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## FAMILY INFLUENCE AND MANAGEMENT ACCOUNTING USAGE – FINDINGS FROM GERMANY AND AUSTRIA\*\*

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### ABSTRACT

Although contingency-based research finds many factors that influence a firm's management accounting (MA) system, despite the vast economic importance of family firms in most Western countries, researchers have not considered family influence as a contingency variable for MA systems. Using survey results from Germany and Austria, we explore the effect of the level of family influence on selected aspects of MA usage. We find that firms with higher levels of family influence use fewer strategic and operational MA instruments, formalize their strategic plans to a lesser extent, establish fewer discrete MA departments, and employ fewer management accountants with academic degrees.

JEL Classification: L22, M41.

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## 1 INTRODUCTION

Most of the firms in the German-speaking world and in other Western countries are family firms (FFs). The percentage of FFs depends on the size of the firms considered. Among German firms with annual sales of more than €1 million, FFs comprise two-thirds of all firms and represent 30% of all firms with sales exceeding €500 million (Klein (2000)). For small firms, the share of FFs may be higher than 90% (IFERA (2003)). Consequently, a large part of the gross national products of Western countries are generated by FFs, and up to 79% of the working population is employed in FFs (IFERA (2003)).

Despite the obvious and long-standing economic importance of FFs, research, which had been spotty, began to intensify in the 1990s, thus, it can be considered a young research field (Bird, Welsh, Astrachan, and Pistrui (2002); Hack (2009); Kraus, Harms, and Fink (2011); Gedajlovic, Carney, Chrisman, and Kellermanns (2012)). Because these businesses differ in several important dimensions, such as goals, time horizons, governance structures, and financial management, FFs need to be analyzed separately from non-family firms (NFFs) (Filbeck and Lee (2000); Salvato and Moores (2010); Bammens, Voordeckers, and van Gils (2011)).

One aspect of financial management, the specific organization of management accounting (MA) systems in FFs, has received very limited attention (Salvato and Moores (2010); Speckbacher and Wentges (2012); Songini, Gnan, and Malmi (2013)). Therefore, to increase the understanding of the impact of family influence on MA usage, we address the research question: *How does the level of family influence affect MA usage?*

Researchers such as Songini (2006) and Duller, Feldbauer-Durstmüller, and Mitter (2011) see the introduction or improvement of MA systems as one step toward the professionalization of business administration in FFs. Moores and Craig (2006) find that this step depends on FF peculiarities. MA can also play an important role in solving FF-specific challenges. For example, Giovannoni, Maraghini, and Riccaboni (2011) analyze MA changes during FF professionalization and business succession. They find that MA practices are further developed during these processes and that such changes enable a crucial transfer of knowledge to non-family managers and to succeeding family generations. In describing a Spanish FF's development toward increased professionalization and growth, Amat, Carmona, and Roberts (1994) show that both external and internal forces drive MA change. Among external factors, they note increased competition as the main driver for professionalization, but they also call attention to the increased importance of MA. Concerning internal forces, Amat et al. (1994) stress the introduction of non-family managers to the firm, which moved their case-study firm from informal to formal mechanisms of control. This process also shows that in this particular firm, different departments communicated with each other primarily through budget talks.

Other recent studies focus on the adoption of specific MA practices in FFs, such as operational planning, strategic planning, and the balanced scorecard (Upton, Teal, and Felan (2001);

Moore and Craig (2006); García Pérez de Lema and Duréndez (2007); Becker, Ulrich, and Staffel (2011); Duller et al. (2011); Speckbacher and Wentges (2012); Feldbauer-Durstmüller, Duller, and Greiling (2012)). These studies indicate that FFs do use strategic and operational planning to some extent (Upton et al. (2001); García Pérez de Lema and Duréndez (2007); Becker et al. (2011); Duller et al. (2011); Feldbauer-Durstmüller et al. (2012)) and that the implementation of these practices requires the consideration of FF peculiarities (Moore and Craig (2006)). Small and medium-sized FFs in particular seem to use MA practices to a lesser extent than do small and medium-sized NFFs (García Pérez de Lema and Duréndez (2007); Speckbacher and Wentges (2012); Hiebl, Feldbauer-Durstmüller, and Duller (2013a)). One reason might be that FFs rely more on intuitive decision-making than do NFFs, and therefore show less use of formalized decision-making and control instruments, such as MA practices (Posch and Speckbacher (2012)). However, these authors show that although FFs may rely less on such formalized systems, their performance is not necessarily inferior compared to that of NFFs, which use more formalized systems. Posch and Speckbacher's (2012) results indicate that intuitive decision-making and a lower usage of MA practices in small and medium-sized FFs may actually be an appropriate way of managing such FFs to achieve good or superior performance. Another relevant study, Moore and Mula (2000), concerns the salience of different types of control with regard to the FF's life-cycle stage. These authors find that in later stages of the FF life cycle, FFs use more bureaucratic control practices that also comprise some MA practices, such as computerized accounting systems, delegated authority for budgets, and the introduction of profit centers.

To date, most of the studies on MA in FFs highlight certain contingent variables that foster the introduction or intensification of MA systems, such as the presence of non-family management and outside investors, the replacement of family members, the firm's life-cycle stage, and the firm's age or size. The majority of studies analyze either FFs alone or compare FFs with NFFs. However, few quantitative studies have yet considered different degrees of family influence. Only Speckbacher and Wentges (2012) distinguish between different levels of family involvement in a firm's top management team and the effect on management control systems. These authors find that greater family involvement (especially on the management board) is associated with a lower use of formalized performance measurement, but they emphasize that this relationship is mainly true for smaller firms and is only weakly evident for larger firms.

This brief review of the FF literature indicates that there is a general lack of knowledge on the impact of different degrees of family influence on the usage of MA, thus supporting our research effort to investigate the relationship between the level of family influence and MA usage. The focus of studies at the intersection of FFs and MA lies on the implementation of MA practices in FFs. Little is known about other aspects of MA institutionalization, such as whether separate MA departments or management accountant training exist.

Although we consider the relationship between family influence and the implementation and formalization of MA practices in this paper, we also explore more organizational aspects, such as the existence of discrete MA departments and the level of management accountant training. We focus on five aspects of MA usage: strategic instruments, operational instruments, formalization of plans, existence of MA departments, and training of the head of MA. We choose these aspects because they represent both the operational and strategic usage of MA and the formalization of and factual organizational resource commitment to MA. Hence, we complement quantitative results that study other aspects of management control in FFs, such as incentive systems and performance measurement (Speckbacher and Wentges (2012); Songini and Gnan (2013)); actions, results, and cultural controls (Posch and Speckbacher (2012)); or the overall existence of MA systems (García Pérez de Lema and Duréndez (2007); Becker et al. (2011)).

The contextual variable of MA systems focused on in this paper, family influence, itself constitutes an FF-specific resource, and is one variable that also explains performance differences between FFs and NFFs (Chrisman, Chua, and Sharma (2005); Rutherford, Kuratko, and Holt (2008)). The level of family influence in FFs usually decreases in connection with two processes of transition: succession, and the integration of non-family players such as managers, shareholders, or directors (Hiebl et al. (2013a)). An abrupt decline of family influence can occur if, for instance, the controlling family sells its shares to a team of senior, non-family managers or to an NFF (Howorth, Westhead, and Wright (2004); Winter, Danes, Koh, Fredericks, and Paul (2004)). Amat et al. (1994), Bammens et al. (2011), Giovannoni et al. (2011), Hiebl (2014), and Stergiou, Ashraf, and Uddin (2013) find a further steady decline of family influence can be observed when an FF gradually integrates non-family managers or directors into the business to professionalize it. Gersick, Davis, McCollom Hampton, and Lansberg (1997) note a deterioration when ownership becomes diluted by passing on shares to a growing number of descendants. Whether abrupt or gradual, the key development is the decrease of one controlling family's influence on the FF. Thus, because family influence is either minimized or entirely dissolved, the FF eventually turns into an NFF. Because the level of family influence is a continuum that can range from no family influence to a very high level of family influence, a dichotomous categorization between FFs and NFFs is not sufficient to depict the different levels of family influence. Therefore, we distinguish between degrees of family influence.

By analyzing the impact of different degrees of family influence on the usage of five selected aspects of MA, our paper complements the current FF literature in several ways. First, by using a more finely tuned measurement of family influence, the F-PEC-P scale, we corroborate and extend findings on the relationship between family influence and MA usage. Second, we extend current knowledge by showing that the negative relationship between family influence and MA usage not only holds true for strategic MA practices and formalization (Posch and Speckbacher (2012); Speckbacher and Wentges (2012)), but also for operational MA practices and for organizational aspects of MA, such as the establishment of discrete MA departments. Third, our quantitative findings confirm qualitative research findings by previous researchers such as Amat et al. (1994), Giovan-

noni et al. (2011), and Stergiou et al. (2013), who show that the introduction of non-family professionals, and therefore, the lowering of family influence, is associated with increased usage of MA.

The paper proceeds as follows. In Section 2 we develop five hypotheses. In Section 3 we describe our variables and research methods. In Section 4 we provide results, and in Section 5 we conclude with a discussion of our findings, implications for future research and practice, and the limitations of our study.

## 2 HYPOTHESES

Current research, which is in part based explicitly on contingency theory, is based mainly on MA and management control systems. This research identifies several organizational and contextual factors that influence MA systems, such as a firm's size, age, strategy, organizational structure, and times of economic crisis (e.g., Chenhall (2003); Chenhall (2007); Asel, Posch, and Speckbacher (2011)). However, because, as we note above, the potential contextual factor "level of family influence" has not been sufficiently considered in MA research, we use a contingency-based research approach with the level of family influence as the main independent variable and aspects of MA as dependent variables.

Our main theoretical rationale for proposing a relationship between family influence and the usage of MA is that using more formalized decision-making and control practices, such as MA practices, is part of the professionalization of FFs (Songini (2006); Songini and Gnan (2013); Dekker, Lybaert, Steijvers, Depaire, and Mercken (2013)). In FF studies, researchers consider that professionalization is strongly intertwined with family influence, in the sense that greater family influence leads to a lower level of professionalization (Hall and Nordqvist (2008); Stewart and Hitt (2012); Dekker et al. (2013)). Some authors even equate "professional management" in FFs with "non-family management", indicating that family managers are non-professional per se (e.g., Dyer (1989); Burkart, Panunzi, and Shleifer (2003)).

Although we do not argue that family managers cannot act "professionally", to generate our hypotheses we follow the formalization aspect of professionalization (Dyer (1989); Hall and Nordqvist (2008)). This aspect postulates that a higher level of family influence is associated with lower levels of formalization (i.e., "professionalism"), which includes the usage of formalized MA practices and MA institutionalization (Songini (2006)). However, less formalization does not necessarily lead to inferior FF performance and may be nothing more than the outcome of different control philosophies in FFs, which rely more on reciprocal trust and clan controls than on more bureaucratic forms of control (Moore and Mula (2000); Posch and Speckbacher (2012)). Thus, although we generally expect a negative correlation between family influence and MA usage, we do not imply that FFs feature improper control systems.

## 2.1 USE OF MA PRACTICES

One key aspect of MA institutionalization is the use of strategic and operational MA instruments (Chenhall (2003)). MA research documents that these instruments are heavily used (e.g., Cadez and Guilding (2007); Abdel-Kader and Luther (2008); Cinquini and Tenucci (2010)). However, general studies on the use of MA instruments do not usually examine the potential contextual factor of family influence. For the FF type of firm, empirical research shows that FFs use strategic MA practices to a lesser extent than do NFFs (García Pérez de Lema and Duréndez (2007); Becker et al. (2011)). In this connection, Speckbacher and Wentges (2012) also show that a higher level of family influence is associated with a lower use of performance measurement practices that may be regarded as strategic MA practices.

As noted earlier, family influence might be lessened if the FF hires non-family managers. From the perspective of non-family managers, formalized or more professional MA instruments should be a more important resource than for family managers. In recent decades, non-family managers have increasingly relied on MA instruments because intense competitive pressure has forced these managers to effectively exploit available information from both inside and outside their own company (Cinquini and Tenucci (2010)). In contrast, family managers are usually characterized by longer management tenures, and therefore usually develop a deep understanding of the firm's market environment and the firm itself (Chirico (2008); Davis, Allen, and Hayes (2010)). This aspect implies that family managers should rely less on MA instruments than do non-family managers (Moore and Yuen (2001)). Thus, we can assume that a lower family influence (e.g., as a result of more non-family managers in the firm) is positively associated with a greater need for MA practices.

In contrast, firms that experience a high level of family influence are closely controlled by the firm's owners. This fact often leads to a paternalistic culture that is influenced by very authoritarian senior family managers who are not open to innovations or new management practices from outside the FF (Kraus, Pohjola, and Koponen (2012); Chirico, Nordqvist, Colombo, and Mollona (2012)). Thus, compared to firms with a lower level of family influence, firms with a high level of family influence might not know about practices that might facilitate the decision-making process and the management's information supply, such as strategic and operational MA instruments (Luft and Shields (2002); Davila and Foster (2005); Rausch (2011)).

An institutional perspective further supports this relationship. When non-family managers are introduced to FFs, thus lowering the level of family influence, they will likely demand instruments similar to those they used with former employers. Such instruments most likely include operational and strategic MA practices (Davila and Foster (2005)). Moreover, MA instruments can be used as a "language" to transfer knowledge to successors or non-family managers, as these instruments highlight the operational and strategic cornerstones of the FF in a compressed form (Giovannoni et al. (2011)). Therefore, MA

instruments may be increasingly used when family influence is lessened by the employment of more non-family managers. Thus, we hypothesize:

- H1a.** *Firms with a lower level of family influence use more strategic MA instruments than do firms with a higher level of family influence.*
- H1b.** *Firms with a lower level of family influence use more operational-planning instruments than do firms with a higher level of family influence.*

## 2.2 FORMALIZATION OF STRATEGIC PLANS

In FFs, a higher level of formalization is usually another effect of professionalization (Gedajlovic, Lubatkin, and Schulze (2004); Davila (2005)). Such formalization may also include more recording of strategic plans, and these formalized plans may serve as a tool for handing over knowledge to business successors of non-family managers/directors (Giovannoni et al. (2011)). As family members increasingly withdraw from active management of the firm, thus reducing family influence, formalization also becomes important because the average management tenure is usually lower in firms with reduced family influence (Tsai, Hung, Kuo, and Kuo (2006)). This lower involvement of the family in active management increases the need for knowledge transfer to succeeding managers, in, for instance, the form of strategic plans that are actually written down and thus formalized rather than being passed along orally.

In contrast, in firms with a higher level of family influence and the usual culture of reciprocal trust and clan controls (Moore and Mula (2000)), informal control systems are more common than in firms with less family influence (Tokarczyk, Hansen, Green, and Down (2007); Rutherford et al. (2008); Posch and Speckbacher (2012); Wessel, Decker, Lange, and Hack (2014)). Therefore, explicit strategy statements or strategic plans are less formalized. Thus, we hypothesize:

- H2.** *Firms with a lower level of family influence rely more on written strategic plans and explicit strategy statements than do firms with a higher level of family influence.*

## 2.3 ESTABLISHMENT OF DISCRETE MA DEPARTMENTS

Our third hypothesis addresses the establishment of MA departments. Because we focus on Germany and Austria, we define the institutionalization of MA in business organizations in Germany and Austria as a common practice, one that separates management and financial accounting (Becker and Messner (2005); Wagenhofer (2006); Ewert and Wagenhofer (2007); Schäffer and Binder (2008); Guenther (2013); Schäffer (2013)). Doing so often results in creating both a discrete financial accounting department and a discrete MA department.

We analyze the establishment of discrete MA departments because, in our view, the establishment of such departments represents a firm's more tangible commitment to MA usage than does the usage of MA practices. MA practices can also be performed by other firm-internal parties than only management accountants (e.g., financial accountants or top managers; see, for instance, Hiebl, Feldbauer-Durstmüller, Duller, and Neubauer (2012)). In contrast, employing management accountants, and thus the installation of an MA department, requires dedicated expenses, primarily in the form of salaries, for MA. Thus, adding such employees may be seen as an even stronger sign of MA usage than the usage or the formalization of MA practices. Although MA practices can easily be abandoned if they do not prove useful, closing an MA department involves severe consequences for both management accountants and the firm. Hence, we can also regard the establishment of MA departments as a strong sign of commitment to MA, because it also involves a far higher downside risk compared to the usage of MA practices.

From the perspective of FF professionalization, we assume that a lower level of family influence fosters the establishment of discrete MA departments. In a corporate culture of mutual trust and clan controls, which is typical of FFs that are highly influenced by the family, there is also a reduced need for a discrete MA department that could perform formal or bureaucratic control mechanisms (Songini (2006); Rausch (2011)). However, if family influence is reduced by the integration of non-family parties, then more formal control mechanisms are usually introduced or intensified (Davila (2005); Davila and Foster (2009); Chua, Chrisman, and Bergiel (2009)). Thus, we can also assume a higher need for staff performing such mechanisms. Hence, we argue that for firms that experience a lower level of family influence, discrete MA departments will be more important.

In contrast, in firms with high family influence, paternalistic owner-managers usually demand most of the decision power in "their" FF (Kets de Vries (1993); Gedajlovic et al. (2004); Chrisman, Kellermanns, Chan, and Liano (2010)). Hence, they are unlikely to welcome a critical business advisor, which is a role often ascribed to management accountants (Granlund and Lukka (1998); Yazdifar and Tsamenyi (2005); Byrne and Pierce (2007); Hiebl, Duller, and Feldbauer-Durstmüller (2012)). Moreover, family members involved in the management of an FF often have deep firm- and market-specific know-how and therefore rely less on formalized support practices for managerial decision-making (Chirico (2008); Moog, Mirabella, and Schleppehorst (2011)). Therefore, we expect that firms with higher/lower family influence will show less/a greater propensity to hire professional management accountants or to create discrete MA departments. Thus:

**H3.** *Firms with a lower level of family influence establish more discrete MA departments.*

## 2.4 TRAINING OF MANAGEMENT ACCOUNTANTS

Research finds that for accounting personnel in large corporations, academic training is common (Vafeas (2009)). In contrast, FF studies find that FFs generally attach less im-

portance to academic training than do NFFs (Fiegener, Brown, Prince, and File (1996); García Pérez de Lema and Duréndez (2007); Chirico (2008)). Academically trained management accountants may also prefer to avoid firms that have a high level of family influence, because professional growth prospects might be limited in a firm in which most management positions are reserved for members of the controlling family (Barnett and Kellermanns (2006)). Moreover, in striving to preserve their influence, controlling families usually hinder the introduction of stock option plans. Doing so creates limitations on wealth transfer for non-family employees (Covin (1994); Sirmon and Hitt (2003)). Based on their academic expertise, well-educated management accountants might require more decision-making power (Holland and Boulton (1984); Klein and Bell (2007)), which could interfere with the controlling family's goal of complete decision power (Gedajlovic et al. (2004)).

However, there are situations in which a controlling family may be forced to bring non-family experts into the FF. For instance, the family might be missing management know-how, or there might be a limited number of family members to fill too many management positions (Klein and Bell (2007)). When more non-family managers and directors are brought into the firm, thus decreasing the level of family influence, the formal education of management accountants should become more important, since non-family executives with an NFF background are accustomed to assessing the qualifications of management accountants based on their formal education (Vafeas (2009)). Using observations from case-study firms, Amat et al. (1994) and Giovannoni et al. (2011) showed that academically trained management accountants foster the process of professionalization and decrease family influence by introducing increasingly sophisticated MA tools. These authors also ascribe this development to the management accountants' university educations. Thus:

**H4.** *In firms with a lower level of family influence, it is more likely that the heads of MA will hold a university degree.*

## 2.5 THE MODERATING ROLE OF FIRM SIZE

From a professionalization perspective, in larger FFs there may be a less pronounced impact of family influence on MA usage. Although in smaller firms complexity may still be manageable and a higher usage of MA or general formalization might successfully be held back by high family influence, in larger firms organizational complexity could become too large to cope with without increasing the use of more formalized procedures such as MA (Songini (2006); Dekker et al. (2013)). Stated differently, due to increased complexity and more diversified operations and organizational structures (Chenhall (2003)), and even though family influence may be high, larger firms may simply be forced to lean toward MA practices, and thus to increase formalization/professionalism in the firm. Therefore, we expect that in larger firms, the level of family influence serves as a weaker predictor of MA usage compared to small and medium-sized firms:

**H5.** *The impact of family influence on the usage of MA as proposed in hypotheses H1–H4 will be weaker for larger firms.*

### 3 METHODS

#### 3.1 SAMPLING PROCEDURES

To test the proposed hypotheses, in 2009 and 2010 we contacted 5,000 medium-sized and large firms with at least 50 employees in the German federal states of Bavaria and Baden-Württemberg, and 5,406 medium-sized and large firms in Austria. We pretested our questionnaire for intelligibility in a pilot study with ten corporate executives. We recruited two pilot-test participants from smaller firms to ensure that participants from smaller businesses correctly understood all terms on the questionnaire, as smaller firms usually use less sophisticated MA practices (Davila (2005); Lavia Lopez and Hiebl (2015)).

We implemented the questionnaire as an online survey that could be completed using a web browser. We contacted the CEOs of the 10,406 firms mentioned above through e-mail and invited them to participate in our survey.<sup>1</sup> After a first wave of answers, we sent follow-up e-mails to non-respondents. In total, we received 962 responses, representing a gross response rate of 9.2%. Of this total, we had to eliminate 281 survey responses due to missing information, and 47 responses because the firm had too few employees. Another 64 responses were missing the data required for using the F-PEC-P formula to assess the level of family influence. We also excluded these responses from the analysis. Hence, the basis of our study comprises the remaining 570 survey responses.

To control for non-response bias, we compared the first third of respondents, i.e., the early responders, with the last third of respondents, i.e., the late responders. We find no significant differences between the first and last third of the responders, so there was no indication of non-response bias (Armstrong and Overton (1977)).

#### 3.2 VARIABLES

##### 3.2.1 INDEPENDENT VARIABLE: FAMILY INFLUENCE

Our research question asks how the level of family influence affects MA usage. Hence, in our research model, we use the *level of family influence* as the independent variable. The five aspects of MA institutionalization we describe in Section 2 serve as dependent variables and *firm size* is the moderator variable to test H5. To empirically test the hypotheses derived above, we operationalize the latent construct of family influence.

<sup>1</sup> Although our questionnaire and the accompanying letter were sent to CEOs, we cannot rule out the possibility that persons other than the CEO actually filled out the questionnaire.

Although research on FFs has increased substantially in recent years, no definition for FFs or family influence has yet been agreed upon (Chua, Chrisman, and Sharma (1999); Rutherford et al. (2008); Kraus et al. (2012)). One metric for measuring different degrees of family influence is the F-PEC scale, which assesses the “familiness” of a firm using three subscales: *power*, *experience*, and *culture* (Astrachan, Klein, and Smyrniotis (2002); Klein, Astrachan, and Smyrniotis (2005)). Lindow, Stubner, and Wulf (2010) find that the power dimension of the F-PEC scale shows a significant correlation with organizational structure. To distinguish between FFs and NFFs, Klein (2000) introduced the F-PEC power dimension (F-PEC-P) and named it *Substantial Family Influence*. According to Klein’s (2000) formula, the latent construct *level of family influence* consists of the levels of family ownership, family management, and family directorship. Since the MA system is part of the organizational structure of a firm, and because this structure is most influenced by the level of family influence (Lindow et al. (2010)), we use the F-PEC-P scale in this article to operationalize the level of family influence. By utilizing the F-PEC-P scale to measure family influence, we deliberately chose a different and we believe more comprehensive approach to measure family influence. To be better able to compare our results with those of Speckbacher and Wentges’ (2012) results, and thus to be able to analyze whether the inclusion of the supervisory board in the F-PEC-P measure yields significantly different results, in the regression analysis we include both a variable that comprises all three ingredients of family influence (ownership, management, supervision; termed *F-PEC-P extrapolated*) and a variable that comprises only ownership and management (termed *F-PEC-P reduced*). The latter measurement is similar to the approach by Speckbacher and Wentges (2012).

Klein et al. (2005) calculate the full F-PEC-P value of a firm, which we label as F-PEC-P extrapolated, by adding together a controlling family’s share in equity, ranging from zero to one; the share of members of the supervisory board, ranging from zero to one; and the share of members of the management board, which also ranges from zero to one. Thus, the total F-PEC-P extrapolated value ranges from zero to three. In contrast, we construct our variable F-PEC-P reduced by adding together only the controlling family’s share in equity, ranging from zero to one, and the share of family members in the management board, which also ranges from zero to one. Thus, the F-PEC-P reduced value ranges only from zero to two. These calculations of the F-PEC-P values treat the family’s share in equity, in both the supervisory and the management boards, as mathematically equal. We could argue that family members might exert greater influence on the firm via the management board than through the supervisory board or ownership stakes. Although these concerns may be valid, to keep our study as comparable as possible to other studies that rely on the F-PEC-P to measure family influence, we follow the recommendations by Klein et al. (2005) for constructing the F-PEC-P values.

We use data from German and Austrian firms. These two countries feature a two-tier board system. Thus, management boards and supervisory boards are separate corporate bodies (Shleifer and Vishny (1997); Weimer and Pape (1999)). This system makes it possible for us to directly ask survey respondents for the composition of their management

and supervisory boards, thus enabling our construction of the F-PEC-P values (Jaskiewicz and Klein (2007)). However, depending on their legal form and size, not all German and Austrian firms are required by law to install a supervisory board. Briefly, only firms with the legal form of a *Gesellschaft mit beschränkter Haftung* (GmbH) and that are large in size, as measured by the number of employees and total assets, or that have the legal form of an *Aktiengesellschaft* (AG), are required by law to install a supervisory board (Verspay (2009); Karollus, Huemer, and Harrer (2012)). In our sample, 77.1% of all firms have the legal form of a GmbH (or a GmbH & Co. KG), and 14% are organized as an AG. The remaining sample firms, which comprise 8.9% of all firms, have various other legal forms, such as *Kommanditgesellschaft*, *Gesellschaft bürgerlichen Rechts*, or *Einzelunternehmen*.

Firms with different legal forms than GmbH or AG, and/or firms organized as a GmbH that are smaller in size, can install an optional supervisory or advisory board. Although advisory boards do not have the same legal standing as supervisory boards, advisory boards typically perform tasks similar to those of supervisory boards (Klein (2005); Blumentritt (2006)). Therefore, when assessing the composition of the supervisory board for constructing the F-PEC-P extrapolated values of all firms, we consider advisory boards as substitutes for supervisory boards. This means that when a firm's management does not install a supervisory board, but instead chooses an advisory board, we include the advisory board composition in the F-PEC-P extrapolated calculation.

Moreover, there are firms that are not required by law to install a supervisory board and some that deliberately choose not to install either a supervisory or an advisory board. When constructing the F-PEC-P extrapolated value for firms without such boards, if we were to combine the family's share in ownership, management, and supervision, it would mean that such firms could reach a maximum F-PEC-P extrapolated value of two, as the supervisory part of the equation would always take the value of zero. However, not installing a supervisory or an advisory board does not necessarily mean that family influence is lower in such firms. A lower family influence would be represented by a maximum F-PEC-P value of two instead of three. Thus, in accordance with Achleitner, Bock, Braun, Schraml, and Welter (2010) and Schraml (2010), for firms without supervisory or advisory boards we extrapolate the F-PEC-P values derived by the addition of the family's share in ownership and management by multiplying this sum by  $3/2$ . Since it includes the extrapolated shares of the family in supervisory or advisory boards, we label the F-PEC-P variable as *F-PEC-P extrapolated*.

To distinguish between various degrees of family influence, we divide the entire F-PEC-P extrapolated continuum from zero to three into four steps. Klein (2000) initially defines firms with a score of less than one as NFFs. In our paper, we consider firms with no family influence at all as *no family influence firms*. As does Klein (2000), we refer to firms with some family influence, but with an F-PEC-P extrapolated score of less than one, as experiencing a *low* level of family influence. We use the same interval width of one to distinguish between firms with *high* (F-PEC-P extrapolated  $\geq 2$ ) and *medium* ( $1 \leq$  F-PEC-P extrapolated  $< 2$ ) levels of family influence. For instance, in a firm that

we consider as having a *high* level of family influence, the controlling family may still hold all shares (one out of one for ownership) and directorship of the firm (one out of one for supervisory board), but the management board may consist of one family manager and two non-family managers (0.33 out of one for management). Therefore, such a firm's F-PEC-P extrapolated value would be 2.33 (1 + 1 + 0.33). We regard this firm as a *high family influence firm*.

### 3.2.2 DEPENDENT VARIABLES

We use five aspects of MA institutionalization as dependent variables. To assess the use of strategic MA and operational-planning instruments, we gave survey participants 20 strategic MA instruments and 11 operational planning instruments and asked them to state whether they used each instrument. We based our choice of instruments on earlier empirical studies on the utilization of strategic MA (Guilding, Cravens, and Tayles (2000); Cadez and Guilding (2007)) and operational planning instruments (Matthews and Scott (1995); Chenhall and Langfield-Smith (1998); Abdel-Kader and Luther (2008)). We supplemented these choices with instruments that we ourselves selected. Because there were so many instruments included in the questionnaire, we did not ask an additional question about how intensely the instruments were used, which clearly limits the informative value of the survey regarding the usage of MA instruments. Nevertheless, the number of instruments used in a firm should still act as an indication of the level of MA usage.

To operationalize the formalization of strategic plans, we asked survey participants to specify to what extent they recorded their strategic plans and strategic statements in a written form, offering a four-point scale ranging from "Fully recorded" to "Not recorded". For the establishment of a discrete MA department and the educational level of the head of this department, we generated a dichotomous variable by asking whether the survey participant's firm had an established, discrete MA department and whether the head of MA had obtained a university degree.

### 3.2.3 CONTROL VARIABLES

We include firm size as a control variable in bivariate and multivariate tests, as both FF (e.g., Klein (2000)) and MA research (e.g., Chenhall (2003); Lavia Lopez and Hiebl (2015)) show that there is a strong relationship between not only size and firm type (FF compared to NFF) but also size and MA usage. For multivariate tests, we also control for firm age, firm generation, and industry sector.

We construct the dichotomous control variable *firm size* by asking survey participants whether their firm employs more than 249 employees, between 50 and 249 employees, between ten and 49 employees, or fewer than ten employees. In accordance with the EU's

definition of small and medium-sized entities (European Commission (2003)), we classify firms with 50–249 employees as medium-sized, and firms with at least 250 employees as large. Since firms with fewer than 50 employees were not the target audience of the survey we excluded them from further analysis.

We construct the metric control variable *firm age* by asking the participants for the year their firm was founded and then subtracting this founding year from the year in which our study was conducted (2009 for Austria, 2010 for Germany). To create the ordinal control variable *firm generation*, we asked survey participants to identify their firm's current leading generation and offered them a five-item choice ranging from "first generation" to "fifth or higher generation". We generate the nominal control variable *industry sector* by asking survey participants whether they would classify their firm as *manufacturing*, *retail*, or *service*. We classify firms that do not fit into any of these three sectors as *other* sector. To prepare for the regression analysis, we create the three dummy variables, Manufacturing, Retail, and Service, indicating the sector to which each firm belonged. If the firm belonged to one of the three sectors, then the dummy variable took the value of one, and zero otherwise.

## 4 RESULTS

### 4.1 DESCRIPTIVE STATISTICS AND CORRELATIONS

*Table 1* presents the descriptive statistics for the entire sample. The table shows that 34% of the sampled firms qualify as large, and 66% as medium-sized. At the time of our investigation, the firms showed an average firm age (mean) of approximately 61 years. Classified by industry sector, 35% of the sampled firms are manufacturing firms, 12% are retail firms, and 20% belong to the service sector.

**Table 1: Descriptive Statistics for Entire Sample**

<i>Variables</i>	<i>Valid N</i>	<i>Me- dian</i>	<i>Mean</i>	<i>SD</i>	<i>Actual range</i>
<b>Independent</b>					
<i>Level of family influence (F-PEC-P extrapolated)</i>	570	1.00	1.18	1.21	0-3
<i>Level of family influence (F-PEC-P reduced)</i>	567	0.90	0.84	0.83	0-2
<b>Dependent</b>					
<i>Number of strategic MA instruments used</i>	515	4.00	4.75	3.32	0-20
<i>Number of operational planning instruments used</i>	480	5.00	5.55	2.81	0-12
<i>Firm with discrete MA department</i> (1=MA department existent; 0=MA department non-existent)	539	1.00	0.51	0.50	0-1
<i>Head of MA with university training</i> (1=with university training; 0=w/o university training)	254	1.00	0.73	0.45	0-1
<i>Written recording of strategic plans and strategy statements</i> (4=fully recorded; 1=not recorded)	471	4.00	n.a.	n.a.	1-4
<b>Controls</b>					
<i>Firm size</i> (1=large / ≥250 employees; 0=medium-sized / 50–249 employees)	570	0.00	0.34	0.47	0-1
<i>Firm age</i>	497	44.00	60.57	67.47	1-739
<i>Firm generation</i>	420	2.00	2.45	1.35	1-5
<i>Manufacturing</i> (1=manufacturing; 0=non-manufacturing)	566	0.00	0.35	0.48	0-1
<i>Retail</i> (1=retail; 0=non-retail)	566	0.00	0.12	0.33	0-1
<i>Service</i> (1=service; 0=non-service)	566	0.00	0.20	0.40	0-1

n.a. not available (ordinal variable).

*Table 2* provides further descriptive information for each of the four levels of family influence. The four levels of family influence clearly differ from each other in terms of the components of their F-PEC-P extrapolated values. In our sample, the average firm with high family influence is entirely owned and primarily managed by family members, but firms with medium family influence show a clearly reduced participation of family members in the management board, with an average participation of 31%. This finding underscores the importance of non-family management for firms with medium family influence. Firms in our sample with low family influence feature only small relics of family influence, and of course, firms with no family influence do not have any family-owned equity or family members on the management and supervisory boards.

**Table 2: Descriptive Statistics for Different Levels of Family Influence**

Level of family influence (F-PEC-P related)	Measure	Firm size (1=large / 2-50 employees; 0=medium-sized / 50-249 employees)	Firm age	Firm generation	Manu-facturing (1=manu-facturing; 0=non-manu-facturing)	Retail (1=retail; 0=non-retail)	Service (1=services; 0=non-service)	Level of family influence (exact F-PEC-P extrapolated value)	Share of stock owned by family members	Share of family members in management board	Share of family members in supervisory board	Number of strategic MA instruments used	Number of operational planning instruments used	Firm with discrete MA department (1=MA department existent; 0=MA department nonexistent)	Head of MA with university training (1=with university training; 0=w/o university training)	Written recording of strategic plans and strategy statements (4=fully recorded; 1=not recorded)
High (F-PEC-P ≥ 2)	N	182	169	179	179	179	179	182	182	182	13	172	161	180	46	158
	Median	0.00	50.00	2.00	0.00	0.00	0.00	3.00	1.00	1.00	0.20	3.00	5.00	0.00	1.00	3.00
	Mean	0.20	68.75	2.45	0.30	0.16	0.16	2.72	0.99	0.88	0.34	3.70	4.81	0.27	0.67	n.a.
	SD	0.40	84.61	1.11	0.46	0.36	0.36	0.39	0.07	0.22	0.38	2.68	2.55	0.44	0.47	n.a.
	Actual range	0-1	4-739	1-5	0-1	0-1	0-1	2.00-3.00	0.50-1.00	0.25-1.00	0.00-1.00	0-15	0-12	0-1	0-1	0-1
Medium (2 > F-PEC-P ≥ 1)	N	111	98	97	110	110	110	111	96	109	29	102	93	104	54	91
	Median	0.00	41.50	2.00	0.50	0.00	0.00	1.50	1.00	0.25	0.17	4.00	6.00	1.00	1.00	4.00
	Mean	0.35	58.01	2.35	0.50	0.13	0.13	1.42	0.89	0.31	0.18	4.78	5.94	0.55	0.67	n.a.
	SD	0.48	49.62	1.29	0.50	0.33	0.33	0.26	0.22	0.34	0.22	3.17	2.87	0.50	0.48	n.a.
	Actual range	0-1	2-313	1-5	0-1	0-1	0-1	1.00-1.93	0.00-1.00	0.00-1.00	0.00-0.83	0-19	0-11	0-1	0-1	0-1
Low (1 > F-PEC-P > 0)	N	32	28	25	32	32	32	32	20	31	15	27	25	29	14	25
	Median	1.00	39.50	2.00	0.00	0.00	0.00	0.75	0.51	0.00	0.17	5.00	6.00	1.00	1.00	4.00
	Mean	0.63	54.36	2.32	0.41	0.16	0.03	0.63	0.52	0.13	0.14	6.00	6.04	0.62	0.71	n.a.
	SD	0.49	60.87	1.41	0.50	0.37	0.18	0.27	0.29	0.18	0.17	3.65	3.36	0.49	0.47	n.a.
	Actual range	0-1	4-315	1-5	0-1	0-1	0-1	0.01-1.00	0.00-0.95	0.00-0.50	0.00-0.50	0-13	0-12	0-1	0-1	0-1
No (F-PEC-P = 0)	N	245	202	119	245	245	245	245	139	240	129	214	201	226	140	197
	Median	0.00	34.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	5.00	6.00	1.00	1.00	4.00
	Mean	0.40	55.84	2.55	0.32	0.09	0.29	0.00	0.00	0.00	0.00	5.41	5.91	0.68	0.77	n.a.
	SD	0.49	58.97	1.68	0.47	0.29	0.45	0.00	0.00	0.00	0.00	3.60	2.81	0.47	0.42	n.a.
	Actual range	0-1	1-444	1-5	0-1	0-1	0-1	0-0	0-0	0-0	0-0	0-20	0-12	0-1	0-1	0-1

We note that all firms that experience a high level of family influence show that the controlling family participates to at least some extent on the FF's management board (at least 25%), but among medium- and low-family-influence firms, we also find only non-family management teams. In contrast, in all four levels of family influence, the supervisory boards of the firms in our sample are predominantly composed of non-family members. Although there is a tendency toward an increasing share of family members on the supervisory board, given higher family influence, these results seem surprising, considering the often-expressed reluctance of controlling families to include non-family members on their supervisory boards (e.g., Fiegener, Brown, Dreux, and Dennis (2000); Bammens et al. (2011)). However, these results might be explained by the lower share of higher-family-influence firms having installed a supervisory board compared to supervisory boards installed by no-family-influence firms. *Table 2* shows that 129 out of 245 (53%) no-family-influence firms have installed a supervisory board, but only 13 out of 182 (7%) high-family-influence firms and 29 out of 111 (26%) medium-family-influence firms have installed such a board. These results suggest that although family firms may be reluctant to install a supervisory board in the first place (which may also be influenced by lower firm size), if they do install such a board, they recruit non-family members for the board.

The descriptive statistics also suggest that firms with a higher level of family influence are generally smaller, which confirms earlier research findings (e.g., Klein (2000); IFERA (2003)). We find a parallel result for firm age: the firms in our sample that experience a higher level of family influence are also older, on average. Considering aspects of MA institutionalization, it is evident from the descriptive statistics that higher-family-influence firms use fewer strategic MA and operational-planning instruments, establish fewer discrete MA departments, and employ fewer heads of MA with a university education.

**Table 3: Correlations**

Variables	1	2	3	4	5	6	7	8	9	10
1. Firm size	1.000									
2. Firm age	0.037 <sup>2</sup>	1.000								
3. Firm generation	0.152 <sup>2</sup> ***	0.773 <sup>2</sup> ***	1.000							
4. Industry sector (Manufacturing, Retail, Service, Other)	0.165 <sup>1</sup> ***	0.089 <sup>1</sup>	0.119 <sup>1</sup>	1.000						
5. Level of family influence (F-PEC-P extrapolated, 4 steps)	-0.181 <sup>2</sup> ***	0.168 <sup>2</sup> ***	0.055 <sup>2</sup>	0.148 <sup>1</sup> ***	1.000					
6. Number of strate- gic MA instru- ments used	0.268 <sup>2</sup> ***	-0.019 <sup>3</sup>	0.068 <sup>2</sup>	0.218 <sup>1</sup> ***	-0.216 <sup>2</sup> ***	1.000				
7. Number of opera- tional planning instruments used	0.187 <sup>2</sup> ***	-0.044 <sup>3</sup>	0.068 <sup>2</sup>	0.408 <sup>1</sup> ***	-0.165 <sup>2</sup> ***	0.564 <sup>3</sup> ***	1.000			
8. Firm with discrete MA department	0.417 <sup>1</sup> ***	0.037 <sup>1</sup>	0.201 <sup>1</sup> ***	0.234 <sup>1</sup> ***	0.360 <sup>1</sup> ***	0.282 <sup>1</sup> ***	0.322 <sup>1</sup> ***	1.000		
9. Head of MA with university training	0.117 <sup>1</sup> *	0.032 <sup>1</sup>	0.195 <sup>1</sup>	0.061 <sup>1</sup>	0.110 <sup>1</sup>	0.088 <sup>1</sup>	0.064 <sup>1</sup>	n.c. <sup>4</sup>	1.000	
10. Written recording of strategic plans and strategy statements	0.134 <sup>2</sup> ***	-0.052 <sup>2</sup>	0.007 <sup>2</sup>	0.085 <sup>1</sup>	-0.240 <sup>2</sup> ***	0.278 <sup>2</sup> ***	0.243 <sup>2</sup> ***	0.257 <sup>1</sup> ***	0.132 <sup>1</sup>	1.000

Level of significance: \*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

<sup>1</sup> Cramers V (no direction of correlation indicated; ranges from 0 to 1),

<sup>2</sup> Spearman's rho,

<sup>3</sup> Bravais-Pearson's correlation coefficient,

<sup>4</sup> Not computable (no head of MA without discrete MA department).

Table 3 presents the correlations among the control variables (*firm size*, *firm age*, *firm generation*, and *industry sector*), the independent variable (*level of family influence*), and the five aspects of MA usage. We find several significant correlations, but only two of them, the correlations between firm age and firm generation and between the number of strategic MA instruments and operational planning instruments, come near or lie within the critical range of 0.6-0.8 that would indicate multicollinearity (Lehmann, Gupta, and Steckel (1998); Grewal, Cote, and Baumgartner (2004); Tabachnick and Fidell (2007)). In any case, the significant correlation of these two pairs of variables seems logical, given that firm generation grows along with firm age, and that those firms that use more strategic MA instruments also use more operational planning instruments. Thus, the use of the statistical methods presented in Table 4 seems appropriate.

**Table 4: Bivariate Tests**

Hypothesis	Measure	Firm size	Level of family influence				F-PEC-P extrapolated (exact value)	p value
			High (F-PEC-P $\geq$ 2)	Medium (2>F-PEC-P $\geq$ 1)	Low (1>F-PEC-P>0)	No (F-PEC-P=0)		
H1a	Number of strategic MA instruments used	Large	5.000	5.67	6.07	6.49	0.032 <sup>2</sup> **	0.018 <sup>3</sup> **
		Medium-sized	3.36	4.30	5.92	4.73	0.000 <sup>2</sup> ***	0.000 <sup>3</sup> ***
H1b	Number of operational planning instruments used	Large	5.58	6.54	6.36	6.43	0.263 <sup>2</sup>	0.114 <sup>3</sup>
		Medium-sized	4.59	5.57	5.64	5.59	0.003 <sup>2</sup> ***	0.000 <sup>3</sup> ***
H2	Strategic plans and explicit strategy statements fully recorded or majority recorded	Large	85.3%	94.3%	100.0%	90.7%	0.355 <sup>1</sup>	0.162 <sup>4</sup>
		Medium-sized	75.0%	85.7%	90.9%	90.2%	0.012 <sup>1</sup> ***	0.000 <sup>4</sup> ***
H3	Firm with discrete MA department	Large	69.4%	83.3%	82.4%	85.4%	0.217 <sup>1</sup>	0.018 <sup>4</sup> **
		Medium-sized	16.0%	39.7%	33.3%	56.2%	0.000 <sup>1</sup> ***	0.000 <sup>4</sup> ***
H4	Head of MA with academic training	Large	64.0%	76.7%	72.7%	84.1%	0.209 <sup>1</sup>	0.031 <sup>4</sup> **
		Medium-sized	71.4%	54.2%	66.7%	70.4%	0.539 <sup>1</sup>	0.189 <sup>4</sup>

Level of significance: \*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .

<sup>1</sup> Pearson's chi-square test.

<sup>2</sup> Jonckheere-Terpstra test.

<sup>3</sup> Bravais-Pearson correlation (one sided  $p$ -values).

<sup>4</sup> Point biserial correlation (one sided  $p$ -values).

## 4.2 BIVARIATE TESTS

To judge the applicability of our hypotheses, we first present the bivariate statistical test results in *Table 4*. For nominal dependent variables, we use Pearson's chi-square test to examine whether the four levels of family influence affect MA usage. For metric-dependent variables, we use the Jonckheere-Terpstra test. For both groups of dependent variables, we control for firm size by testing large and medium-sized firms separately. Doing so gives us a first impression of the applicability of the moderating role of firm size as proposed in H5. Based on these tests, Hypotheses H1a, H1b, H2, and H3 are confirmed for the group of medium-sized firms. For the group of large firms, none of the hypotheses could be confirmed using these procedures. To test whether our classification of family influence into four levels could have an effect on bivariate results, we also calculate separately for both large and medium-sized firms Bravais-Pearson correlations (for metric-dependent variables) and point biserial correlations (for nominal-dependent variables) for the relation between exact F-PEC-P extrapolated values (without any split into steps) and the five aspects of MA institutionalization. Our results confirm that in medium-sized firms, the level of family influence is significantly associated with four of the five aspects of MA usage.

Thus, these bivariate analyses imply that medium-sized firms that experience a higher level of family influence use fewer strategic MA and operational planning instruments, exhibit a lower degree of written recordings of strategic plans, and establish fewer discrete MA departments. Although in the group of medium-sized firms the test results for H4 are not significant, there is a descriptive tendency that supports this hypothesis. For large firms, the level of family influence only partially – and only when we use the exact F-PEC-P extrapolated values – shows a significant relation to the number of strategic MA instruments used and the training of the head of MA. Therefore, based on these bivariate tests, we conclude that the level of family influence has an effect mainly on MA usage in medium-sized firms and has only a weaker effect in large firms. These differing results support H5, that firm size can moderate the relation between family influence and MA usage.

## 4.3 REGRESSION ANALYSIS

To further test the underlying factors driving the five dependent variables in our study, we construct four regression models for each of the five independent variables of MA usage, resulting in a total of 20 regression models. We present these models in *Tables 5 to 9*. All models incorporate all control variables. Each first-regression model includes our independent variable *family influence* as measured via the F-PEC-P extrapolated value, and each second model contains *family influence* as measured by the F-PEC-P reduced value. The third and fourth models comprise interaction effects between family influence and firm size, as predicted in H5. In the third model, we test whether the interaction between the F-PEC-P extrapolated value and firm size contributes significantly to explaining the

dependent variables. In the fourth model, we instead include the interaction between the F-PEC-P reduced value and *firm size* as the independent variable.

Because of the different scale levels of the dependent variables, we use two different regression types. We test H1a and H1b based on multiple linear regressions (shown in *Tables 5 and 6*), but test H2, H3, and H4 based on logistic regressions (shown in *Tables 7 to 9*). In all linear regression models, the independent variables' tolerance and the variance inflation factors are reasonably close to the value of one, so multicollinearity does not seem to be an issue (Dobson and Barnett (2008); Sheather (2009); Fahrmeir, Kneib, and Lang (2009)).

**Table 5: Multiple Linear Regression Results to Test H1a (Final Models)**

Independents	H1a (F-PEC-P extrapolated)				H1a (F-PEC-P reduced and interaction)			
	$\beta$	p	F	Vari- ance In- flation Factor	$\beta$	p	F	Vari- ance In- flation Factor
Level of family influence (F-PEC-P extrapolated)	-0.568	0.000	24.025	0.954	-0.568	0.000	24.025	0.954
Level of family influence (F-PEC-P reduced)	-0.806	0.000	22.922	0.960	-0.806	0.000	22.922	0.960
Level of family influence (F-PEC-P extrapolated) X Firm size	Not included in final regression model							
Level of family influence (F-PEC-P reduced) X Firm size	Not included in final regression model							
Firm size	1.318	0.000	18.840	0.919	1.318	0.000	18.840	0.919
Firm age	Not included in final regression model							
Firm generation	Not included in final regression model							
Manufacturing = 0	1.191	0.000	15.187	0.881	1.191	0.000	15.187	0.881
Retail = 0	1.333	0.002	9.580	0.913	1.333	0.002	9.580	0.913
Service = 0	Not included in final regression model							
Absolute term	4.425	0.000	300.854		4.425	0.000	300.854	
Model fit	-----							
R <sup>2</sup>	0.134				0.134			
Adjusted R <sup>2</sup>	0.128				0.127			
F (Model, global)	19.651	0.000			19.391	0.000		

Level of significance: \* p < 0.10; \*\* p < 0.05; \*\*\* p < 0.01. Method: stepwise, p<sub>in</sub> = 0.10, p<sub>out</sub> = 0.11.

**Table 6: Multiple Linear Regression Results to Test H1b (Final Models)**

Dependent	H1b (F-PEC-P extrapolated)					H1b (F-PEC-P extrapolated and interaction)					H1b (F-PEC-P reduced and interaction)				
	$\beta$ coeff.	p value	F (coeff. partial)	Tolerance	Variance Inflation Factor	$\beta$ coeff.	p value	F (coeff. partial)	Tolerance	Variance Inflation Factor	$\beta$ coeff.	p value	F (coeff. partial)	Tolerance	Variance Inflation Factor
Level of family influence (F-PEC-P extrapolated)	-0.439	0.000	21.212	0.990	1.010	-0.439	0.000	21.212	0.990	1.010	-0.562	0.001	11.118	0.977	1.024
Level of family influence (F-PEC-P reduced)															
Level of family influence (F-PEC-P extrapolated X Firm size)															
Level of family influence (F-PEC-P reduced)															
Level of family influence (F-PEC-P reduced X Firm size)															
Firm size															
Firm age															
Firm generation															
Manufacturing = 0															
Retail = 0															
Service = 0															
Absolute term	5.068	0.000	682.361			5.068	0.000	682.361			4.580	0.000	164.644		
Model fit															
R <sup>2</sup>	0.207					0.207					0.182				
Adjusted R <sup>2</sup>	0.202					0.202					0.169				
F (Model, global)	41.086	0.000				41.086	0.000				14.829	0.000			

Level of significance: \* p < 0.10; \*\* p < 0.05; \*\*\* p < 0.01. Method: stepwise, p.in = 0.10, p.out = 0.11.

In all linear regression models to test H1a (number of strategic MA instruments used, see *Table 5*) and H1b (number of operational planning instruments used, see *Table 6*), the level of family influence was included in the final regression models, regardless of whether we measure the level as F-PEC-P extrapolated or F-PEC-P reduced. This result underscores the predictive power of this contextual factor for MA institutionalization: firms with a higher level of family influence show less use of strategic MA and operational planning instruments.

To explain the number of strategic MA instruments, *firm size*, *manufacturing*, and *retail* were also included in the regression models. This leads to the interpretation that larger firms and firms belonging to the manufacturing or retail sectors use significantly more strategic MA instruments than do medium-sized firms and firms belonging to the service sector or other industry sectors. *Manufacturing* and *retail* were also included in the final regression models to further test H1b. Based on this analysis, manufacturing and retail firms seem to use significantly more operational planning instruments than do service sector firms or firms belonging to other industry sectors. In addition, in the two models that use the F-PEC-reduced value to test H1b, *firm size* and *firm age* were included in the final models, but not in the models using the F-PEC-P extrapolated scale.

However, no interaction effects were included in the final models to test H1a and H1b that included interaction effects between family influence and firm size. Thus, based on these models, and despite the bivariate results pointing to the applicability of these interaction effects, we cannot confirm the significance of an interaction between *family influence* and *firm size*. Put differently, based on these results, family influence seems to be a distinct predictor of the number of strategic MA and operational planning instruments used, regardless of firm size.

**Table 7: Logistic Regression Results to Test H2 (Final Models)**

Independents	H2 (F-PEC-P extrapolated)			H2 (F-PEC-P reduced)			H2 (F-PEC-P extrapolated and interaction)						
	Dependent	Reference class	β coeff.	exp(β)	p value	Strategic plans and explicit strategy statements fully or majority recorded	β coeff.	exp(β)	p value	Strategic plans and explicit strategy statements fully or majority recorded	β coeff.	exp(β)	p value
Level of family influence (F-PEC-P extrapolated)	none <sup>1</sup>	none <sup>1</sup>	-0.454	0.635	0.000***	Strategic plans and explicit strategy statements fully or majority recorded	-0.454	0.635	0.000***	Strategic plans and explicit strategy statements fully or majority recorded	-0.606	0.546	0.000***
Level of family influence (F-PEC-P reduced)	none <sup>1</sup>	none <sup>1</sup>				Strategic plans and explicit strategy statements fully or majority recorded				Strategic plans and explicit strategy statements fully or majority recorded			
Level of family influence (F-PEC-P extrapolated) X Firm size						Strategic plans and explicit strategy statements fully or majority recorded				Strategic plans and explicit strategy statements fully or majority recorded			
Level of family influence (F-PEC-P reduced) X Firm size						Strategic plans and explicit strategy statements fully or majority recorded				Strategic plans and explicit strategy statements fully or majority recorded			
Firm size	Medium-sized	Medium-sized	Not included in final regression model			Strategic plans and explicit strategy statements fully or majority recorded	Not included in final regression model			Strategic plans and explicit strategy statements fully or majority recorded	Not included in final regression model		
Firm age	none <sup>1</sup>	none <sup>1</sup>	Not included in final regression model			Strategic plans and explicit strategy statements fully or majority recorded	Not included in final regression model			Strategic plans and explicit strategy statements fully or majority recorded	Not included in final regression model		
Firm generation	none <sup>1</sup>	none <sup>1</sup>	Not included in final regression model			Strategic plans and explicit strategy statements fully or majority recorded	Not included in final regression model			Strategic plans and explicit strategy statements fully or majority recorded	Not included in final regression model		
Manufacturing	Non-manufacturing	Non-manufacturing	Not included in final regression model			Strategic plans and explicit strategy statements fully or majority recorded	Not included in final regression model			Strategic plans and explicit strategy statements fully or majority recorded	Not included in final regression model		
Retail	Non-retail	Non-retail	Not included in final regression model			Strategic plans and explicit strategy statements fully or majority recorded	Not included in final regression model			Strategic plans and explicit strategy statements fully or majority recorded	Not included in final regression model		
Service	Non-service	Non-service	Not included in final regression model			Strategic plans and explicit strategy statements fully or majority recorded	Not included in final regression model			Strategic plans and explicit strategy statements fully or majority recorded	Not included in final regression model		
Absolute term			2.478	11.918	0.000***	Strategic plans and explicit strategy statements fully or majority recorded	2.478	11.918	0.000***	Strategic plans and explicit strategy statements fully or majority recorded	2.274	9.722	0.000***
<i>Model fit</i>													
Cox & Snell Pseudo-R <sup>2</sup>			0.036			Strategic plans and explicit strategy statements fully or majority recorded	0.036			Strategic plans and explicit strategy statements fully or majority recorded	0.043		
Nagelkerkes Pseudo-R <sup>2</sup>			0.064			Strategic plans and explicit strategy statements fully or majority recorded	0.064			Strategic plans and explicit strategy statements fully or majority recorded	0.077		

Level of significance: \* p < 0.10; \*\* p < 0.05; \*\*\* p < 0.01.  
 Method: stepwise, p.in = 0.10, p.out = 0.11.  
<sup>1</sup> No reference class due to metric independent variable.

**Table 8: Logistic Regression Results to Test H3 (Final Models)**

Independents	H3 (F→PEC-P extrapolated)			H3 (F→PEC-P reduced)			H3 (F→PEC-P extrapolated and interaction)			H3 (F→PEC-P reduced and interaction)			
	Reference class	$\beta$ coeff.	exp( $\beta$ )	p value	$\beta$ coeff.	exp( $\beta$ )	p value	$\beta$ coeff.	exp( $\beta$ )	p value	$\beta$ coeff.	exp( $\beta$ )	p value
Level of family influence (F→PEC-P extrapolated)	none <sup>1</sup>	-0.606	0.545	0.000***									
Level of family influence (F→PEC-P reduced)	none <sup>1</sup>				-0.821	0.440	0.000***				-0.821	0.440	0.000***
Level of family influence (F→PEC-P extrapolated) X Firm size													
Level of family influence (F→PEC-P reduced) X Firm size													
Firm size	Medium-sized	1.834	6.257	0.000***	1.907	6.735	0.000***	1.834	6.257	0.000***	1.907	6.735	0.000***
Firm age	none <sup>1</sup>												
Firm generation	none <sup>1</sup>												
Manufacturing	Non-manufacturing	0.945	2.573	0.000***	0.955	2.598	0.000***	0.945	2.573	0.000***	0.955	2.598	0.000***
Retail	Non-retail												
Service	Non-service	0.713	2.040	0.009***	0.715	2.044	0.009***	0.713	2.040	0.009***	0.715	2.044	0.009***
Absolute term		-0.252	0.777	0.197	-0.294	0.745	0.132	-0.252	0.777	0.197	-0.294	0.745	0.132
<i>Model fit</i>													
	Cox & Snell Pseudo-R <sup>2</sup>	0.277			0.272			0.277			0.272		
	Nagelkerkes Pseudo-R <sup>2</sup>	0.369			0.363			0.369			0.363		

Level of significance: \*  $p < 0.10$ ; \*\*  $p < 0.05$ ; \*\*\*  $p < 0.01$ .  
 Method: stepwise,  $p_{in} = 0.10$ ,  $p_{out} = 0.11$ .  
<sup>1</sup> No reference class due to metric independent variable.



To further test the factors driving the dependent variables in H2, H3, and H4, we use logistic regression analyses, as all three dependent variables show a dichotomous scale level. In all 12 regression models we use to test these three hypotheses (see *Tables 7 to 9*), the independent variable *level of family influence* was included in the final regression models, regardless of whether we measure it as F-PEC-P extrapolated or F-PEC-P reduced. Therefore, these analyses establish the relevance of the level of family influence on the formalization of strategic plans, the establishment of discrete MA departments, and the training of the heads of MA. Hence, this evidence confirms Hypotheses H2, H3, and H4.

In all four models used to test H3, and in two models (using F-PEC-P reduced) used to test H2, *firm size* was included in the final logistic regression models. In these models, larger firms and firms with a lower level of family influence emerge as being more likely to have established an MA department and to show a higher formalization of strategic plans. In addition, according to the final regression models we use to test H3, manufacturing and service firms also appear to prefer to establish discrete MA departments compared with firms from other industry sectors.

However, similar to the regression results on H1a and H1b, none of the tested interaction effects were included in the final models to test H2, H3, and H4. Thus, based on our regression results, we cannot confirm H5, which suggests a stronger effect of family influence on MA usage in smaller compared to larger firms. Also, our results concerning the formalization of strategic plans, i.e., the establishment of discrete MA departments and the training of the heads of MA, suggest that family influence is a significant and distinct antecedent, regardless of firm size.

When we compare the two slightly different ways of measuring family influence (F-PEC-P extrapolated and F-PEC-P reduced), we find that regardless of measurement, family influence acts as predictor of MA usage: family influence was included as a covariate in all 20 final regression models. When we look more closely at the results, we see that in the ten regression models that use the F-PEC-P reduced scale, the  $\beta$  coefficients of the level of family influence take on consistently higher negative values compared with the ten models in which we measure family influence as F-PEC-P extrapolated. This stronger negative impact of higher family influence on MA usage might be explained by the descriptive finding noted earlier, that supervisory and advisory boards in our sample, if they exist at all, are predominantly populated with non-family members. Thus, the inclusion of the supervisory/advisory boards in the construction of F-PEC-P extrapolated leads to lower family influence, as with F-PEC-P reduced. In turn, the softened impact of family influence, as measured with F-PEC-P extrapolated on MA usage, may be explained.

## 5 DISCUSSION, CONCLUSION, AND AVENUES FOR FURTHER RESEARCH

Our goal in this paper is to analyze how family influence affects the usage of MA. Our bivariate and multivariate analyses, which are based on survey responses from Germany

and Austria, provide evidence that independent of the two alternative ways of measuring, the level of family influence serves as a significant predictor for different aspects of MA usage. We find that higher family influence is negatively associated with the use of MA. Our analysis of whether this relationship can be moderated by firm size yielded inconsistent results. Bivariate analyses suggest that in medium-sized firms, there is a negative association between a higher level of family influence and MA usage. This finding is not present amongst large firms in our sample. However, in all ten regression models in which we test the interaction effect between family influence and firm size as potential covariates, the interaction effect was not included in the final regression model. Our results therefore suggest that the interaction effect does not significantly contribute to explaining the usage of MA.

In contrast to other quantitative studies that focus on MA or management control in FFs, we use a more comprehensive measurement of family influence, the F-PEC-P scale. By using this more finely tuned definition of family influence, we can corroborate and extend findings on the relationship between family influence and MA usage by Speckbacher and Wentges (2012) and Posch and Speckbacher (2012), showing that family influence is negatively associated with the usage of strategic MA practices and the usage of formalized controls. Extending the results by Posch and Speckbacher (2012), we show that this finding also holds for larger firms. We further extend their findings by showing that higher family influence is also negatively associated with the usage of operational MA instruments, a higher training level of management accountants, and the establishment of discrete MA departments. This last aspect may be seen as the most tangible manifestation of an FF dedicating resources to MA. Furthermore, our results that point to a negative relationship between family influence and MA usage can also be seen as corroborating qualitative research evidence that the employment of professional, non-family management accountants or chief financial officers who reduce family influence in the firm is associated positively with higher MA usage (Giovannoni et al. (2011); Stergiou et al. (2013)).

However, in contrast to Speckbacher and Wentges' (2012) findings, our analysis of the relationship between interaction effects among family influence, firm size, and MA usage yields inconsistent results. A possible reason for these differing results may be due to how we measure firm size. We targeted medium-sized and large firms (European Commission (2003)), and in our analysis we distinguished between firms with 50–249 employees (medium-sized firms) and firms with at least 250 employees (large firms). In contrast, Speckbacher and Wentges (2012) use a more granular measurement of firm size and include a size class with firms having less than 100 employees. For this class of smaller firms, Speckbacher and Wentges (2012) find that family influence is a better predictor of MA usage than it is for larger firms with at least 100 employees. Thus, combining our results with those of Speckbacher and Wentges' (2012), suggests that overall, family influence serves as a significant predictor of MA usage, and it is only for very small firms (i.e., those with fewer than 100 employees) that the relationship between family influence and MA usage is stronger than in larger firms.

Our findings can be helpful for both management accountants and FF owners. Management accountants who consider working for an FF could estimate the role MA might play in that firm, based on the level of family influence. Our findings indicate that in firms with a higher level of family influence, potential management accountants can estimate whether there is a lower present reliance on MA but a higher potential future need for MA professionalization, and thus, that there is a chance to actively drive MA change. In turn, FF owners could use our results to better foresee the effects of reducing family influence in their business. When FF owners hire non-family managers or reduce family influence in another manner, they should expect a higher need for MA to arise, which could also lead to higher overhead costs. However, this does not necessarily only mean higher costs for the firm overall. FF owners could also use MA practices to actively codify knowledge, thereby easing business succession to either family members or non-family members (Giovannoni et al. (2011)).

In the field of MA in FFs, various avenues remain for further research. For instance, researchers might examine the underlying drivers of increased usage of MA together with the reduction of family influence. Researchers might pursue the answers to questions such as why the controlling family introduces MA practices to better control and monitor non-family managers, and if, because they are accustomed to basing their decisions on formalized MA information, non-family managers themselves are the driving force behind increased MA usage. It would also be interesting to use longitudinal data to follow selected firms on their way from a high to a low level of family influence while measuring the change in MA usage. Furthermore, it might also be interesting to analyze how the role of management accountants differs with the level of family influence. As with MA research in general, most studies have not examined the impact of family influence. Thus, it would be interesting to investigate whether management accountants in firms with a higher level of family influence face different demands and challenges. Further, an investigation of this question in small or medium-sized firms is warranted.

Our study does have some limitations. Our data set was generated by a one-time inquiry in Southern Germany and Austria; thus, we cannot rule out interfering cultural variables. Hence, our results cannot be assumed to directly apply to other cultural contexts. Furthermore, because we focus on a selection of aspects to represent MA usage, these aspects cannot be expected to represent the entire complexity of MA systems. Further analyses on other aspects of MA usage might be helpful to expand or relativize our findings. Another limitation is that we use the F-PEC-P concept to operationalize the level of family influence. As discussed above, this concept also has some shortcomings. Thus, it may be useful to reproduce our study using another method to operationalize family influence. By doing so, other researchers could test whether our findings also hold true for other definitions of family influence.

A further limitation of our study concerns the use of a contingency-based approach per se. By adhering to this widespread view of management research, we followed the “structure follows strategy” paradigm proposed by Chandler (1962). This paradigm is widely

debated in management research because the question of whether a company's environment really determines its structure is still unclear. We interpret MA systems as multidimensional constructs consisting of functions, tasks, task-bearers, and instruments. Thus, future research could consider holistic, theoretical approaches, such as the Gestalt approach suggested by Miller and Friesen (1977). In addition, Chenhall (2007) argues that because of aspects inherent to the methods used in contingency research, deducing practical implications is challenging. Hence, new theoretical constructs could be utilized to fulfill the praxeological function of management and accounting research that is rooted in the sociological views of Bourdieu (1977). However, because we use a contingency approach, we cannot rule out the potential problem of omitted variables. Due to the limited length of the questionnaire, we could not include additional contextual variables, such as firm strategy and perceived environmental uncertainty, that are occasionally investigated in MA studies based on contingency theory (Luft and Shields (2003); Chenhall (2003)). Moreover, further non-family management accountant or chief financial officer characteristics could also influence FFs' MA systems (Giovannoni et al. (2011); Hiebl (2014); Stergiou et al. (2013)), but due to length restrictions we could not include them in our questionnaire. Future studies could be conducted to corroborate our results and to elaborate on whether they hold true if the researchers also control for these factors.

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