year (i.e. future, non-contracted cash flows anticipated to be realized beyond one year), 4) Operating Exposure Indirect (i.e. indirect exposure caused by competitors that have a different foreign exchange set-up, also called competitive exposure), and 5) Translation Exposure (i.e. an accounting exposure caused by translation of foreign accounts). The extent of hedging is shown for Founder Family Firms (FF Firms) and Other Firms as well as for the aggregate (defined in Table II).

	<u>Percentage hedged</u>							<u>Total</u>	<u>Median</u> <u>% hedge</u>	<u>N</u>
	<u>0</u>	<u>1-20</u>	<u>20-40</u>	<u>40-60</u>	<u>60-80</u>	<u>80-99</u>	<u>100</u>			
<b>Transaction Exposure</b>										
FF Firms	12%	15%	12%	21%	12%	12%	18%	100%	40-60	34
Other Firms	13%	17%	22%	17%	13%	13%	4%	100%	20-40	23
Total	12%	16%	16%	19%	12%	12%	12%	100%	40-60	57
<b>Operating Exposure &lt; 1 year</b>										
FF Firms	18%	21%	21%	15%	18%	6%	3%	100%	20-40	34
Other Firms	43%	35%	9%	4%	4%	0%	4%	100%	1-20	23
Total	28%	26%	16%	11%	12%	4%	4%	100%	1-20	57
<b>Operating Exposure &gt; 1 year</b>										
FF Firms	35%	29%	9%	18%	0%	6%	3%	100%	1-20	34
Other Firms	67%	33%	0%	0%	0%	0%	0%	100%	0	24
Total	48%	31%	5%	10%	0%	3%	2%	100%	1-20	58
<b>Operating Exposure Indirect</b>										
FF Firms	59%	19%	13%	6%	0%	3%	0%	100%	0	32
Other Firms	87%	9%	0%	0%	4%	0%	0%	100%	0	23
Total	71%	15%	7%	4%	2%	2%	0%	100%	0	55
<b>Translation Exposure</b>										
FF Firms	50%	22%	22%	3%	0%	3%	0%	100%	0 / 1-20	32
Other Firms	91%	5%	5%	0%	0%	0%	0%	100%	0	22
Total	67%	15%	15%	2%	0%	2%	0%	100%	0	54

**Table VIII Regression Analysis on Founder Family Firms and the Extent of FX Hedging**

This table reports results of an ordinary least squares regression analysis on the extent of foreign exchange hedging using derivatives and/or debt denominated in foreign currency (foreign debt) among the sub-sample of firms that at least to some extent use derivatives or foreign debt to manage exchange rate exposures. Information on variables is obtained from WEB-DIRECT and from responses to the questionnaire (Appendix). The dependent variable is the degree of hedging (responses to Question 13; midpoints of intervals used) for five subcategories of exchange rate exposures as explained in Table VII. *C* is a constant. *TA* is the logarithm of total assets of the firm. *GPTA* is the gross profit of the firm divided by the total assets of the firm. *EQTA* is the equity of the firm divided by the total assets of the firm. *RD* is the R&D expenses in percent of the turnover of the firm (responses to Question 4; midpoints of intervals and a max. of 30 percent used). *EXPORT* is the percentage of the firm's consolidated operating revenues in foreign currency (responses to Question 1; midpoints of intervals used). *FF Firm* is a dummy coded as 1 if the founder of the firm or members of his/her family are active in the management team, are present in the board of directors, and/or are shareholders and coded as 0 otherwise (responses to Question 5a). \*, \*\*, and \*\*\* indicate significance at the 10 percent, 5 percent, and 1 percent levels respectively.

	<u>Model 1</u> (Transaction)	<u>Model 2</u> (Operat.<1)	<u>Model 3</u> (Operat.>1)	<u>Model 4</u> (Indirect)	<u>Model 5</u> (Transl.)
C	-0.20 (0.5838)	-0.22 (0.5039)	0.28 (0.1453)	0.27 (0.2218)	0.17 (0.3404)
TA	0.10 (0.1228)	0.03 (0.6266)	-0.06 (0.1453)	-0.05 (0.1967)	-0.03 (0.3695)
GPTA	-0.46 * (0.0567)	-0.12 (0.5707)	-0.25 (0.1267)	-0.29 ** (0.0421)	-0.19 (0.1088)
EQTA	0.24 (0.3319)	0.43 ** (0.0409)	0.23 (0.1538)	0.17 (0.2012)	-0.07 (0.5575)
RD	-0.99 (0.4563)	0.09 (0.9409)	-0.25 (0.7910)	0.38 (0.6904)	0.55 (0.4822)
EXPORT	0.34 ** (0.0323)	0.16 (0.2580)	0.12 (0.2845)	0.06 (0.5431)	0.11 (0.1759)
FF FIRM	0.12 (0.1816)	0.22 *** (0.0069)	0.20 *** (0.0016)	0.08 * (0.0997)	0.10 ** (0.0336)
N	56	56	57	54	53
R-squared	0.3030	0.2362	0.2635	0.1814	0.2225
Adjusted R-squared	0.2176	0.1427	0.1751	0.0768	0.1211
F-statistic	0.3410	2.5254 **	2.9813 ***	1.7353	2.1936 **
Prob.(F-statistic)	0.1172	0.0329	0.0016	0.1337	0.0606



**Table IX Founder Family Firms and the Extent of FX Speculation**

This table reports findings on the extent of foreign exchange speculation using derivatives and/or debt denominated in foreign currency (foreign debt) among the sub-sample of firms that at least to some extent use derivatives or foreign debt to manage exchange rate exposures. Information on the extent of speculation is obtained from responses to Question 14 in the Questionnaire (Appendix). Foreign exchange speculation is divided across three subcategories: 1) Alter the timing of a hedge because of own market view of exchange rates (future price movements), 2) Alter the size of a hedge because of own market view of exchange rates (future price movement), 3) actively take a position in foreign exchange derivatives or debt denominated in foreign currency (foreign debt) because of own market view of exchange rates (future price movements). The extent of speculation is shown for Founder Family Firms (FF Firms) and Other Firms (defined in Table II) as well as for the aggregate.

	<u>Never</u>	<u>Sel dom</u>	<u>Some times</u>	<u>Often</u>	<u>Very often</u>	<u>Total</u>	<u>Median</u>	<u>N</u>
Alter the timing of hedge								
FF Firms	17%	26%	20%	34%	3%	100%	Sometimes	35
Other Firms	16%	32%	36%	8%	8%	100%	Sometimes	25
Total	17%	28%	27%	23%	5%	100%	Sometimes	60
Alter the size of hedge								
FF Firms	21%	21%	26%	29%	3%	100%	Sometimes	34
Other Firms	16%	32%	24%	20%	8%	100%	Sometimes	25
Total	19%	25%	25%	25%	5%	100%	Sometimes	59
Actively take position								
FF Firms	9%	14%	37%	34%	6%	100%	Sometimes	35
Other Firms	24%	36%	24%	12%	4%	100%	Seldom	25
Total	15%	23%	32%	25%	5%	100%	Sometimes	60

**Table X Regression Analysis on Founder Family Firms and the Extent of FX Speculation**

This table reports results of an ordered regression analysis on the extent of foreign exchange speculation using derivatives and/or debt denominated in foreign currency (foreign debt) among the sub-sample of firms that at least to some extent use derivatives or foreign debt to manage exchange rate exposures. Information on variables is obtained from WEB-DIRECT and from responses to the questionnaire (Appendix). The dependent variable is the frequency of speculation (responses to Question 14) for three subcategories of exchange rate speculation as explained in Table IX and measured as an ordered variable coded as 1 = never, 2 = seldom, 3 = sometimes, 4 = often, and 5 = very often. *C* is a constant. *TA* is the logarithm of total assets of the firm. *GPTA* is the gross profit of the firm divided by the total assets of the firm. *EQTA* is the equity of the firm divided by the total assets of the firm. *RD* is the R&D expenses in percent of the turnover of the firm (responses to Question 4; midpoints of intervals and a max. of 30 percent used). *EXPORT* is the percentage of the firm's consolidated operating revenues in foreign currency (responses to Question 1; midpoints of intervals used). *FF Firm* is a dummy coded as 1 if the founder of the firm or members of his/her family are active in the management team, are present in the board of directors, and/or are shareholders and coded as 0 otherwise (responses to Question 5a). \*, \*\*, and \*\*\* indicate significance at the 10 percent, 5 percent, and 1 percent levels respectively.

	<u>Model 1</u> (Timing)	<u>Model 2</u> (Size)	<u>Model 3</u> (Active)
TA	0.22 (0.3233)	0.11 (0.6151)	-0.02 (0.9228)
GPTA	0.52 (0.5243)	-0.03 (0.9701)	0.96 (0.2283)
EQTA	0.94 (0.2322)	0.50 (0.5246)	1.38 * (0.0812)
RD	6.20 (0.1857)	6.31 (0.1801)	-0.10 (0.9831)
EXPORT	1.00 * (0.0746)	1.40 ** (0.0149)	0.24 (0.6631)
FF FIRM	0.13 (0.6474)	-0.16 (0.5926)	0.87 *** (0.0043)
N=1 (never)	10	11	9
N=2 (seldom)	16	15	14
N=3 (sometimes)	16	14	18
N=4 (often)	14	15	15
N=5 (very often)	3	3	3
N	59	58	59
Pseudo R-squared	0.0633	0.0636	0.0659
LR statistic	11.22 *	11.15 *	11.60 *
Prob.(LR statistic)	0.0819	0.0838	0.0716

**Table X1 Alternative Measures of Founder Family Influence**

This table reports results of alternative measures of founder family influence in Table VI, Table VIII, and Table X. The default is *FF Firm*, which is a dummy coded as 1 if the founder of the firm or members of his/her family are active in the management team, are present in the board of directors, and/or are shareholders and coded as 0 otherwise (responses to Question 5a). Coefficients and p-values for four alternative founder family influence dummies are reported below the coefficients and p-values for the default measure (substituting the FF Firm dummy in the respective tables). *FF Manager Firms* is a dummy coded as 1 if the founder of the firm or members of his/her family are active in the management team and coded as 0 otherwise (responses to Question 5a). *FF Director Firms* is a dummy coded as 1 if the founder of the firm or members of his/her family are present in the board of directors and coded as 0 otherwise (responses to Question 5a). *FF Shareholder Firms* is a dummy coded as 1 if the founder or members of his/her family are shareholders and coded as 0 otherwise (responses to Question 5a). *FF MDS Firms* is a dummy coded as 1 if the founder of the firm or members of his/her family are active in the management team, are present in the board of directors, and are shareholders and coded as 0 otherwise (responses to Question 5a). \*, \*\*, and \*\*\* indicate significance at the 10 percent, 5 percent, and 1 percent levels respectively.

	<u>Model 1</u> (FX)	<u>Model 2</u> (Interest)	<u>Model 3</u> (Com.)	<u>Model 4</u> (All)	<u>Model 5</u> (Ordered)
FF FIRM	-0.00 (0.9954)	0.53 ** (0.0151)	0.13 (0.6447)	0.26 (0.2005)	0.33 * (0.0724)
<i>Alternative measures:</i>					
FF Manager Firms	0.13 (0.4846)	0.32 (0.1000)	0.31 (0.2547)	0.07 (0.7128)	0.28 * (0.0890)
FF Director Firms	0.01 (0.9621)	0.54 *** (0.0083)	0.13 (0.6356)	0.22 (0.2575)	0.29 * (0.0950)
FF Shareholder Firms	0.02 (0.9256)	0.35 * (0.0869)	0.27 (0.3400)	0.09 (0.6468)	0.23 (0.1874)
FF MDS Firms	0.05 (0.8049)	0.29 (0.1340)	0.29 (0.2824)	-0.03 (0.8626)	0.21 (0.2044)

	<u>Model 1</u> (Transaction)	<u>Model 2</u> (Operat.<1)	<u>Model 3</u> (Operat.>1)	<u>Model 4</u> (Indirect)	<u>Model 5</u> (Transl.)
FF FIRM	0.12 (0.1816)	0.22 *** (0.0069)	0.20 *** (0.0016)	0.08 * (0.0997)	0.10 ** (0.0336)
<i>Alternative measures:</i>					
FF Manager Firms	0.05 (0.5717)	0.18 ** (0.0343)	0.11 * (0.0930)	0.04 (0.3972)	0.01 (0.8010)
FF Director Firms	0.10 (0.2474)	0.25 *** (0.0017)	0.21 *** (0.0004)	0.09 * (0.0643)	0.11 ** (0.0139)
FF Shareholder Firms	0.13 (0.1413)	0.23 *** (0.0046)	0.21 *** (0.0009)	0.09 * (0.0805)	0.10 ** (0.0290)
FF MDS Firms	0.12 (0.1816)	0.23 *** (0.0082)	0.14 ** (0.0373)	0.14 ** (0.0373)	0.03 (0.5374)

	<u>Model 1</u> (Timing)	<u>Model 2</u> (Size)	<u>Model 3</u> (Active)
FF FIRM	0.13 (0.6474)	-0.16 (0.5926)	0.87 *** (0.0043)

*Alternative measures:*

FF Manager Firms	0.07 (0.8119)	-0.09 (0.7758)	0.58 * (0.0561)
FF Director Firms	0.32 (0.2647)	0.05 (0.8712)	0.99 *** (0.0011)
FF Shareholder Firms	0.17 (0.5702)	-0.12 (0.6764)	0.80 *** (0.0082)
FF MDS Firms	0.33 (0.2923)	0.16 (0.6047)	0.82 *** (0.0095)