Why and when do family firms invest less in talent management? The suppressor effect of risk aversion

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Abstract
This article explores the complex relationship between family firms and talent management practices. We use an international sample of medium-sized manufacturing firms to show that the relationship between family-owned firms and investment in talent management practices is mediated by the firm's level of risk aversion, which is, in turn, moderated by industry competition. Risk-averse family-owned firms tend to invest less in talent management practices when industry competition is weak. In contrast, when competition increases, family-owned firms tend to invest in talent as much as non-family-owned firms do.

Keywords Talent management · Family ownership · Risk aversion · Moral hazard · Adverse selection · Industry competition

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1 Introduction

In a complex global economy, firms must manage talent as a source of competitive advantage (Wright & Kehoe, 2008). Talent management is defined as the set of 'activities and processes that involve the systematic identification of key positions, which differentially contribute to the organisation's sustainable competitive advantage, the development of a talent pool of high-potential and high-performing incumbents to fill these roles, and the development of a differentiated human resource architecture to facilitate filling these positions with competent incumbents and to ensure their continued commitment to the organisation' (Collins & Mellahi, 2009, p. 305). Talent management, decided at the top governance level, is considered a priority for any organisation (Fegley, 2006) because it increases their competitiveness (Chatterjee, 2016), performance (Shaw et al., 2013), and efficiency and productivity (Bloom et al., 2014).

When firms recruit, train, and manage talented employees, firms face two agency problems: adverse selection (information asymmetry between the employer and the applicants) and moral hazard (opportunistic behaviours of the agent once under contract) problems. These problems can be addressed either by incurring investment costs related to talent management or by maintaining the *status quo* and directly bearing the associated costs. Talent management practices aim to reduce both the traditional type I (principal-agent) agency problems, such as adverse selection and moral hazard (Tabor et al., 2018), and the specific agency problems created by family generational involvement in the firm, such as nepotism, conflict of family and business cultures (Bertrand & Schoar, 2006), and asymmetric altruism (Bernheim & Stark, 1988; Chrisman et al., 2004). Career-related issues are far more complex in family firms than in non-family firms due to the inextricable link between family and business (Baù et al., 2020). Although empirical evidence shows that family firms benefit from implementing formal human resource practices to attract and manage talented non-family employees (Chrisman et al., 2017; Jaskiewicz et al., 2017), talent management practices are unevenly distributed across family firms and between family and non-family firms (Bloom & Van Reenen, 2007; Hauswald et al., 2016; Memili et al., 2013).

Three main reasons may explain the difference in talent management practice between family and non-family firms. First, active supervision by family owners may discourage investment in talent management; family ownership may mitigate traditional agency problems using alternative practices such as exploiting the family social network to recruit potential candidates (Steijivers et al., 2017). Second, family ownership may create a family-specific logic, based on nepotism and asymmetric altruism, as a substitute for formal human resource practices (Daspit et al., 2017). Finally, family-owned firms may develop a self-perception where family-oriented goals could act as negative signals for potential talented candidates. Differences in talent management have relevant consequences for firm performance. For instance, Dal Maso et al. (2020) find that almost half of the negative relationship between family blockholders and environmental performance is mediated by investment in human resource practices. Therefore, the key question

is why and when do family firms invest less in talent management? We attempt to answer this question using organisational risk literature, an inherent part of agency theory.

Organisational risk, defined as 'income stream uncertainty' (Palmer & Wiseman, 1999, p. 1039), depends on idiosyncratic firm characteristics and contingency factors. Managing talent is risky because firms cannot ex-ante predict a candidate's innate talent (adverse selection problem) or the time the candidate is going to spend at the firm (moral hazard problem) (Arrow, 1973; Spence, 1973; Stiglitz, 1975). Under uncertain information, due to adverse selection and moral hazard, risk-averse firms weigh potential threats more heavily than the potential benefits from investing in and implementing talent management practices. Nonetheless, uncertainty should be contextualised because exogenous circumstances, such as industry competition, may alter the level of uncertainty of a particular event (Govindarajan, 1988; Hiebl, 2012). The cost of losing highly talented employees is higher when competition is high. Arguing that industry competition exacerbates adverse selection and moral hazard problems in talent management, we hypothesise that industry competition alters the behaviour of risk-averse firms versus risk-neutral firms. When industry competition increases, risk-averse firms are more willing to invest in talent management as a form of insurance for sustainability and continuity. Because of their idiosyncratic firm characteristic (e.g., Daspit et al., 2021), we focus on family-owned firms, which tend to be more risk-averse than non-family firms (Block, 2012; Hiebl, 2012; Morck & Yeung, 2003; Sirmon et al., 2008;). Knowing that talent management practices are less effective for non-talented employees, family firms, which are on average more risk-averse than non-family ones, are less likely to invest in talent management when competition is low. Accordingly, a negative association between family ownership and investment in talent management practices, mediated by the firm's level of risk aversion, may be expected in less competitive contexts.

We use the Bloom and Van Reenen (2007) dataset—an international sample comprising family-owned and non-family, medium-sized manufacturing firms operating in France, Germany, the United Kingdom, and the United States—to assess the mediation–moderation effect. Our results demonstrate that a firm's level of risk aversion negatively mediates the impact of family ownership on talent management investment as a managerial decision coming from the top governance level. Specifically, we show that family-owned firms are more risk-averse than non-family-owned ones and that being more risk-averse negatively influences the level of investment in talent management. We find that risk aversion is the only reason why, when competition is low, family-owned firms under-invest in talent management. That is, once we account for this mediation effect, no significant differences emerge between family and non-family companies. We also show that industry competition moderates this relationship. When industry competition is low, family-owned firms invest less in talent management practices than non-family-owned firms because of their risk aversion. Conversely, when direct competition increases the risk of losing talented employees (and thus competitive advantage), family-owned firms invest more in talent to ensure the firm's survival, thereby closing the investment gap. Finally, we demonstrate that the results apply to both pre- and post-contractual talent management practices.

Our study contributes to previous research by addressing the call by Wright et al. (2014) and Tabor et al. (2018) to better understand the antecedents of investment in human capital. Our model supports the finding of Memili et al. (2013) that, compared with non-family-owned firms, family-owned firms are less likely to offer incentives to non-family employees; and explicitly determines that the variations are due to firms' risk aversion and industry competition. Second, our study contributes to agency theory by explicitly measuring organisational risk using the inverse of the variance of return on capital employed (ROCE). Following Palmer and Wiseman (1999), we isolate the owner firm's characteristics (family ownership) from firms' relative risk aversion. Finally, our results have practical implications, especially for policymakers. Recognising the importance and prevalence of family firms across regions and countries and knowing that competition triggers risk-averse family firms to invest in talent management, there are two alternative policy paths. First, policymakers could promote competition which incentivises family-owned firms to maintain their competitive edge by improving their managerial practices to attract, develop, promote, and retain talented employees. Second, in low-competitive contexts, the government must also consider family risk aversion and promote talent management investment by assuming a part of the risk.

The remainder of this paper is organised as follows. In Sect. 2, we discuss the theoretical framework and relate it to the existing literature. Section 3 describes the sample, data, and methodology of this study. Finally, we report the results in Sect. 4 and discuss the main findings in Sect. 5, along with concluding remarks and practical implications (Sect. 6), as well as limitations and scope for future research (Sect. 7).

2 Related literature and hypotheses development

In a hypercompetitive and increasingly complex global economy, the identification and development of talent is a key priority for most CEOs (PwC, 2012), one that is highly rewarding (Lepak & Snell, 1999); nevertheless, managers often fail to manage talent effectively (Collings, 2014). While most previous research has focused on the relationship of the human capital dimension with firm performance (for a detailed overview, see Crook et al., 2011), paradoxically, the determinants of such investment have been less studied (Liu et al., 2014). Tabor et al. (2018) reached similar conclusions in their literature review of non-family members in family firms.

In the following sub-sections, we develop a conceptual model that includes the antecedents explaining talent management investment, with a specific focus on family ownership.

2.1 Talent management

Stemming from the resource-based view (Oliver, 1997), managerial literature (Gallardo-Gallardo et al., 2015) has identified talent management as the development of high-performing and high-potential incumbents in critical organisational roles

(Collings, 2014). Talent management research is still in its infancy (Lewis & Heckman, 2006); it lacks a clear and consistent conceptual framework (Al Ariss et al., 2014; Thunnissen et al., 2013). It focuses on talented people without any specific position or organisational boundary (Thunnissen et al., 2013). With this in mind, Sparrow and Makram (2015) state that this phenomenon is about the '*management of talent*,' not the narrower human resource management concerns of talent management per se. Indeed, the management of a small group of elite employees whose skills are difficult to find and replace (Sparrow & Makram, 2015) may fulfil these high-potential employees' needs and generate favourable attitudes and behaviours that can result in superior performance (Collins & Mellahi, 2009; Thunnissen et al., 2013). Furthermore, talent management 'practices may allow high-potential employees to become more agile which is necessary in order to compete in a modern unpredictable business world' (Khoreva et al., 2017, p. 20). The importance of talent management is even more evident in a globalised economy where talent is a fundamental source of strategic opportunity (Schuler et al., 2011).

Nevertheless, while scholarly interest in talent management has increased over the last decade (Tatoglu et al., 2016), the antecedents to talent management investments (i.e., how firms make talent management investment decisions) have remained unexplored (Liu et al., 2014). In this context, there are two parallel streams of literature that seek to explain the differences in firms' talent management investments. These streams are mostly related to the role of ownership and management composition, such as for a family-owned and -managed firm (Neckebrouck et al., 2018), and the inherent risks (i.e., adverse selection and moral hazard) associated with recruiting, retaining, and promoting human capital (Klein & Bell, 2007), which are related to the firm's level of risk aversion (Cappelli, 2008). We conjecture that these research streams converge; hence, ownership identity and firm risk aversion dimensions should be simultaneously considered to explore talent management investment.

2.2 Family ownership and talent management

Lajili (2015) argues that the governance structure of a company may be inferred through its ownership structure. Family businesses' governance differs from mainstream corporate governance in an important aspect: family members may have multiple organisational roles (Mustakallio et al., 2002), allowing them to directly or indirectly control managerial decisions by avoiding non-family board members' interference and other investors' control (Steijivers et al., 2017). Direct control is exercised when family managers directly make the most important decisions (Gallo & Sveen, 1991). Indirect control passes through an agency theory channel since family boards may effectively replace the CEO, even with a relatively low share in ownership (Tsai et al., 2006). Considering both channels (direct and indirect), Rizzotti et al. (2017) find that family owners promptly replace an underperforming CEO when the CEO is not a family member.

Therefore, as suggested by Tsai et al. (2006), we can rely on agency theory to explain why family-owned firms differ from non-family-owned firms in terms of investment in talent management practices. According to this theory, firms incur

agency costs to prevent opportunistic behaviour when the decision-making agent (the manager) has conflicting interests with the principal (the owner) (Eisenhardt, 1989; Jensen & Meckling, 1976). When there is information asymmetry in the labour market, agency conflicts can arise between the principal, either family or non-family owners, and the agent, any external non-family applicants, in the form of adverse selection and moral hazard problems. There are three main agency theory arguments indicating that family-owned firms are less willing to invest in talent management practices.

First, like any other firm, family-owned firms face the traditional challenges of adverse selection and moral hazard (Schulze et al., 2002) when dealing with talented non-family employees because of goal discrepancies, asymmetric information, and bounded rationality between the principal and agent. In non-family firms, the ownership–management distinction induces the implementation of talent management practices (incurring agency costs) to attenuate adverse selection and moral hazard problems. Conversely, these agency problems are 'theoretically' mitigated by owners' active monitoring role in family-owned firms (Chua et al., 2009). Family-owned firms may rely on social networks to hire employees and control them via close contact (Steijivers et al., 2017) to reduce information asymmetries, supervise their behaviour, and align their goals. Consequently, these firms are less willing to implement costly talent management practices.

Second, even though family-owned firms have an apparent advantage over non-family firms in reducing some agency problems, there are others exclusive to family firms. The family logic imprinted on the firm by family ownership generates unique asymmetric altruism and self-control problems for family firms (Bernheim & Stark, 1988; Thaler & Shefrin, 1981). This family logic is characterised by a long-term investment horizon (Miller & Le Breton-Miller, 2005), high psychological ownership (Pieper, 2010), and social, emotional, and economic investments in the firm (Gómez-Mejía et al., 2007). These agency problems influence managerial practices (Konzelmannet et al., 2006; Pindado et al., 2012) by imposing family-oriented interests that do not necessarily maximise profit (Basco, 2017; Lippi & Schivardi, 2014) or optimise human resources decision-making (Basco & Pérez-Rodríguez, 2011). These may include differential treatment of employees (Bandiera et al., 2015; Cai et al., 2013; Daspit et al., 2017; Jennings et al., 2018) and management entrenchment (Randolph et al., 2017), which are not aligned with the investment in and implementation of talent management practices.

Third, family-oriented goals serve as reverse signalling for potential candidates (potential employees). Family firms may consider themselves less professional about providing adequate rewards and appropriate incentives to talented candidates (Chrisman et al., 2017); therefore, they may avoid investing in talent management for less efficient, low-potential employees (Krishnan & Scullion, 2017; Lepak & Snell, 1999). Indeed, talent management investments require high-potential employees to be in the talent pool (Collings & Mellahi, 2009). Consequently, family-owned firms may perceive talent management practices as an unnecessary drain of wealth and a disutility for family members.

Based on these agency theory arguments, family business specificities induce family-owned firms to be reticent about investing in professional practices such as

talent management. Family ownership has pernicious effects on human resource practices (Liu et al., 2014). Neckebrouck et al.'s (2018) results indicate that family firms pay their employees 7 per cent less, invest 14 per cent less in off-site employee training, and have about 1 per cent more voluntary employee turnover than non-family firms do. According to De Kok et al. (2006), firms with family ownership and/or management are less likely to adopt professional human resource practices, which is the result of both a direct idiosyncratic effect explained by agency theory and an indirect effect of organisational characteristics such as firm size and complexity. Using a sample of 500 Spanish companies, Sánchez-Marín et al. (2019) find a negative moderating effect of family involvement on the relationship between the formalisation of training practices and firm performance. Similarly, using a sample of more than 30,000 firm-year observations from 2002 to 2016, Dal Maso et al. (2020) find a negative correlation between family ownership and investment in *training and development* practices, showing that this relationship explains at least half of family firms' lower environmental performance compared with non-family firms.

2.3 Family ownership, risk aversion, and talent management

As one of the main goals of corporate governance is to indicate the organisation's strategic direction, and as family ownership influences the strategic decision of talent investments (Ceja Barba & Tàpies, 2009; Miller & Le Breton-Miller, 2006), there is an ongoing debate about whether being a family firm is an antecedent of talent management investment. We continue to rely on the agency theory rationale to explore whether investing in talent management practices depends on the inherent risk of managing talent and the principal's risk aversion level. According to this theory, the level of risk aversion influences the principal-agent contract (Eisenhardt, 1989).

Conventional agency models regard the principal and agent as risk-neutral and risk-averse, respectively (Chua et al., 2009). During the recruitment process, the principal has limited knowledge about an employee's actual abilities (Akerlof, 1970). While agents know their own capabilities, principals must rely exclusively on public information about the former's talent. As a result, an adverse selection problem arises, and risk-neutral principals reward workers according to the average level of talent in the market. However, some studies have extended this framework to risk-averse principals (Chen et al., 2018; Penno, 1984; Shavell, 1979; Sobel, 1993), showing that risk aversion causes principals to attach greater importance to the worst events, to avoid profit uncertainty (Basov & Yin, 2010). Thus, risk-averse firms weigh potential threats due to adverse selection and moral hazard problems[1] more heavily than the potential benefits from investing in and implementing talent management practices. Given this, risk-averse firms are less willing than risk-neutral firms to invest in talent management.

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[1] In fact, employees may join rival organisations (Castanias & Helfat, 2001; Coff, 1997), thus increasing the recipient firm's competitiveness and productivity.

Even though the heterogeneity of family firms (Daspit et al., 2021), family-owned firms tend to be more risk-averse than non-family firms (Block, 2012; Hiebl, 2012; Morck & Yeung, 2003; Sirmon et al., 2008) because of their idiosyncratic characteristics. Their peculiar family specificities (Carney, 2005) affect organisational resource creation and allocation (Basco, 2015; Minetti et al., 2015), as well as the level of risk aversion (Hiebl, 2012; Schulze et al., 2001). Family firms tend to be risk-averse because they consider the firm as an inter-generational asset (Gentry et al., 2016; Hiebl, 2012). Families invest sizeable private and socio-emotional wealth in the firm, and this further increases their risk aversion (Bianco et al., 2013). Consequently, having a higher risk aversion may exacerbate adverse selection and moral hazard perception related to managing talented employees, thus affecting talent management investment. First, the usual adverse selection (principal-agent) problem in recruiting talented individuals is further aggravated by the principal's family-oriented goals (Aparicio et al., 2017) that are not necessarily disclosed during the hiring process. Second, even when family-oriented goals are in place, they may be ambiguous compared with economic goals (Basco, 2017), leaving employees to pursue their own goals. Consequently, family firms may prefer to use alternative practices to monitor their employees, such as active family presence in the decision-making process. Based on the above-mentioned arguments, we expect that firms' risk aversion mediates the family ownership–talent management investment relationship.[2]

Consequently, risk-averse family firms invest less in talent management because they place greater weight on the worst events related to moral hazard and adverse selection, and such risk aversion affects investment in talent management. Accordingly, we posit the following hypothesis:

Hypothesis 1 Ceteris paribus, the level of firms' risk aversion negatively mediates the relationship between family ownership and investment in talent management practices.

2.4 Risk aversion, talent management investment, and industry competition

In addition to the effect of firms' risk aversion, we explore the impact of industry competition on family ownership and investment in talent management. The level of industry competition can erode a firm's competitive advantage and jeopardise its survival (Cucculelli & Micucci, 2008).[3] Talent management is a major priority and provides a competitive advantage for organisations that aim to grow

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[2] As a robustness check, we test the interaction term between family firms and risk aversion (moderation analysis reported in the supplementary material A) finding no results. This supports our mediation hypothesis.

[3] Cucculelli & Micucci (2008), evaluate the impact of founder's successions on firm's performance before and after the founder steps down. While the main finding of the study is that the inherited management within a family negatively affects the firm's performance, they also found that succession negatively affects the performance in sectors where the competition is intense.
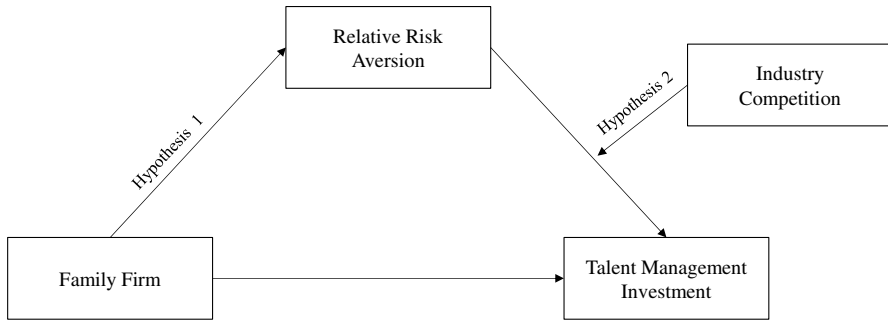
Fig. 1 Research Model

and survive in highly competitive markets (Cappelli, 2008; Fegley, 2006; Lewis & Heckman, 2006). Industry competition may change the investment decisions of risk-averse firms that weigh negative events more and are more sensitive to higher levels of industry competition. Industry competition increases the likelihood of losing talented employees who may prefer to join rival organisations (Castanias & Helfat, 2001; Coff, 1997), thereby affecting firm competitiveness and productivity, resulting in high turnover costs associated with recruiting and selecting their replacements. In other words, talented workers with proven ability have alternative opportunities; therefore, firms must appropriately reward talent to retain them and avoid moral hazard problems.

In this context, firm survival and family control may be threatened (Gómez-Mejia et al., 2007). Risk-averse firms may then be more willing to increase their talent management investment as insurance for sustainability, reducing the investment gap between family and non-family-owned firms. In contrast, when industry competition is low, risk-averse firms are less willing to invest in talent management than are risk-neutral firms.

These arguments may also apply to other family firms' strategic decisions. For instance, Calabrò and Mussolino (2013) argue that family firms face opposing forces in deciding whether to expand beyond domestic markets. On the one hand, they wish to maintain family control and pursue low-risk strategies, remaining within the known territory. On the other hand, internationalisation may offer them opportunities to grow. Interestingly, when the latter factor surpasses the former, family firms perform as well as non-family firms.

Following these arguments, we expect Hypothesis 1 to hold only in the context of low industrial competition (see Fig. 1). Accordingly, our second hypothesis is as follows:

Hypothesis 2 Ceteris paribus, industry competition moderates the mediation effect expected in Hypothesis 1. In a low (or high) competitive environment, risk-averse family-owned firms under-invest (or invest at least as much as non-family firms) in talent management practices.

3 Data and methods

3.1 Sample and data collection

The Bloom and Van Reenen (2007) dataset has been used for the present analysis. This dataset is based on the World Management Survey and was designed to measure the quality of managerial practices, specifically, talent management practices. Interviews were conducted in 2004 on a sample of 732 medium-sized manufacturing firms located in four countries: France, Germany, the United Kingdom, and the United States. A two-step procedure was used for sample selection. First, for each country, a sample of representative medium-sized firms (i.e., between 50 and 10,000 employees, with a median value of 675) was identified. Second, a randomly selected subsample was drawn from this initial sample. In this respect, Bloom and Van Reenen (2007) drew a sampling frame from each country to represent medium-sized manufacturing firms and then randomly chose the order of interviews.[4] Accounting for missing values, our final sample comprised 640 firms, with an average of 2023 employees (and a standard deviation of 4246). The number of employees had a left-skewed distribution, denoting a majority of relatively large firms with formalised managerial practices.

The data collection process involved medium-sized rather than small or large firms. Indeed, large firms are characterised by a high degree of between-plant heterogeneity, making it difficult to obtain a synthetic measure of managerial quality, whereas public data on small firms are rarely available. Information was telephonically collected without telling the managers that they were being scored. The respondents were plant managers, who are typically senior enough to have a perception of management practices but not as much as to be distant from daily operations. The survey responses were corrected using interviewer fixed effects and a standardised scoring system. On average, the interviews lasted 50 min, and the response rate was 54%. This high participation rate resulted from four strategies. First, the interview was introduced as a 'piece of work' without talking about firms' financial performance or accounting position. Second, the interviews started with less controversial questions about shop-floor operations. Third, interviewers were continuously monitored to incentivise them to contact firms. Fourth, the project received the written endorsement of the Banque de France (in France), the Bundesbank (in Germany), and the Treasury (in the U.K.). This emphasised the importance of the survey, making managers more willing to participate.

A common problem with surveys is that respondents try to infer the interviewer's opinion and provide what they consider the 'correct' answer instead of the true one. To address this issue, interviewers did not mention that managers were being scored. Thus, Bloom and Van Reenen used a 'blind' scoring technique based on a series of open questions specifically designed to accurately classify answers. A

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[4] While the Bloom and Van Reenen (2007) dataset is considered the most comprehensive data source for talent management practices available online, we acknowledge the limitations arising from the timing as well as industry and country selection.

second problem with surveys is that interviewers may have preconceptions about a firm's performance and thus systematically misclassify answers based on their a priori expectations. To mitigate this problem, interviewers did not receive information on firms' financial status or performance before the interview. Moreover, Bloom and Van Reenen eliminated interviewer fixed effects because each interviewer ran over 50 interviews on average. Finally, because the management quality is associated with several observable dimensions, they collected additional information on the interview process, the manager, and the interviewer's characteristics.

Bloom and Van Reenen assessed sample representativeness by comparing the respondent firms with the non-responding ones. They found no evidence that the responders were systematically different from the non-responders. Further, to assess the dataset's internal validity, different plant managers in the same firm were interviewed, and a strong correlation was found between independently collected measures. Conversely, external validation was conducted by measuring the association between managerial practices and firm performance. After augmenting the dataset with information on firm accounts and stock market values, they found that managerial practices were correlated with firm productivity, profitability, Tobin's Q, sales growth rate, and survival rate.

3.2 Dependent and independent variables

To measure investment in talent management practices, we used the average z-scores of talent management practices related to recruiting talent, instilling a talent mindset, creating a distinctive employee value proposition, and retaining talent, as measured by Bloom and Van Reenen (2007). These managerial practices belong to either the 'targets' or the 'incentives' areas. The first dimension measures whether attracting and developing talent is a firm target, whereas the second is related to the existence of an incentive system through which the firm creates a distinctive employee value proposition to retain talented workers. The survey considered both monetary and non-monetary incentives, such as training and development, and creating a distinctive employee value proposition. Therefore, compared with traditional human resource management practices, this study's dependent variable explicitly considered the existence of an internal talent market. Together with the capacity to identify talented workers, the creation of a talent market represents an essential feature of talent management.

We focused on three explanatory variables: whether a firm is family-owned, the level of a firm's risk aversion, and the intensity of competition within a given industry. First, there are different definitions of family ownership (see the following literature review for more details: Basco, 2013; Mazzi, 2011; O'Boyle et al., 2012), for this study, we take Miller et al. (2010) recommendations, and in line with our theoretical framework, which sustains the importance of family generational ownership involvement to capture firm behaviour and risk, we separated family ownership from lone founder ownership. In this sense, we followed previous studies in using a dummy variable that equals one, if the largest shareholder is a single family—combined across all family members, second-generation or beyond—and zero

otherwise.[5] Data on ownership and family generation come from company Securities and Exchange Commission (i.e., SEC) filings, company databases (Compustat and ICARUS in the United States, and Amadeus in the United Kingdom, France, and Germany), and company websites. In the case of missing data, information was supplemented with a telephonic survey for approximately 300 firms.

The second explanatory variable originated from accounting data and was related to the firms' level of risk aversion. To measure corporate risk-taking, we followed a common approach by proxying systematic and unsystematic risk with return volatility estimates (Cheng, 2008; John et al., 2008; Li et al., 2013; Miller & Bromiley, 1990; Nakano & Nguyen, 2012; Wright et al., 2007; Yost, 2018). In line with this literature, we used the inverse of the ROCE variance as a proxy for a firm's relative risk aversion.[6] John et al. (2008) argue that riskier corporate operations are associated with more volatile returns to capital. Thus, they proxy for the degree of risk-taking in firms' operations using the volatility of corporate returns. In this respect, Palmer and Wiseman (1999) find a strong positive relationship between managerial risk-taking and organisational risk (captured by the variance of return on assets). Moreover, they also find that managerial risk-taking persists over time.

Similarly, using option-implied risk aversion estimates, Bliss and Panigirtzoglou (2004) show that agents' relative risk aversion is negatively related to market volatility. A risk-averse agent is an individual 'preferring lower risk options at the expense of returns' (Wiseman & Gómez-Mejia, 1998, p. 133); therefore, relative risk aversion is strongly associated with return volatility. Finally, we may argue that ROCE volatility is a reliable proxy for risk aversion, independent of the return-variance relationship. If expected returns are positively correlated with return volatility, modern portfolio theory applies, and more risk-averse firms tend to reduce volatility at the expense of returns (Copeland & Stapleton, 1993). Conversely, in the case of a negative relationship between expected returns and volatility, a poor performer increases risk-taking, eventually resulting in further poor performance (Bromiley, 1991).[7]

We used the Lerner index as an indirect measure of competition. Bloom and Van Reenen define this index as (1 − profits/sales). The index was calculated as

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[5] With respect to the definition of the family ownership variable used in our study, we acknowledge it to be a very stringent definition of family firms (owned by second generation or beyond). Indeed, there may be cases of family firms owned by founders where the second generation is active in leading the Board of Directors. While we acknowledge this as a potential limitation, we have ruled out the possibility that our effects are unrelated to family ownership. In the supplementary material available online, we use a counterfactual analysis that replaces the family ownership indicator with a dummy variable that equals one if the founder is the largest single shareholder and CEO, to show that lone founders are not particularly risk averse. Therefore, they invest in talent management as much as other firms. The lack of any mediating effect is since, on average, firms owned by lone founders are not more risk-averse than others. Therefore, this counterfactual exercise supports the fact that our findings are family ownership specific. Moreover, our conclusions also hold when a different dataset is used to replace the family ownership dummy with a family management variable.

[6] For ease of representation, we standardised the relative risk aversion index.

[7] In the supplementary material B (available online), we further validate the relative risk aversion measures by showing that the portfolio theory applies in our case.

an average for the period 1995–1999 for a firm's country and three-digit industry values (excluding the focal firm). The higher the market competition, the higher the value of the index. As profits are negatively related to the number of competitors, when competition increases, profits tend to disappear, and the Lerner index tends to be one.[8]

Our estimates also considered additional variables that may influence talent management investment. To control for managerial capabilities, we added the average management score (*Management score*) across the following three managerial areas: *operational* (three practices), *performance monitoring* (five practices), and *target settings* (five practices). Operational practices are related to the introduction of modern manufacturing processes (such as lean processes), the rationale for introducing these processes, and the documentation of process improvements. Monitoring practices are related to the capacity to discuss, track, and review performance, and the existence of consequence management (that is, making sure that plans are followed, and appropriate sanctions and rewards are in place). Finally, the target area involves questions that examine whether the goals are balanced (i.e., targets are operational, financial, or more holistic), interconnected, stretch, and long-term oriented.

In addition, we consider the number of managers with a Master of Business Administration (*Managers with MBA*) and the percentage of employees with college degrees (*Degree*). In our model, we also include other factors of production: the stock of physical capital employed (*Physical capital*), number of employees (*Number of employees*), number of hours worked (*Hours worked*), and material costs (*Material costs*). Lastly, we add firm age (*Firm age*) and two dummy variables identifying whether a company is listed on a market exchange (*Publicly listed company*) or presents consolidated accounts (*Consolidated accounts*). Table 1 provides a detailed description of the main variables used.

Table 2 reports the basic descriptive statistics and unconditional correlation coefficients for the selected set of variables. The z-transformation of the *Talent management* score shows that a symmetric distribution around the mean (− 0.001). Family-owned firms represent 22.7% of the sample; the *Lerner index* is concentrated around the mean (0.944), and the *Relative risk aversion* coefficient exhibits a right-skewed distribution (-0.035). Apart from the control variables, firms operating in the United States represent 42% of the sample, with the remaining fraction almost equally divided among France (19%), Germany (19%), and the United Kingdom (20%).

3.3 Econometric analysis

To estimate the mediation effect of risk aversion on the relationship between family ownership and talent management, we used a structural equation model (SEM). The main advantage of this approach is that we can fit a single model and estimate the indirect and total effects by conducting a sensitivity analysis, such as

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[8] As a robustness check, we also considered an alternative measure of competition: a self-reported variable (*Competition*), indicating whether the firm has no direct competitors, fewer than five direct competitors, or five or more direct competitors. Un-tabulated results confirm the validity of our main inference.

Table 1 Description of variables

Variable	Description
Talent management	Average z-score of talent management practices related to recruiting talent, instilling a talent mindset, creating a distinctive employee value proposition and retaining talent as measured by Bloom and Van Reenen (2007).
Family ownership	Dummy variable taking value 1 if the largest shareholder is a single family (combined across all family members, whom are all second generation or beyond).
Lerner index	$(1 − \text{profits/sales})$, calculated for the period 1995–1999 as the average across each firm's country and three-digit industry (excluding each firm itself).
Relative risk aversion	The inverse of the variance of ROCE. For the sake of interpretation, the index has been standardized.
Management score	Average management score across the following managerial areas: operations (3 practices), performance monitoring (5 practices), and targets settings (5 practices) as measured by Bloom and Van Reenen (2007).
Managers with MBA	Percentage of managers with an MBA degree.
Degree*	The percentage of employees with a college degree.
Physical capital*†	Plant and equipment capital.
Number of employees*†	The number of workers employed.
Hours worked*	Average hours per week for all employees (managers and non-managers).
Material costs*π	The difference between the costs of goods sold and the costs of labor and capital (depreciation).
Consolidated accounts	Dummy variable taking the value 1 if data refer to consolidated accounts.
Firm age*	Firm age.
Publicly listed company	Dummy variable the taking value 1 if the firm is publicly listed and 0 otherwise.

*These variables are taken in logs

†Data come from Amadeus (France, Germany, and the United Kingdom) and Compustat (the United States)

πIn France and Germany, material costs are line items in accounts. For the UK, material costs are obtained by subtracting total wages from the costs of goods sold. For the US, material costs come from the method proposed in Bresnahan et al. (2002)

that proposed by Imai et al. (2010). Specifically, we tested the effects of omitted variables on the mediation effect. We estimated the following structural model (hereafter, firm subscripts are suppressed):

$$Relative\ risk\ aversion = \alpha_0 + \alpha_1 Family\ ownership + \delta X + \eta_{cs} + u \quad (1)$$

$$Talent\ management = \beta_0 + \beta_1 Family\ ownership + \beta_2 Lerner\ index + \beta_3 Relative\ risk\ aversion$$
$$+ \beta_4 Relative\ risk\ aversion * Lerner\ index + \gamma X + \mu_{cs} + \varepsilon \quad (2)$$

The variables are as described above and in Table 1. X is a matrix of control variables, μ_{cs} is a set of country-sector dummies capturing idiosyncratic characteristics, and ε is the error term. Equation (1) is also known as *the mediation equation*: By substituting *Relative risk aversion* in Eq. (2) with the right-hand side of Eq. (1), we can divide the relationship between *Family ownership* and

Table 2 Descriptive statistics and correlations coefficients

Variable	#	Obs	Mean	St. Dev	1	2	3	4	5	6
Talent management	1	640	− 0.001	0.759	1					
Family ownership	2	640	0.227	0.419	− 0.061	1				
Relative risk aversion	3	640	− 0.035	0.488	− 0.079***	0.115***	1			
Lerner index	4	640	0.944	0.051	0.081**	− 0.065	− 0.06	1		
Management score	5	640	3.284	0.825	0.649***	− 0.117***	− 0.017	0.111***	1	
Managers with MBA	6	640	0.944	3.061	0.140***	− 0.121***	− 0.04	0.032	0.137***	1
Degree	7	640	1.665	1.816	0.159***	− 0.104***	− 0.011	− 0.032	0.144***	0.325***
Physical capital	8	640	10.206	1.661	0.192***	− 0.011	0.014	− 0.292***	0.136***	0.019
Number of employees	9	640	6.719	1.298	0.162***	− 0.046	0.025	− 0.238***	0.135***	0.002
Hours worked	10	640	2.564	2.018	0.061	− 0.043	0.048	− 0.063	0.081**	0.177***
Material costs	11	640	11.218	1.580	0.193***	− 0.091**	− 0.023	− 0.188***	0.165***	0.052
Consolidated accounts	12	640	0.238	0.426	− 0.087**	0.04	0.049	0.057	0.008	− 0.128***
Firm age	13	640	3.614	0.903	− 0.052	0.247***	0.016	− 0.182***	− 0.071*	− 0.066*
Publicly listed company	14	640	0.597	0.491	0.145***	− 0.210***	− 0.065*	− 0.107***	0.067*	0.184***

Variable	#	7	8	9	10	11	12	13	14
Degree	7	1							
Physical capital	8	− 0.005	1						
Number of employees	9	− 0.008	0.874***	1					
Hours worked	10	0.795***	− 0.027	− 0.043	1				
Material costs	11	0.045	0.812***	0.832***	− 0.015	1			
Consolidated accounts	12	− 0.035	− 0.287***	− 0.294***	0.038	− 0.239***	1		
Firm age	13	− 0.093**	0.238***	0.218***	− 0.029	0.166***	− 0.103***	1	
Publicly listed company	14	0.142***	0.360***	0.392***	− 0.006	0.382***	− 0.679***	0.134***	1

This table reports the descriptive statistics and the unconditional correlation coefficients for the set of variables entering our analysis. The final sample is distributed geographically as follows: France 19%, Germany 19%, United Kingdom 20%, and United States of America 42%

Significance: *$p<0.1$; **$p<0.05$; ***$p<0.01$

Talent management into two components: a direct component, captured by β_1; and an indirect component, passing through the measure of risk aversion, given by $(\alpha_1 {}_* \beta_3)$.

The indirect component represents the extent to which the relationship between family-owned firms and talent management is mediated by their degree of relative risk aversion and sheds light on our first research question. In other words, it assesses the extent to which the relationship between talent management and family ownership owes to risk aversion and not to idiosyncratic characteristics of family-owned firms that flow into the 'direct' channel. In addition, we tested whether *Relative risk aversion* mediates the relationship between *Talent management* and any explanatory variable by multiplying β_3 with the corresponding coefficient of Eq. (1).

The final step of our analysis involved testing the moderation effect of the level of competition. In the absence of competition, the estimated mediation effect is simply the product of $\hat{\alpha}_1$ and $\widehat{\beta}_3$, while the estimated variance will be $Var(\hat{\alpha}_1\hat{\beta}_3) = \hat{\alpha}_1^2 Var(\hat{\beta}_3) + \hat{\beta}_3^2 Var(\hat{\alpha}_1) + Var(\hat{\alpha}_1) Var(\hat{\beta}_3)$ (Goodman, 1960). However, investment in talent management by risk-averse family-owned firms can vary by level of competition. Therefore, given a certain degree of competition, the conditional indirect component becomes $\hat{\alpha}_1\hat{\beta}_3 + \hat{\beta}_4 \, Lernerindex$, and the corresponding variance is augmented by the variance of the second addend.

3.4 Sensitivity analysis

As for any other econometric model that does not include a reliable instrumental variable, we considered a potential omitted variable bias in our model specification. In other words, the a priori existence of an omitted variable correlated with both ROCE volatility and talent management investment may not be excluded. Parallelly, the identification of an appropriate instrument is a questionable and challenging task. Therefore, we conducted a sensitivity analysis to identify possible causal inference problems. Following the method of Imai et al. (2010), we simulated the effects of a potential confounder on our structural model by generating a variable that causes a predetermined degree of correlation between the residuals of Eqs. (1) and (2). This methodology allowed us to evaluate the potential strength of the omitted variable bias.

4 Results

4.1 Main results

Table 3 reports the estimates of Eqs. (1) and (2). These two equations represent our SEM and test the existence of a mediation effect of risk aversion on the relationship between family firm ownership and talent management. Column 1 of Table 3 displays the coefficients of Eq. (1); it further indicates that family firms tend to be more risk-averse than non-family firms (α_1 of 0.177; p < 0.05) (see Hiebl, 2012). By

Table 3 Talent management practices and family ownership (Lerner index)—structural equation model

Dependent Variable	Column (1) Mediation	Column (2) Direct effect	Column (3) Indirect effect	Column (4) Total effect
	Relative risk aversion	Talent management	Talent management	Talent management
Constant	− 0.083***	− 0.224		− 0.224
	(0.012)	(0.284)		(0.284)
Family ownership	0.177**	0.069	− 0.373**	− 0.304*
	(0.075)	(0.043)	(0.158)	(0.163)
Lerner index		0.215		0.215
		(0.299)		(0.299)
Relative risk aversion		− 2.111***		− 2.111***
		(0.024)		(0.024)
Lerner Index * Relative risk aversion		2.163***		2.163***
		(0.026)		(0.026)
Management score	0.008	0.607***	− 0.017	0.590***
	(0.029)	(0.030)	(0.060)	(0.068)
Managers with MBA	0.002	− 0.006	− 0.004	− 0.010
	(0.004)	(0.008)	(0.009)	(0.012)
Degree	− 0.021	0.078***	0.045	0.123**
	(0.025)	(0.020)	(0.054)	(0.057)
Physical capital	− 0.075	0.026	0.159	0.185
	(0.052)	(0.038)	(0.110)	(0.116)
Number of employees	0.120*	− 0.015	− 0.253*	− 0.267*
	(0.063)	(0.050)	(0.134)	(0.142)
Hours worked	0.014	− 0.043**	− 0.030	− 0.074
	(0.020)	(0.019)	(0.042)	(0.046)
Material costs	− 0.032	0.001	0.068	0.069

Table 3 (continued)

Dependent Variable	Column (1) Mediation	Column (2) Direct effect	Column (3) Indirect effect	Column (4) Total effect
	Relative risk aversion	Talent management	Talent management	Talent management
	(0.022)	(0.029)	(0.047)	(0.055)
Consolidated accounts	0.228	0.094	− 0.482	− 0.388
	(0.141)	(0.097)	(0.300)	(0.315)
Firm age	− 0.080*	0.013	0.169*	0.182*
	(0.047)	(0.033)	(0.100)	(0.104)
Publicly listed company	0.096	0.021	− 0.203	− 0.182
	(0.066)	(0.091)	(0.140)	(0.168)
Obs	640	640	640	640
Pseudo-likelihood (Log)		− 6627.997		

This table reports the ML estimates of the Eq. (1) and (2). Inference is based on a Satorra–Bentler adjustment, thus standard errors are robust to non-normality. We test the significance of indirect effect (IE) using the following estimates: Delta method ($p < 0.05$), Sobel ($p < 0.05$) and Monte Carlo ($p < 0.05$)

Significance: *$p < 0.1$, ***$p < 0.05$, ***$p < 0.01$

considering the other covariates, we observe that risk-averse firms usually employ more workers than other firms. Besides, younger firms exhibit a higher degree of risk aversion.

Column 2 of Table 3 reports the estimates of Eq. (2), that is, the direct effects of our covariates on *Talent management* investment. According to our results, a negative relationship exists between risk aversion and talent management practices when the level of competition is low (see the coefficient of *Relative risk aversion*) and a positive moderation effect of competition (see the coefficient of *Relative risk aversion*Lerner Index*). This implies that risk-averse firms invest as much as other firms in talent management practices only when the competition is high, and talent management increases firms' competitiveness. In contrast, when competition is low, firms can survive even with a lower investment in talent management practices; therefore, risk-averse firms under-invest in these practices.

Column 3 of Table 3 shows the estimates of the indirect mediation effect. The indirect effect is obtained by multiplying the coefficients of Eq. (2) by the coefficients of Eq. (1).[9] Considering Column 3, we notice that *Risk aversion* mediates the effects of *Family ownership*, *Number of employees,* and *Firm Age*. Whereas family firms (compared with non-family firms) and larger firms under-invest in talent management because of their risk aversion, mature firms tend to invest more in talent management because of their lower risk aversion. Evidence on family firms is particularly strong in terms of magnitude or statistical significance. Finally, Column 4 of Table 3 provides the total effect of our regressors on *Talent management* practices. By considering only the total effect, we observe that the mediation channel prevails over the direct one, leading to a negative coefficient ($[\beta_1 + (\alpha_1 \times \beta_3)] = -0.304$, p < 0.1). Based on our empirical results, we cannot reject Hypotheses 1 and 2.

4.2 On the role of competition

Next, we tested whether family firms' investment in talent management changes not only because they are more risk-averse than non-family firms but also because they operate in different competitive contexts. In other words, we must consider the moderation channel depicted in Fig. 1. For this purpose, we estimated the total effect of *Family ownership* on *Talent management* for the three different levels of the Lerner index: one standard deviation below the mean, at the mean, and one standard deviation above the mean. As shown in Table 4, a negative effect of *Family ownership* on *Talent Management* emerges for family firms operating in less competitive markets (p < 0.05). The smaller magnitude confirms that only family firms facing a low level of competition tend to under-invest in talent management owing to their relatively high degree of risk aversion. Conversely, their idiosyncratic characteristics and the

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[9] Our primary inference is based on the delta method. However, to ensure comprehensiveness, we have also performed two additional tests: a Sobel-test (p < 0.05) and a Monte Carlo test (p < 0.05).

Table 4 Total effect of Family ownership on Talent management for different levels of Lerner index

	Total effect	St. Error	z-Statistics	p-value	95% CI	
Lerner index (Mean-1 St. Dev)	− 0.032**	0.016	− 2.04	0.041	− 0.062	− 0.001
Lerner index (Mean)	− 0.012	0.010	− 1.26	0.209	− 0.032	0.007
Lerner index (Mean + 1 St. Dev)	0.007	0.009	0.77	0.442	− 0.011	0.025

This table provides the total effect of Family ownership on Talent management when the Lerner index is one standard deviation below the mean, at the mean and one standard deviation above the mean. Inference is based on the Delta Method

Significance: $*p < 0.1$, $**p < 0.05$, $***p < 0.01$
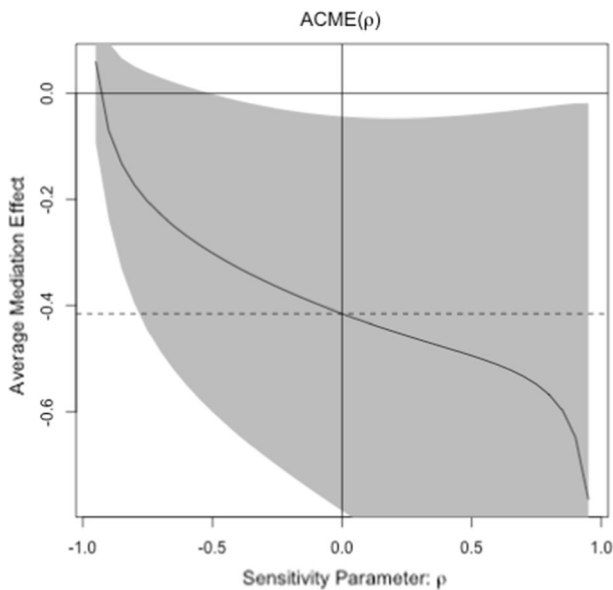
Fig. 2 Sensitivity analysis for the indirect (ACME) effect of Family ownership on Talent management

need for risk-averse firms to invest in talent management when competition is high partly compensate for this phenomenon.

4.3 Sensitivity analysis

Using a causal inference analysis, Fig. 2 shows how our main results change in the presence of latent confounders, thus inducing residual covariance between the error terms of Eqs. (1) and (2) and reports the average causal mediation effect (ACME). This allows us to establish the extent to which our estimates may be affected by the existence of omitted variables. One could argue that a non-null residual covariance would render the mediation model unidentified. However, the exclusion of the

Relative risk aversion–Talent management path solves the identification problem without altering the causal link (Muthén, 2011).

According to Fig. 2, the ACME is negative and statistically significant at the 5% level for a wide range of correlation coefficients (ρ). More precisely, the ACME is negative and statistically significant for $\rho \in [-0.5, 1]$, and negative but statistically insignificant for $\rho \in [-0.9, -0.5]$. Therefore, for the mediation effect to be statistically zero, the absolute value of the negative correlation between errors should be 50% or more. Because the robustness of our results must be interpreted in terms of an interval, a certain degree of subjectivity remains. Nonetheless, this sensitivity analysis assists us in assessing the potential bias in the interpretation of our findings.

In addition, in the supplementary material available online, we present a series of additional robustness checks. First, we extended Eq. (2) to include the interaction between *Relative risk aversion* and both the *Lerner index* and *Family ownership* to show that risk aversion does not moderate the relationship between family ownership and talent management investment. Second, we proved that the choice to proxy relative risk aversion using the inverse of the ROCE variability has both theoretical and empirical foundations. Third, to rule out the possibility that our effects were not related to family ownership, we also carried out a counterfactual analysis in which we replaced the family ownership indicator with a dummy variable that equals one if the founder is the largest single shareholder and CEO, and zero otherwise. According to our results, lone founders are not more risk averse than non-family firms; therefore, they invest in talent management as much as other firms do. Finally, we used a different dataset to test the external validity of our results. This dataset contains information on family management and provides an alternative measure of risk aversion (i.e., the volatility of return on assets). However, with respect to Bloom and Van Reenen's (2007) dataset, this alternative dataset considers training and development practices instead of talent management practices.

4.4 Pre- and post-contractual talent management practices and family ownership

To corroborate the idea that both adverse-selection issues and moral hazard issues are relevant, we divided talent management practices into two components: pre-contractual and post-contractual. Specifically, we measured the former as the z-score of talent management practices related to recruiting talent, and the latter was measured using the average z-score of talent management practices related to instilling a talent mindset, creating a distinctive employee value proposition, and retaining talent as measured by Bloom and Van Reenen (2007). Table 5 shows the estimates of Eqs. (1) and (2) for the pre- and post-contractual practices (Panels A and B, respectively) with the Lerner index.[10] As shown, the overall effect of *Family ownership* on *Talent management* is negative and statistically significant only for pre-contractual practices ($p < 0.05$). The same effect becomes statistically less significant for

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[10] For the sake of representation, we report the estimates with Lerner index. Results are robust even when replace Lerner index with the measure of Competition. Results are available upon request.

Table 5 Pre- and Post-contractual practices and family ownership (Lerner index)—structural equation model

	Column (1) Mediation	Column (2) Direct Effect	Column (3) Indirect Effect	Column (4) Total Effect
Panel A: Pre-contractual practices				
Dependent variable:	Relative risk aversion	Pre-contractual	Pre-contractual	Pre-contractual
Family ownership	0.185**	− 0.021	− 0.388**	− 0.409**
	(0.078)	(0.072)	(0.164)	(0.175)
Lerner index		0.104		0.104
		(0.556)		(0.556)
Relative risk aversion		− 2.103***		− 2.103***
		(0.052)		(0.052)
Lerner index * Relative risk aversion		2.130***		2.130***
		(0.057)		(0.057)
Firm controls	Yes	Yes	Yes	Yes
Panel B: Post-contractual practices				
Dependent variable:	Relative risk aversion	Post-contractual	Post-contractual	Post-contractual
Family ownership	0.177**	0.095**	− 0.365**	− 0.270*
	(0.075)	(0.044)	(0.154)	(0.160)
Lerner index		0.286		0.286
		(0.305)		(0.305)
Relative risk aversion		− 2.066***		− 2.066***
		(0.019)		(0.019)
Lerner index * Relative risk aversion		2.123***		2.123***
		(0.020)		(0.020)
Firm controls	Yes	Yes	Yes	Yes
Observations	640	640	640	640

This table reports the ML estimates of the Eq. (1) and (2). Inference is based on a Satorra–Bentler adjustment, thus standard errors are robust to non-normality. We test the significance of indirect effect (IE) using the following estimates: Delta method ($p < 0.05$), Sobel ($p < 0.05$) and Monte Carlo ($p < 0.05$)

Significance: *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$

post-contractual practices because family firms with net risk aversion tend to invest in talent only once a worker is part of the company.

5 Discussion

Although family firms benefit from formal human resource practices (Chrisman et al., 2017; Jaskiewicz et al., 2017), anecdotal and empirical evidence suggests that family firms fail to effectively manage human resources (Ceja Barba & Tàpies, 2009; Neckebrouck et al., 2018). Our study addresses this research gap by investigating why and when family firms invest less in talent management. Specifically, we focus on talent management investment owing to its ability to increase a firm's competitive advantage in today's complex global economy (Chatterjee, 2016).

Our results indicate that the degree of risk aversion mediates the relationship between family-owned firms and the level of investment in talent management as a decision coming from the top governance level. More specifically, when industry competition is low, risk-averse family-owned firms tend to under-invest in talent management practices with respect to non-family firms. This occurs because the main risk connected with talent management in the case of a non-competitive context is hiring employees who are not talented, while talented workers, because of the limited competitors, are less likely to abandon their jobs even when the firm's talent management investment is low. In this situation, investment in talent management is less effective, and, relative to risk-neutral firms, risk-averse firms may decide to under-invest in talent management practices to avoid squandering money. In contrast, when industry competition increases, talented employees may prefer to join rival organisations; thus, talent management becomes an insurance against losing talented workers (Castanias & Helfat, 2001; Coff, 1997). Thus, any difference between family-owned and non-family-owned firms disappears in the face of intense industry competition.

While previous studies proved that a firm's ownership structure affects human capital investment (Liu et al., 2014), our study explains why and when it happens. Our findings are consistent with Memili et al.'s (2013) findings that family firms are less likely to offer incentives to non-family members than non-family firms by explicitly determining that variations are caused by corporate risk aversion and industry competition. Second, our study also contributes to the agency theory literature by explicitly measuring organisational risk rather than making assumptions. While most previous studies on family firms and risk attitudes (Hiebl, 2012) use 'family' characteristics of the firm as a proxy for risk aversion, we directly measured it using the inverse of the variance of the ROCE (Palmer & Wiseman, 1999). Additionally, relying on agency theory and considering a firm's risk aversion, industry competition, and family ownership as antecedent variables for talent management, this study extends previous research by addressing the call made by Wright et al. (2014) and Tabor et al. (2018) to better understand the antecedents of human capital investments, given the positive effects of measuring, training, and rewarding practices on firm performance.

6 Conclusions

This study contributes to the current debate on human resource practices, specifically talent management practices in family- and non-family-owned firms. Using Bloom and Van Reenen's (2007) data and a mediation–moderation model, we arrived at the following results. First, compared to non-family firms, family-owned firms exhibit a higher degree of risk aversion, choosing corporate operations associated with less volatile returns to the capital employed. Second, risk-averse firms tend to under-invest in talent management practices within a non-competitive market. Third, in competitive contexts, risk-averse family firms invest as much as non-family firms in talent management. Finally, although these results hold for both pre- and post-contractual practices, family businesses invest more in retaining talented workers than recruiting them.

7 Limitations and future research

Our study also has some limitations which represent opportunities for future research. First, in explaining why family and non-family firms differ in their talent management investments, we presumed firm size. While Bloom and Van Reenen's (2007) dataset, which focuses specifically on medium-sized enterprises, is reliable, we were unable to test whether our results hold for very large or very small family-owned firms. Therefore, future studies should complement our findings by investigating any potential spill-over effects related to talent management investment in the omitted firm sizes. Secondly, the positive 'direct' influence of family ownership on investment in post-contractual talent management practices—net of a firm's level of risk aversion—unfolds a potential area for subsequent study. Accordingly, future research should unpack the direct channel effect by disentangling the different components of family firms' residual effects.

Additionally, based on family firms' characteristics, future research could investigate the effects of labour supply determinants on family-owned firms' investment in talent management. For instance, since family objectives dominate professional practices in favour of nepotism and other non-competitive practices, talented candidates may be reluctant to look for a job in family-owned firms. Therefore, future research may investigate the impact of a negative self-selection mechanism on family firms' investment in talent management. Nevertheless, this argument does not invalidate our study for two reasons. First, the self-selection mechanism is more related to the direct channel than to the mediation channel. Second, even in the case of possible interactions between self-selection and risk aversion, self-selection is particularly relevant in highly competitive contexts where the number of firms is sufficiently high to generate a tight labour market and workers have plenty of external opportunities in the bargaining process. This implies that our estimates of the mediation effect are eventually downward-biased, and our results may be even stronger in the case of no self-selection.

Third, our study relies on Bloom and Van Reenen's (2007) dataset to explore formal talent management practices. In some cases, family-owned firms may rely on informal processes in which employees directly learn from the entrepreneur/founder (Block et al., 2018; Neubaum et al., 2017). While we acknowledge this as a limitation of our study, we believe that it represents a promising avenue for future research. Fourth, since our results show a partial mediation of risk aversion, the remaining variance not explained by the mediation (direct channel) opens the possibility to integrate other theoretical arguments such as behavioural agency theory. A potential line of future research is to consider the reference point to measure the loss aversion of the firm. Applying behavioural agency theory in the specific case of family firms when non-economic goals might also be important, one can assume that the risk behaviour of the principals would change based on their reference points and the extent to which goals are threatened.

Finally, future studies should address the general categorisation between family-owned and non-family-owned firms by considering different types of family firms and a more recent dataset containing information on talent management practices. This research line could help in understanding the extent to which risk aversion mediates the relationship with talent management investment across heterogeneous family firms. All family firms may not have the same attitude towards risk, and this may affect their behaviour during crises. Moreover, future research can also extend our analysis to non-manufacturing sectors as well as developing countries. Indeed, if risk aversion influences family firms' investment in talented workers, we may expect a negative correlation between the proportion of family firms in a country and its economic growth. In this case, reforms devoted to promoting competitive markets can alleviate this problem.

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