VOLUNTARY DISCLOSURE OF NON-FINANCIAL INFORMATION: THE CASE OF FAMILY AND NON-FAMILY BUSINESSES IN ITALY

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Abstract

This paper conducts an empirical analysis using two distinct indicators of voluntary disclosure, one focusing upon research and development (R&D) and the other on strategy, and, in this way, reveals that when quoted Italian firms (family and non-family) increase the intensity of their R&D activity, they also increase voluntary disclosure of information about both R&D and strategy, but the different attitude towards the two components of voluntary disclosure is demonstrated by the behaviour of the two types of firms. In particular, family firms are more inclined to increase the component of information on strategy and much less on R&D. The empirical results support the hypotheses that suggest that the importance and usefulness of providing accurate information about firm strategies is much higher in family governance than in managerial governance. Therefore, the paper makes a contribution to the topic of voluntary disclosure and the different forms of behaviour that family and non-family firms adopt in this regard.

Keywords: Family Firms, Voluntary Disclosures, R&D, Strategy

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1. INTRODUCTION

Research and development (R&D) activities are considered to be a source of agency problems between insiders (managers) and outsiders (stakeholders) (Cheng, 2004). Aboody and Lev (2000) found that insider trading leads to higher profit frequency for firms with higher R&D intensity. According to some authors (Jensen & Meckling, 1976; Williamson, 1981), information disclosure can reduce agency costs in the relationship between investors and management. One of the positive effects of voluntary disclosure can be a decrease in the cost of capital as a result of reduced information asymmetry (Botosan, 1997; Leuz & Verrecchia, 2000). Thus, voluntary disclosure is primarily undertaken by managers in response to pressure from powerful stakeholders such as shareholders and banks who are trying to protect their financial interests and as a way to attract their capital into the firm.

Consistently with previous definitions for different national regulatory environments (Cooke, 1989; Raffournier, 1995; Meek et al., 1995; Depoers, 2000), we define voluntary disclosure as information that derives from management inside knowledge that is disclosed externally, even if its publication is not required in regulated reports. Voluntary disclosure is, therefore, produced by a management's reporting decision (Meek et al., 1995; Healy & Palepu, 2001). Researchers have also focused on the determinants of voluntary disclosure of R&D-related financial information (Entwistle, 1999; Percy, 2000).

Voluntary disclosure of R&D by firms may nonetheless have some disadvantages. Indeed, any

voluntary disclosure of information about R&D projects increases ownership costs (Verrecchia, 1983; Dye, 1985; Jones, 2007). In addition to using disclosure as a mechanism to reduce information asymmetry, managers may face a dilemma: whether to disclose to inform investors at the risk of providing strategic information to competitors. As a consequence, managers should pay more attention to controlling the information to be disclosed and the timing of its disclosure.

In a study of R&D disclosure, Entwistle (1999) provides evidence of a trade-off between the costs of disclosing proprietary information and the benefits of more accurate stock prices. The author undertakes a series of interviews with chief executive officers (CEOs) about the "effective" management of R&D disclosure, including concerns about revealing proprietary information and bad news about R&D projects. He finds that firms are afraid to disclose strategic information that could be used unfavourably by competitors. These firms are sometimes forced to disclose bad news, in part to manage market expectations and maintain their credibility with external stakeholders.

There is evidence in the literature that companies with high levels of R&D intensity (measured as intensity of R&D by annual R&D expenditure deflated by total sales) provide more voluntary disclosure of their R&D activities (Lang & Lundholm, 1993; Entwistle, 1999; Percy, 2000; Ding et al., 2004; Merkley, 2014; Nekhili et al., 2016). A positive correlation has also been found between R&D capitalization and voluntary R&D disclosure (Zhao, 2002; Oswald & Zarowin, 2007; Nekhili et al., 2016). Voluntary disclosure activities are closely related to several key elements of corporate governance, especially the monitoring of the company's management and its strategy by the board of directors (BoD). Allegrini and Greco (2013) suggest a complementary relationship between governance and disclosure. Corporate ownership structure, as part of the governance mechanism, has received increasing attention in recent years (Connelly et al., 2010; Hope, 2013). However, there are not many studies on the effect that the ownership structure might have on voluntary corporate disclosure. Khlif et al. (2017) recently reviewed and synthesized the empirical research. Studies document a positive relationship between better governance mechanisms and voluntary disclosure (Ajinkya et al., 2005; Karamanou & Vafeas, 2005; Laksmana, 2008), but with regard to the effect of ownership structure on voluntary disclosure, the empirical results are mixed and, in some cases, contradictory (Arcay & Vazquez, 2005; Armstrong et al., 2010; Brown et al., 2011; García-Meca & Sánchez-Ballesta, 2010; Luo et al., 2006). In their reviews, Artiach and Clarkson (2011) and Brown et al. (2011) attribute the mixed evidence across studies to differences in the number of disclosure items, the mode and nature of disclosure (e.g. from total voluntary disclosure to disclosure of specific issues such as earnings forecasts and corporate social and environmental information), the type of disclosure required by owners, and the research setting examined.

Two groups of studies, differing in the number of disclosed items and the nature of disclosure, allow us to draw some interesting conclusions. The first group focuses on the general voluntary disclosure of the firm, while the second one concentrates on the disclosure of specific R&D-related issues by the firm. For example, with regard to the studies in the first group, Chau and Gray (2010) found that there is a low level of voluntary disclosure when family ownership is greater than 25%. In contrast, Ho and Wong (2001) found no significant relationship between family ownership and the level of voluntary disclosure in a sample of Hong Kong-listed firms. For listed firms in Malaysia, Zaini et al. (2019) conduct a content analysis that reveals differences between family and non-family firms in their decision-making in terms of voluntary disclosure practices, which depends on the influence of ownership. There are studies in the second group, such as Nor et al. (2010) in Malaysia and Zemzem et al. (2015) in France, which found no significant relationship between family ownership and R&D-related disclosure. In the study by Nekhili et al. (2012) (using French firms as a sample), the effect of family ownership on R&D-related disclosure is found to be negative and significant. Finally, Abdelbadie and Elshandidy (2013) found no relationship between ownership structure and R&D disclosure. Based on these mixed results, the relationship between ownership structure and disclosure is an empirical issue that still requires investigation. The mixed evidence in the cited studies of family firms can reasonably be attributed to the choice of disclosure items to be used in the empirical analysis.

Total voluntary disclosure involves a range of issues such as corporate internal, social and environmental information. Emerging insight shows that different categories of owners may have different preferences and priorities regarding corporate risk, stability, growth and performance (Douma et al., 2006; Gedajlovic et al., 2005). Such preferences and priorities influence the demand for quality accounting information (Ang et al., 2000; Armstrong et al., 2010), which means that owner-managers of family firms, compared with managers of non-family firms, may prefer to disclose additional information on some specific issues. However, it is difficult to control for the impact of economic incentives on family versus non-family managers on key elements of overall voluntary disclosure using an econometric model. This may pose a hurdle when attempting to achieve a clear and meaningful result using econometric analysis aimed at identifying the relationships between ownership structures and overall voluntary disclosure by firms.

Owners have different motivations affecting corporate decision-making (Hautz et al., 2013; Heugens et al., 2009). In the presence of R&D activities, managers of non-family firms, on the one hand, and family firms, on the other, may be motivated to satisfy demands for high-quality accounting information. In particular, it is reasonable for shareholders of non-family firms to request additional information on issues related to R&D activities. On the other hand, in family firms, owners know or have direct information on R&D issues (given that family members not only own equity but also control and direct the company and may have a seat on the BoD). Therefore, owner-managers of family firms may prefer to satisfy requests for additional information from other influential stakeholders, such as banks. Explicit information about R&D assets is less sought after by bankers, given that in the event of bankruptcy or liquidation, these assets will lose much of their

value. Banks request more information about the strategic objectives of the investment and how managers intend to achieve these objectives. Voluntary disclosure of strategy information is an important source of information (both positive and negative) that is not provided by a firm's balance sheet and income statement but that has implications for the firm's future earnings and future ability to repay debt.

Our study aims to examine the voluntary disclosure practices of family firms compared to non-family firms regarding the performance of R&D activities. We then propose, on the one hand, to contribute to filling the gap in the research on the nature and significance of voluntary disclosure of R&D-related information in family firms compared to non-family firms. On the other hand, we attempt to enrich the research on family firms and the specifics of their strategies, governance, and accountability.

We classify companies as family firms when the dominant family has the power to appoint the BoD and when the family uses fractional shareholdings of its members, both directly or through financial holdings, to appoint one of its members as the CEO and/or chairman (in cases of non-CEO duality) of the firm's board. In other words, we refer to the family firm as understood by Casson (1999), Grassby (2001) and Lansberg (1999), who noted that the incentive for long-term investment is expected to be particularly prevalent when a family CEO or active chairman runs the business.

The remainder of the paper is organised as follows. Section 2 presents the theoretical framework and develops the research hypotheses. Section 3 describes the methodological approach adopted in the empirical study, describing the data, variables, and research method. Section 4 provides the research findings. Sections 5 and 6 overview the discussion and conclusions of the study.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

The literature on disclosure practices in family-controlled companies is limited. Family-controlled companies have rarely been used in the study of voluntary disclosure because they have been argued to exhibit weak internal governance systems due to entrenchment by managing owners (i.e., owner's opportunism) (Salvato & Moores, 2010). Salvato and Moores (2010) question the differences and ways in which family-controlled companies report accounting information because entrenchment exists in the ownership structure. This implies that voluntary disclosure practices of family-controlled companies may need external stakeholder pressure and a voluntary disclosure structure to address the entrenchment effect and improve corporate governance. Studies have suggested that owner opportunism and/or the entrenchment effect may result in less transparency in the sharing of information with other stakeholders (Amran & Ahmad, 2011; Brennan & Solomon, 2008; Hashim, 2011; Sansone et al., 2010). Family-controlled companies are also believed to have incentives to conceal unfavourable information and to manipulate information provided in their annual reports. Thus, family-controlled firms can bias the information disclosed to suit their preferences and interests. Ang et al. (2000) and Armstrong et al. (2010) highlight the agency conflicts existing between different forms of equity ownership and their impact on the demand for accounting information. They suggest that the expected relationships between the demand for high-quality accounting information and ownership structure are primarily driven by economic incentives and that such demand varies cross-sectionally across ownership structures. This finding is a consequence of the emerging insight that different categories of owners may have different preferences and priorities with respect to corporate risk, stability, growth and performance (Douma et al., 2006; Gedajlovic et al., 2005). When family ownership increases, it may negatively affect voluntary financial disclosure because family members not only own equity but also control and direct the company and may have a seat on the BoD (Nor et al., 2010). Therefore, they have direct access to information and they do not opt for voluntary disclosures as much. However, the literature is inconclusive. For example, Chau and Gray (2010) suggest that when family ownership is concentrated, its relationship with voluntary disclosure is more complicated. They suggest that insiders with considerable ownership of the company could act in their own interests by attempting to expropriate the wealth of minority shareholders. In this case, control by externals will increase, and the cost of such control will also increase. Therefore, insiders tend to report more voluntary disclosures to reduce these costs. As with the theory, the empirical results are also mixed and, in some cases, contradictory.

Reviews of empirical studies on the relationship between ownership and corporate voluntary disclosure by Artiach and Clarkson (2011) and Brown et al. (2011) highlight key aspects and limitations of such studies. Family owner-managers and non-owner managers are two different categories of managers who are driven by differing incentives and respond to two different demands for high-quality accounting information from stakeholders. When the level of family ownership is high, the level of opportunistic behaviour is lower because owner-managers will suffer the consequences of their bad behaviour. From this perspective, it is probable that managers of family firms, as opposed to those of non-family firms, have to deal with less demand for additional information from their shareholders. However, we believe that voluntary disclosure by family firms as their R&D intensity increases is a complex phenomenon that should also be examined in light of the teaching of family firm theory. Managers of family firms tend to stay in their positions for longer periods of time than non-family managers, which gives them greater incentive to act as good stewards of resources (Miller & Le Breton-Miller, 2005, 2006; Uhlaner et al., 2007). Applying these concepts to the present topic, we propose that family managers, to a greater extent than non-family managers, make accurate assessments of the costs and benefits of additional information. Therefore, on the one hand, when resources are invested in R&D, owner-managers of family firms will be more likely to voluntarily disclose information than managers of non-family firms.

Indeed, one positive effect of voluntary disclosure may be to reduce the cost of capital (Botosan, 1997; Leuz & Verrecchia, 2000) as a result of reduced information asymmetry. According to

Eccles et al. (2001, Chapter 10), increased levels of disclosure are likely to reduce firms' capital costs. On the other hand, when resources are invested in R&D, owner-managers of family firms will be less likely to voluntarily disclose information than managers of non-family firms because disclosure is not without costs, as it involves competitive disadvantage effects. These effects involve the disclosure of information that may well be valuable to the firm's competitors. The consequences for competitive advantage of such disclosures are "complex and difficult to predict" (Guo et al., 2004, p. 323). The theory of proprietary costs argues that the costs of disclosing information may outweigh its dissemination (Dye, 1985; Verrecchia, 2001; Prencipe, 2004), so much so that, in order to avoid competitive disadvantage, insiders might choose not to reveal further information, so protecting investors (Dye, 2001). As the intensity of competition increases, the disclosing of information becomes more costly (Darrough & Stoughton, 1990).

The decision to disclose additional information is typically made in terms of a cost-benefit framework. Family firms, as good stewards of resources, carefully select information that can bring long-term benefits to their owners. This may motivate family firms to disclose less information overall than non-family firms, but this does not negate the research questions that are formulated in this article, given the increasing intensity of R&D:

RQ1: Does voluntary disclosure of information about issues closely related to R&D activities increase more in non-family firms than in family firms?

RQ2: Does voluntary disclosure of information about strategy-related issues increase more in family firms than in non-family firms?

Managers have great incentives to increase R&D disclosure when R&D expenditures are most intensive. The need for voluntary R&D disclosure arises from the lack of or partial recognition of R&D benefit flows in the balance sheet. Baruch Lev has conducted several studies of problems which are specifically inherent to R&D (Lev et al., 2005; Aboody & Lev, 1998; 2000) and argues that the reason for this inadequacy is that the firm's financial statements do not adequately reflect the value that innovative activities such as R&D produce. The consequence of this is that the firm (if it does not voluntarily disclose these activities) might be unfavourably affected by the myopia of the capital market in terms of the resource allocation process that the market itself performs. Lev et al. (2005) empirically confirmed that companies that engage in relatively higher R&D spending tend to subsequently perform better in the stock market, indicating that they were previously undervalued by market participants. Therefore, R&D expenditure means that the market does not value such expenditures correctly when they are actually incurred.

Authors encourage managers to make voluntary disclosure of information about intangibles such as R&D since, in this way, they provide information which is useful for outsider shareholders to be able to understand what the "correct" difference between book and market values should be (Chan et al., 2001; Lev et al., 2005). Higher future uncertainty increases firms' equity capital costs and pressure from outside shareholders for R&D information (Entwistle, 1999; Percy, 2000). However, managers of family and non-family firms behave differently with respect to equity. To make investments, a controlling family relies more on external funds from creditors (debt) and less on external funds from other shareholders (equity), since the latter may threaten the family's continued control over the firm (Steijvers & Voordeckers, 2009). The capital constraint, which derives from a refusal to rely on equity can lead owner-managers of family firms to decide to carry out large-scale investment by using elevated leverage. Anderson et al. (2003) show that dominant-family incentive structures reduce agency conflicts between managers and debt holders, causing the costs of debt financing to decrease. At the same time, long-term relationships with creditors and the desire to protect their controlling positions make dominant families particularly willing to provide information about strategy and less willing than managers of non-family firms to provide additional information about specific R&D-related issues (Anderson et al., 2003; Berger et al., 1997; Miller & Le Breton-Miller, 2006). This is because, with respect to intangible assets, debt holders are less interested than shareholders in information that is additional to the book value of the intangible asset. Many intangibles, such as R&D, manifest the difficult issues of creating/ensuring property rights. Others can easily exploit and profit from the positive effects of intangible assets, for example when an employee leaves the firm. Explicit information about R&D assets is less sought after by bankers, given that, if bankruptcy or liquidation occurs, these assets will lose most of their value. The authors discuss the idea that the controlling family is less sensitive to short-term stock market fluctuations because its primary goal is to ensure the long-term survival and prosperity of the company rather than to maximize short-term shareholder wealth (Prencipe et al., 2008; Anderson et al., 2003; Miller & Le Breton-Miller, 2006). In addition, a decrease in stock price has less impact in terms of turnover risk for top executives because executives are protected by their affiliation with the controlling family or personal relationships with its members. The close relationships between executives and the controlling family (Brunello et al., 2003; Miller & Le Breton-Miller, 2006; Volpin, 2002) and the long-term investment horizon of the latter (Anderson et al., 2003; Miller & Le Breton-Miller, 2006) make such firms less sensitive to the short-term oscillations of stock equity markets that follow the voluntary disclosures produced by management reports.

We unite considerations about shareholders, who require information concerning issues relating to R&D, with considerations that explain that dominant family ownerships have incentive structures on the basis of which family firm owner-managers worry less than managers of non-family firms about (outsider) shareholders' requests for information and more about requests for other types of information from other stakeholders. Thus, we can formulate the following hypotheses:

H1: As R&D intensity increases, the voluntary disclosure of information on R&D-related issues by firms increases.

H2: Ownership structures moderate the relationship between R&D intensity and voluntary disclosure of R&D. As R&D intensity increases, the voluntary disclosure of information on R&D-related issues will be lower in family firms.

R&D expenditures increase cash flow variability (Kothari et al., 2002; Shi, 2003) suggesting that the benefit of R&D expenditures may be offset by risk. In particular, Shi (2003) uses the pricing of debt securities to show that R&D expenditure has a negative impact on the cost of debt, as measured by bond ratings and bond risk premiums at issuance. Performance variability is a critical consideration for a family firm. Fluctuations in cash inflows create default risk, and firms become more likely to default on explicit obligations, such as existing contractual agreements with bankers and other debt holders, and implicit obligations, such as promises to customers or employees (Miller & Bromiley, 1990; Shapiro & Titman, 1986). Due to the greater default risk associated with higher variability in the firm performance and the resulting perception of instability and uncertainty in the business, third parties, such as banks, employees, and suppliers are more likely to increase their requests for additional information about strategy. Greater transparency about the actual strategic choices that affect the firm's operations and future performance is required by banks, senior employees, or suppliers to more accurately assess the family firm in terms of changes in risk levels, employment, or purchasing. Disclosure of strategy information is viewed by regulators and standard setters as important in their efforts to improve information flows in the capital markets. To improve voluntary disclosure, the Financial Accounting Standards Board (FASB, 2001) and some authors emphasize, among other things, the usefulness of information about a firm's strategy and its execution (Gu & Li, 2007). In particular, the FASB specifically indicates revelations of "managements' strategies and plans for managing those critical success factors in the past and going forward" as vital for the improvement of business reporting (FASB, 2001, p. 13).

Fuller and Jensen (2002), Hutton (2004), and others have pointed out that disclosure of strategy is central to the transparency and effectiveness of financial reporting in the post-Enron era. Firms with more intangible assets, such as R&D, have more "growth options", that is more investment opportunities to choose between over time (Skinner, 2008a; 2008b). Skinner (2008a) uses definitions provided by Myers (1977), which separate what he calls "assets-in-place" from "growth options". The assets-in-place are assets in which a firm has already invested, whereas growth options are investment opportunities that a firm has the option to continue (Skinner, 2008a). Myers (1977) demonstrates that firms with more growth options exhibit much greater information asymmetry between insiders and outsiders.

Innovative activities such as R&D are among the main contributors to "growth options". The more growth options there are, the greater the risk for those providing the funds (equity or debt). In the future, managers of firms will be able to easily shift these funds to higher-risk growth opportunities. Firms with more growth options available face greater challenges and risks than other firms. For example, once managers have obtained some funding, they could profit by switching investment from the projects proposed when asking for the finance to opportunities which present greater risk, so reducing the value of the financiers' (creditors and shareholders) claims (Smith & Watts, 1992). "Growth options" coincide with the breadth of investment options available to a firm (Myers, 1977). The greater the range of these investment opportunities, the more difficult it will be for financiers to stipulate a complete contract, since this implies a greater information asymmetry between financiers and management. It is, therefore, likely that financiers will seek additional information relevant to value, and managers may disclose strategy information to meet this demand, i.e., to provide information about their plans and objectives. Indeed, it is by defining/describing its strategy that a firm selects and states that it will pursue certain investment opportunities while rejecting others. The demands of banks, suppliers, customers, employees, trade unions, the general public and other stakeholders must be taken into consideration by any company that requires legitimacy (Pfeffer & Salancik, 1978).

The public reputation of a business is important to any family that wants the public to view its company in a positive light, and as a result, the family will try to prevent its firm from adopting any practices that might damage its reputation and will seek to satisfy the demands of powerful stakeholders such as banks and other debt holders. Godfrey (2005) argues that intangible resources of legitimacy and reputation are very precious to family firms. Family firms have a strong tendency to build and maintain a reputation for integrity and trust as such assets can supply families with a form of "social insurance" that can be "cashed in" in times of crisis. For the families of owner-managers, maintaining high social capital and a good reputation among debt holders is an important element to consider. In particular, family ownership can foster unique types of human and social capital in terms of resource endowment. Family firm owners typically attempt to pass on the business to their offspring and may thus seek to build a loyal pool of skilled employees and long-term external relationships to support this transition (Miller & Le Breton-Miller, 2006). To increase staff commitment, motivation, and retention, family firms invest heavily in their employees through high salaries, excellent benefit packages and above-average working conditions. In addition, family firms are interested in investing time and money in potentially sustaining associations (e.g., customers, suppliers and capital providers) that provide access to resources (Miller & Le Breton-Miller, 2005). For instance, building close relationships with financial institutions may facilitate access to financial capital (Miller & Le Breton-Miller, 2006).

We combine considerations about the importance of information concerning strategic issues to stakeholders with the notions that stakeholder demands must be taken into account by any company that requires legitimacy, and that legitimacy and reputation resources are very valuable for family firms, more so than for non-family firms. In this way, we formulate the following hypotheses:

H3: As R&D intensity increases, the voluntary disclosure of information about the firm's strategy-related issues increases.

H4: Ownership structures moderate the relationship between R&D intensity and voluntary disclosure of strategy. As R&D intensity increases, the voluntary disclosure of strategy-related issues will be higher in family firms.

3. RESEARCH METHODOLOGY

3.1. Sample selection

In Italy, all firms exhibit a high degree of concentration in their ownership structures, including those listed on the Italian Stock Exchange in Milan. The family represents the largest group of blockholders on the stock market, while the state or other public bodies constitute the next largest group (Cascino et al., 2010; Corbetta & Minichilli, 2005; Montemerlo, 2000; Soana & Crisci, 2017).

Previous empirical research proxied the overall level of voluntary disclosure made by companies with earnings forecasts (e.g., Ajinkya et al., 2005; Karamanou & Vafeas, 2005) or with voluntary disclosure in the annual report (e.g., Botosan, 1997; Ho & Wong, 2001; Eng & Mak, 2003; Gul & Leung, 2004; Cheng & Courtenay, 2006). In this research, we select the second option. Previous studies showed the existence of a positive correlation between the annual report disclosure level and the amount of disclosure provided via other channels. Therefore, voluntary disclosure in the annual report can provide a good proxy for the overall level of information voluntarily disclosed via other means (Botosan, 1997).

Thus, in order to measure the level of voluntary disclosure by companies, we use disclosure indices based on data reported in annual reports for 2016–2018.

To test our hypotheses, we need to select companies engaged in R&D activities. According to Italian disclosure regulations in force in 2016 (Article 2428 of the Italian Civil Code), all companies that carry out R&D activities during the financial year must present such activities in the Management Discussion and Analysis section (known in Italy as "*Relazione sulla Gestione*"); therefore, we conduct a content analysis of the annual reports of all non-financial companies listed on the Milan Stock Exchange that disclosed R&D activities for the period 2016–2018.

First, we select only those companies that recorded an increase in R&D spending in each of the three years under consideration, leaving out all the others.

According to Italian disclosure regulations in force in 2016 (Article 2428 of the Italian Civil Code), disclosure regards a wide range of issues, such as key financial and non-financial performance indicators, risks, the environmental impact of the operations and human resources. Mangers must also provide strategic information on the environment, investments and the future behaviour of the company. However, there are no clear requirements regarding what quantitative or qualitative disclosures must be provided.

We apply a method to identify firms listed on the Italian Stock Exchange that can be classified as family firms based on the definition, we chose in Section 1. In particular, we determine the family nature of a firm by analyzing the controlling stake and the responsibilities of the CEO and Chairman as of December 31, 2016, and December 31, 2018. In particular, we collect data on:

- the ownership structure, through CONSOB (*Commissione Nazionale per le Società e la Borsa*/ Italian Companies and Exchange Commission);
- the names of the CEO and/or Chairman, through the annual year-end corporate governance report (*Relazione sulla Corporate Governance*).

In this way, we identify as family firms only those listed companies where the family exploited the fractional equity holding of its members to appoint a family member to the position of CEO or chairman of the board (in cases of no-CEO duality).

Companies included in the sample were only those not subject to the Non-Financial Reporting Directive (Directive 2014/95/EU — NFRD)[1]. At the end of these phases, only 45 firms could be considered useful for the subsequent analysis, 23 of which are family firms and the remaining 22 are non-family firms. We collected year-end data for each firm for each of the three years covered by the period 2016–2018. Therefore, our sample comprises a panel of 135 observations, 69 of which relate to family firms.

3.2. Definition of variables

3.2.1. Dependent variables

To test hypotheses *H1* and *H2*, we examine a disclosure index relative to R&D (*RD.DISC* variable); while in order to test hypotheses *H3* and *H4*, we examine a disclosure index relative to strategy (*ST.DISC* variable). With these two disclosure indices, we measure the extent (breadth) and depth of information voluntarily disclosed by the sample firms. In particular, we use the method described by Adrem (1999) and then by García-Meca et al. (2005) to control the extent of information on R&D and strategy voluntarily provided. Then, we refer to the set of items related to both R&D, listed in Table 1, and strategy, listed in Table 2, that are considered transferable (by the firm). We measure the extent of information as the percentage of disclosed information items to the total number of all items (considered as communicable by a firm) related to R&D, on the one hand, or strategy, on the other. To calculate the strategy (*ST.DISC*) and R&D (*RD.DISC*), disclosure indices, we also take into account the depth of the information disclosed. Therefore, we give a score to each item voluntarily disclosed by managers and quantify the scores following the method used by Cerbioni and Parbonetti (2007), who argue that the qualitative and quantitative aspects of firms' voluntarily disclosed information should be examined together. Specifically, if information is disclosed on one of the items listed in Tables 1 or 2:

- is only expressed in discursive rather than numerical terms, then a score of "1" is given to that item;
- is also expressed in numerical terms (besides discursive terms), that is both in monetary or non-monetary terms, then a score of "2" is given to that item.

We calculate (or each sample firm and for each year) each of the two disclosure indices as a percentage of the actual revealed score of the total score that the company is able to report (the total that would be achieved by giving a score 2 to the items included in the established list in Tables 1 and 2). Thus, the qualitative and quantitative information that managers disclose is measured in this paper in terms of the percentage of information provided relative to the maximum amount of information that is considered to be reported by the companies. The maximum volume has never

[1] https://eur-lex.europa.eu/eli/dir/2014/95/oj/eng

been achieved by any of the sample companies due to the fact that none of the firms has provided all of the information. The maximum volume (obtained theoretically) would be achieved if all of the items on the established list were subject to both qualitative and quantitative voluntary disclosure.

Table 1. List of items used to measure R&D disclosure index (*RD.DISC*)

No.	*Item*
1	Patents and licenses obtained through R&D innovation activities
2	Objective of R&D
3	Future R&D projects
4	Implementation, continuation or completion of R&D projects
5	Basic research
6	Product development and design
7	Patents pending due to R&D
8	Relationship of past R&D activities to actual innovation (e.g., new developments, improved use of existing technologies)
9	Period of innovation (e.g., how long is required to carry out the R&D of a new product)
10	Programmed levels of financing to meet R&D expenditure
11	Form of collaboration with other companies and/or government in R&D initiatives
12	Human capital and details on research teams

The suitability of the aggregation of items relative to R&D is assessed using Cronbach's alpha. This assesses the capacity of a group of elements to measure an entity in common, in this case the information disclosed regarding R&D issues. The Cronbach's alpha of the scale is 0.719. Therefore, this is able to judge the feasibility and coherence of the scales as valid (see Nunnally, 1978; Malhotra, 1997).

Table 2. List of the items used to measure the disclosure index relative to strategy (*ST.DISC*)

No.	*Item*
1	New products to be marketed and new technology to be employed
2	Investment in new markets
3	Business vision; objectives and strategy consistency
4	Leadership and brands
5	Acquisitions
6	Strategic alliances, agreements
7	Supplier and customer networks
8	Product quality
9	Marketing information
10	Pricing policy
11	Organisational structure
12	Market share by segment/product
13	Shareholder structure
14	Relative market share compared to competitors
15	Best practices
16	Corporate culture
17	Market share
18	Investments in environmental protection
19	Social responsibility

Next, we run Cronbach's alpha to validate the aggregation of items relative to strategy. Cronbach's alpha of the scale is 0.721. Therefore, this is able to judge the feasibility and coherence of the scales as valid.

3.2.2. Independent variables

On the basis of the predictions made by the framework, we measure the following variables for each firm in the sample at the end of each year of the observation period:

• *RD.INT* = the intensity of R&D, calculated as the ratio of total R&D expenditure to total sales. The hypotheses under study predict positive relationships between *RD.INT* and the dependent variables *RD.DISC* (*H1* and *H2*) and *ST.DISC* (*H3* and *H4*).

• *FAM* = a dummy variable that takes the value of "1" for the sample firms classified as family firms and "0" otherwise. More precisely, in our analysis, *FAM* is considered as a moderator since it influences the strength and sign of the relationship between the independent variable *RD.INT* and the dependent variable *RD.DISC* (*H2*, where the moderator is assumed to be negative), on the one hand, and the dependent variable *ST.DISC* (*H4*, where the moderator is assumed to be positive), on the other.

3.2.3. Control variables

Control variables are chosen on the basis of previous studies of voluntary disclosure. Therefore, we measure, for each firm in the sample and at the end of each year between 01/01/2016 and 31/12/2018, the variables:

• *SIZE*. As more information is normally made available by large firms than it is by small firms, the size of a firm will probably reflect the level of asymmetry of information that exists between managers and investors. Size is calculated as the natural logarithm of the firm's total assets at fiscal year-end.

• *Leverage (LEV)*. It is expected that firms which are heavily in debt will suffer higher costs of monitoring. Ahmed and Courtis (1999) argue that managers of such firms may disclose additional information in their annual reports in an attempt to reduce these costs. Therefore, we calculate leverage as the total amount of debt over the total book value of equity (BVE).

• *Profitability (PROF)*. Raffournier (1995) suggests that there might be significant incentives for firms which make high profits in some years to reveal more corporate information during these years because this would render their good performance more visible to investors. We use the "net profit/BVE" ratio as a measure of profitability, as has also been done by Malone et al. (1993).

• *Market-to-book ratio (M/B)*. This is equal to the market value divided by the BVE. Barth and Kasznik (1999) point out that the market-to-book ratio may also reflect the firm's information asymmetry. Indeed, in firms with high growth rates and significant quantities of intangibles, managers will probably benefit from more information regarding the firm's future growth and the value of these intangible assets. Firms with high market-to-book ratios reveal information voluntarily in order to deal with a potential gap in information brought about by elevated asymmetry between insiders and outsiders.

4. EMPIRICAL FINDINGS

4.1. Descriptive and univariate analysis

Table 3 focuses on strategy disclosure. Table 4 focuses on R&D disclosure. Both tables present average percentages calculated for all sample firms over the three years of the 2016–2018 period.

With regard to the information about R&D which is voluntarily disclosed by sample companies, Table 3 shows that, on average, companies only disclosed information about a minority (36.5%) of the items considered communicable by a firm (included in Table 1). For the majority of these items, only descriptive/narrative information is provided (this occurred for 20.1% of the items in Table 1). Only 10.3% of these items are the object of voluntary disclosure of non-monetary quantitative information, while the residual 6.1% of items are the object of voluntary disclosure of monetary information.

Table 3. The mean number of disclosures about R&D by type

Type of disclosure		*Mean number*
Information only expressed in narrative/descriptive terms		20.1%
Information is also expressed in numerical terms	Monetary quantified	6.1%
	Non-monetary quantified	10.3%
Total mean disclosures per company		36.5%

Table 4. The mean number of disclosures about strategy by type

Type of disclosure		*Mean number*
Information only expressed in narrative/descriptive terms		37.7%
Information is also expressed in numerical terms	Monetary quantified	5.7%
	Non-monetary quantified	6.9%
Total mean disclosures per company		50.3%

In reviewing Table 4, we note that the sample firms (during the revealed years) did not voluntarily disclose information about strategy for all of the items considered communicable by a firm (included in Table 2), but only for 50.3% of them. In particular, on average, companies only disclosed descriptive/narrative type information for 37.7% of the items (considered as communicable). For only 12.6% of the items, the sample firms voluntarily provided both quantitative and descriptive information, and these can be divided as follows: 6.9% of these items were in the form of voluntary quantitative, non-monetary disclosures, while only the remaining 5.7% were in the form of voluntary monetary disclosures. After having revealed all of the necessary data, we make calculations and form a panel of 195 different combinations of variable values (*RD.DISC*, *ST.DISC*, *RD.INT*, *LEV*, *PROF*, *SIZE*, *M/B*), one for each firm-year observation within our sample. Table 5 presents descriptive statistics for these variables whereas their correlation statistics are presented in Table 6. The firms are profitable in general, with *PROF* at 9.1%. The firms are leveraged at 69%, indicating that debt financing is an important source of funds. With regard to their size, the firms are relatively large firms with about €163 million in assets on average.

Table 5. Descriptive statistics

Variable	*Mean*	*Median*	*SD*	*25%*	*75%*
RD.DISC	36.5%	21.66%	7.22	3.7%	37.15%
ST.DISC	50.3%	41.6%	11.13	25.8%	61.91%
RD.INT	0.08	0.07	0.05	0.02	0.15
FAM	0.51	1.00	0.03	0.00	1.00
SIZE	18.91	19.17	0.73	13.91	22.082
LEV	0.69	0.72	0.08	0.54	0.79
PROF	0.091	0.093	0.13	-0.081	0.21
M/B	3.971	4.19	1.03	1.33	8.995

Note: N (observations) = 135. SD — standard deviation.

Table 6. Correlation matrix

Variables		*(1)*	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
(1)	*RD.DISC*	1							
(2)	*ST.DISC*	0.059	1						
(3)	*RD.INT*	0.21***	0.23***	1					
(4)	*FAM*	-0.019	0.15**	0.031	1				
(5)	*SIZE*	0.11*	0.18**	0.019	0.029	1			
(6)	*LEV*	0.009	0.17**	0.091	0.039	0.043	1		
(7)	*PROF*	0.15**	0.12*	0.078	0.021	0.041	0.012	1	
(8)	*M/B*	0.22***	0.16**	0.128**	0.051	-0.021	0.023	0.042	1

*Note: Pearson's product-moment correlation coefficients. N = 135; 1-tailed: ***, **, * indicate significance at 1% and 5% or 10% level, respectively.*

Table 6 shows certain significant correlations. *ST.DISC* with *M/B, RD.DISC* with *PROF, ST.DISC* with *SIZE, ST.DISC* with *LEV, RD.INT* with *M/B* and, finally, *FAM* with *ST.DISC* are significantly correlated ($p < 0.05$). *RD.DISC* with *M/B, RD.INT* with *RD.DISC* and *RD.INT* with *ST.DISC* are strongly correlated ($p < 0.01$). *RD.DISC* with *SIZE* and *ST.DISC* with *PROF* are weakly correlated ($p < 0.1$).

4.2. Regression models

In addition to univariate tests that provide preliminary evidence, we employ two ordinary least squares (OLS) multiple regression analyses to examine the dynamic interactions between the variables and their relationship with voluntary disclosure indices on R&D and strategy.

The first is a hierarchical regression analysis, reported in Table 7, that uses *RD.DISC* as a dependent variable to test hypotheses *H1* and *H2*, which focus upon voluntary disclosure about R&D. The independent variable is *RD.INT*, which also interacts with the moderator variable *FAM*. Our hypotheses predict a positive coefficient for the independent variables *RD.INT* (*H1*), and a negative coefficient for the interaction *RD.INT* × *FAM* (*H2*).

Next, we carry out a second hierarchical regression analysis, reported in Table 8, that uses *ST.DISC* as a dependent variable to test hypotheses *H3* and *H4*, which focuses upon voluntary disclosure about strategy. The independent variable is *RD.INT*, they also interact with the moderator variable *FAM*, just as in the previous model. Our hypotheses predict a positive coefficient for the independent variable *RD.INT* (*H3*), and a positive coefficient for the interaction *RD.INT* × *FAM* (*H4*).

4.3. Hierarchical regression analysis of disclosure indices *RD.DISC*

The results of this analysis are summarized in Table 7. In the first step, we placed the control variables in Model 1 and the results are presented in column (1) of Table 7. This model explains about 7.6% of the variance. The model fits because the F-sign is 2.710, which is significant at the 0.05 level. In Model 1, when the regression coefficients are examined, the results show that firms with a larger size (*SIZE* is significant at $p < 0.05$) or with more intangible assets (*M/B* is significant at $p < 0.05$) voluntarily disclose more information about their R&D activities.

On the other hand, statistically less significant effects are noted for profitability (*PROF* is significant at $p < 0.1$). Therefore, we placed the independent variables in the second phase and formulated Model 2. The results are reported in column (2) of Table 7. This model explains about 17.5% of the variance. This model makes a more significant contribution than the base model (ΔR-squared = 9.9%, F-change = 4.91 with $p < 0.01$). The new variables to be added are generally able to have statistically significant effects on the R&D disclosure index. In particular, findings suggest that there is a strong association between the *RD.INT* (the standardised regression coefficient is positive and equal to 0.181, significant at $p < 0.01$) and *RD.DISC* variables. Therefore, this analysis confirms *H1*.

To test *H2*, it is necessary to examine the dynamic interaction between the *RD.INT* variable and the *FAM* moderator. For this purpose, we write Model 3 in column (3) of Table 7. It presents the results that are achieved by adding the interaction term to the equation, corresponding to hypothesis *H2*. The interaction effect is statistically significant if and only if the interaction term makes a significant contribution above and beyond the model with main effects only. Adding the interaction term yields a statistically significant improvement in model fit (ΔR-squared = 7.1%, F-change = 7.30 with $p < 0.01$). The standardised regression coefficient is negative and equals -0.341, so hypothesis *H2* is supported by our analysis. The full model (Model 3) fits and explains about 24.6% of the variance with F-sign = 5.977, with significance at the 0.01 level.

By using the subscript i to denote each firm in our sample and t for a time period, the regression equation in Model 3 can be written as follows:

$$RD.DISC = b_0 + 0.155\, SIZE_{it} + 0.234\, LEV_{it} + 0.193\, PROF_{it} + 0.177\, (M/B)_{it} + 0.158\, RD.INT_{it} - 1.714\, FAM_{it} - 0.341\, FAM_{it} \times RD.INT_{it} + \varepsilon_{it} \quad (1)$$

The results obtained in the three models are significant and robust. As can be seen from Table 7, all models are significant (at $p < 0.05$ or $p < 0.01$), with R-squared ranging from 0.076 for Model 1 to 0.246 for Model 3.

Table 7. Results of hierarchical regression analysis of the *RD.DISC* variable

Variable	*Model 1*	*Model 2*	*Model 3*
Control variables			
SIZE	0.291**	0.197**	0.155**
LEV	0.312	0.271	0.234
PROF	0.219*	0.181*	0.193*
M/B	0.351**	0.257**	0.177**
Independent variables			
RD.INT		0.181***	0.158***
FAM		-2.197*	-1.714*
Interaction			
RD.INT × FAM			-0.341***
ANOVA			
F-sign	2.71**	4.570***	5.977***
R-squared	0.076	0.175	0.246
Adj R-squared	0.048	0.137	0.205
ΔR-squared	0.076	0.099	0.071
F-change	2.71**	4.91***	7.30***

*Note: N = 135; 1-tailed: ***, **, * indicate significance at 1% and 5% or 10% level, respectively. ANOVA — analysis of variance.*

4.4. Hierarchical regression analysis of disclosure indices *ST.DISC*

Table 8 is constructed similarly to the previous Table 7. Model 1, reported in column (1), presents only the control variables. This model explains about 6.3% of the variance with an F-sign of 2.21 (significant at the 0.1 level). With regard to the previous hierarchical regression, another significant positive effect of *LEV* can be observed, suggesting that the firms in the sample increase voluntary strategy disclosure as financial leverage grows. Model 2, presented in column (2) of Table 8, adds the independent variables corresponding to the tests of hypotheses *H3* and *H4*. This model explains about 10.5 % of the variance. Model 2 makes a more significant contribution than Model 1 ΔR-squared = 4.1%, F-change = 3.090 with $p < 0.05$). The new variables to be added are generally capable of producing statistically significant effects on the disclosure index of strategy. In particular, the results show that there is a strong relationship between the variables *RD.INT* (the standardized regression coefficient is positive and equal to 0.151, significant at $p < 0.01$) and *ST.DISC*. Therefore, hypothesis *H3* is supported by this analysis.

To test hypothesis *H4*, it is necessary to add the moderator *FAM*. For this purpose, we write Model 3 in column (3) of Table 8. Adding the interaction term yields a statistically significant improvement in the model fit (ΔR-squared = 6.0%, F-change = 4.99 with $p < 0.01$). The standardised regression coefficient is positive and equal to 0.291, and, therefore, hypotheses *H4* is supported by our analysis. Model 3 is fit and explains about 16.4% of the variance with F-sign = 3.59, significant at the 0.01 level.

Using the subscript i to denote each firm in our sample and t for the time period, the regression equation in Model 3 can be written as follows:

$$ST.DISC = b_0 + 0.131\ SIZE_{it} + 0.221\ LEV_{it} + 0.159\ PROF_{it} + 0.207\ (M/B)_{it} + 0.147\ RD.INT_{it} + 1.364\ FAM_{it} + 0.291\ FAM_{it} \times RD.INT_{it} + \varepsilon_{it} \quad (2)$$

The results found in the three models are significant and robust. As is evident from Table 8, all the models are significant (at $p < 0.1$ or $p < 0.01$), with R-squared ranging from 0.063 for Model 1 to 0.164 for Model 3.

To test all the models presented in Tables 7 and 8, we employ other statistical tests. In particular, with regard to the problem of multicollinearity, we measure the variance inflation factor (VIF) of each of the independent variables. The VIF values are found to be low enough (range 1–1.6) to confirm the absence of multicollinearity.

Table 8. Results of hierarchical regression analysis of the *ST.DISC* variable

Variable	*Model 1*	*Model 2*	*Model 3*
Control variables			
SIZE	0.113**	0.127**	0.131**
LEV	0.272*	0.201*	0.221*
PROF	0.201*	0.161*	0.159*
M/B	0.298**	0.287**	0.207**
Independent variables			
RD.INT		0.151***	0.147***
FAM		2.031**	1.364**
Interaction			
RD.INT × FAM			0.291***
ANOVA			
F-sign	2.210*	2.511**	3.59***
R-squared	0.063	0.105	0.164
Adj R-squared	0.035	0.063	0.118
ΔR-squared	0.063	0.041	0.060
F-change	2.210*	3.090**	4.99***

*Note: N = 135; 1-tailed: ***, **, * indicate significance at 1% and 5% or 10% level, respectively.*

5. DISCUSSION

Our study aims to investigate the voluntary disclosure practices of family firms compared to non-family firms that engage in R&D activities. The literature on the disclosure practices of family firms is limited. Family firms have rarely been used to study voluntary disclosure, and, therefore, the relationship between ownership structure and disclosure is an empirical issue that still requires investigation. Empirical results on this topic are mixed and in some cases contradictory (Arcay & Vazquez, 2005; Armstrong et al., 2010; Brown et al., 2011; García-Meca & Sánchez-Ballesta, 2010; Luo et al., 2006). Family owner-managers and non-owner-managers are two different categories of managers who have different incentives to satisfy the demands of their diverse stakeholders for high-quality accounting information. In particular, family firms have incentives to establish and maintain a reputation for honesty and trustworthiness with creditors and to build social capital in the form of strong ties with bankers. Debtholders view dominant family ownership as an organisational structure that better protects their interests (Anderson & Reeb, 2003, 2004). Based on these arguments, we develop a theoretical framework that proposes that variations in voluntary disclosure provided by family-controlled firms may represent an organizational strategy to establish legitimacy by aligning the interests of family owners with the expectations of debtholders. We propose that banks and other creditors are more interested in information about the strategic objectives of investments and how managers intend to achieve these objectives, and, consequently, that banks and other creditors are less interested in information about R&D-related issues.

Our analysis supports all of the hypotheses formulated in Section 2, showing that managers of family and non-family firms increase voluntary disclosure of both R&D and strategy-related issues as R&D activity becomes more intense. However, family firms stand out because they are more inclined to make voluntary disclosure about strategy and less inclined to make voluntary disclosure about R&D.

6. CONCLUSION

The empirical results of our analyses provide evidence on voluntary disclosure that supports family firm theory (Levitt & March, 1988; Lester & Cannella, 2006), which states that the importance and utility of providing bankers with accurate information about the firm's strategies are much greater in family management than in managerial governance. This is because family firms make investments that are difficult for other organizations to understand. The difficulty in understanding the strategic significance of the strategic decisions of family owner-managers is that such decisions often relate to policies that will help the business survive until a new generation is ready to take over and leave a healthier enterprise for successors to manage (Daily & Dollinger, 1992; Gallo & Vilaseca, 1996). The accuracy of reporting of company performance is critical to investment decisions by individuals and institutions (Beyer et al., 2010). Industry and business analysts require frequent company reports and forecasts that focus on financial performance, with detailed explanations for deviations from earnings forecasts and accounting projections of expected results (Pruitt et al., 2014). Management's ability to garner support from other important stakeholder groups is a critical factor in assessing the organizational effectiveness of a family firm. Owner-managers of family firms have a strong tendency to manage capital prudently and invest in long-term assets such as reputation and social capital. Reputation and social capital in banks are at risk during periods of high R&D investment. R&D expenditure increases the volatility of cash flows. Fluctuations in cash inflows create default risk, and firms become more likely to default

on explicit commitments, such as existing contractual agreements with bankers and other debt holders, and implicit commitments, such as promises to customers or employees. It is probable that voluntary disclosure of strategy provides important advantages to owner-managers of family firms so that they can protect and maintain good reputations and high social capital in banks during periods when senior management is busy with R&D investments that create significant information asymmetries between management and debt holders.

In focusing on agency conflict issues, we use the classification developed by Smith and Warner (1979), which postulates that four categories of agency conflicts arise between debt holders and equity holders, and we thus note that many agency conflicts can be resolved by resorting to voluntary disclosure by the firm on strategically related issues. The first of Smith and Warner's (1979) categories concerns the conflict of interest between managers and debtholders over dividends. Debtholders are concerned that equity holders may increase dividend payments, thereby reducing the resources available to pay off debtholders' claims. The second is that there is a conflict over future increases in debt levels, which will reduce the likelihood that the creditor will be repaid. The third and fourth sources of conflict relate to asset substitution and underinvestment. Following a debt issuance, firms often have incentives to shift their asset mix toward riskier investments, resulting in a transfer of wealth from debt holders to equity holders. Alternatively, as firms approach default, they may abandon projects with positive net present value because the benefits will primarily accrue to the firm's creditors rather than its equity holders. Agency conflicts in these last three categories relate to the wide range of investment options that managers can choose from after receiving financing, which reduces the cost of financiers' (creditors and shareholders') claims (Smith & Watts, 1992). The wider the range of these investment options, the more difficult it will be for financiers to negotiate a complete contract, since this implies a greater information asymmetry between financiers and management. Therefore, it is probable that financiers will seek further value-relevant information and managers might reveal information about strategy in order to meet this demand, i.e. by providing information about their plans and objectives. Indeed, it is by defining/describing its strategy that a firm selects and states that it will pursue certain investment opportunities while rejecting others.

One important limitation of this study is the Italian economic context from which these data were collected. Therefore, special attention should be paid to generalizing these findings to other national contexts.

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