Determinants of separating management accounting from financial accounting in SMEs and Family Firms – evidence from Poland and Germany*

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Abstract

While implementing management accounting, which is basically a discretionary managerial decision, little is known about the impact of the firm's size and ownership on such decisions. Additionally, another important factor for Small and Medium-sized Enterprises (SMEs) is the scarcity of resources which exerts organizational pressure. Our study focuses on Poland and Germany because we assume isomorphism of Polish firms and the intense influence of German accounting systems in Poland. Our results indicate a strong impact of organizational pressure and only a modest impact of other factors on accounting decisions. The study reveals similar accounting structures between these two countries.

Keywords: financial accounting, management accounting, Germany, Poland, separation
JEL Codes: M19, M41

1. Introduction

Accounting is the most important information system in firms, regardless of size or type of business activity or its legal form. Accounting differentiates into financial accounting and management accounting. While financial accounting is mandatory and subject to national and international regulations, management accounting is a system that is voluntary and depends on the complexity of business (Ikäheimo/Taipaleenmäki 2010) as well as managerial decisions.

The relation between management accounting and financial accounting is often discussed under the topic of convergence (Brandau et al. 2017). The convergence of accounting is seen from the perspective of large and listed firms which adopt International Financial Reporting Standards (IFRS) and explained by goal congruence and isomorphism. Empirical evidence suggests that the majority of these larger firms now adopt a so-called integrated or convergent accounting system that restrains from differences between management accounting and financial accounting (f.e. Engelen/Pelger 2014).

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However, the majority of firms in most countries and also in Germany and Poland are not listed, do not report based on IFRS and do not qualify as large in terms of the number of employees, sales or balance sheet total. Therefore, it is not clear if the extant research on the relationship between management accounting and financial accounting can be generalized to small and medium-sized enterprises (SMEs) or family firms . We argue that in SMEs and family firms, the structure of accounting systems is determined by different causes and cannot be explained by the existing literature. In particular the intertwined nature of family and firm distinguishes family firms from other organizations as the family members are closely related to the firm and may influence decision making in the company. Their choices are induced by the desire to maintain and increase the family`s socioemotional wealth (SEW) and control which sometimes exclude efficiency and economic considerations (Gomez-Mejia et al. 2011). Previous research has shown that family firms rely more often on informal controls and less on management accounting information (Hiebl 2013a; Hiebl et al. 2015). However, there are also important contingent variables that moderate the influences on accounting choices: examples are firm size, business location, or scarcity of resources which leads to organizational pressure. Research is scarce in understanding decisions of this majority of firms, which are often family firms and SMEs, for separating management accounting from financial accounting.

Although management accounting and financial accounting systems differ between countries (Nilsson/Stockenstrand 2015), intensive business relations, as well as coercive and mimetic isomorphism, may result in transferring accounting practices between countries (Granlund/Lukka 1998). Especially subsidiaries operating in developing countries copy practices from their parent companies (Tsamenyi et al. 2008; Acquaah 2013;). We posit that the territorial proximity to Germany affects the level of trade and cooperation between German companies and companies from neighbouring countries in Central and Eastern Europe, as many subsidiaries of German companies are located in this region. Thus, the economic relationship with Germany will have an impact on accounting practices in neighbouring countries such as Poland (Szychta 2018). The coercive and mimetic isomorphism (DiMaggio/Powell 1983) suggests that harmonization is not only a topic of firms in German-speaking countries but also in countries influenced by the accounting systems of German firms, which to date has not been intensively discussed in the literature.

To address the above-mentioned gaps in the literature, we have collected sample data through questionnaire surveys on the structure of management accounting and financial accounting in two countries: Germany and Poland. Comparing the results of the two countries is helpful for cross-validation, thus increasing the validity of the research, and it also helps understanding if determinants of accounting structure are the same between different countries. Therefore, our study

aims to answer the research question: What are the contingencies of separating management accounting and financial accounting for SMEs, including family businesses, in Germany and Poland and are the differences between the countries substantial?

The data obtained were analysed using advanced statistical methods. In empirical research, we employed Bayesian quantile regressions (Dries/van den Poel 2017). To understand the impacts of country differences on the results we estimated two quantile regressions, one with the control variable for the German sample and one with the control variable for the Polish sample. Additional analyses of interaction effects complemented the study.

This paper adds to our understanding of accounting of family firms and SMEs and their specific situations as well as peculiarities for decisions regarding structuring accounting systems (Dello Sbarba/Marelli 2018). It also contributes to the literature in providing evidence in support of socioemotional wealth showing that SMEs and family-owned firms are not small "large firms" under different ownership, also with respect to accounting systems (Gomez-Mejia et al. 2011). We have added the missing element on the importance of organizational pressure for decisions on separating management accounting and financial accounting (Mitchell/Reid 2000; Gomez-Mejia et al. 2011; Lopez /Hiebl 2015). Moreover, we have shed additional light on the comparative aspects of accounting choices in companies from well-developed and less well-developed countries in Europe (Granlund/Lukka 1998; Bloom et al. 2012; Endenich et al. 2016). We have shown that the main structures of accounting and ownership are the same in Germany and Poland, thereby adding knowledge regarding the impact of isomorphism on accounting systems (DiMaggio/Powell 1983; Granlund/Lukka 1998).

As a consequence, our study may be particularly interesting for practitioners in order to take a proactive approach in developing an accounting system for SMEs and in using management accounting practices and information in family businesses (Hiebl 2013a). Finally, we have identified some avenues that may be insightful for other researchers, as more comparative studies are needed to further understand harmonization and its contingencies in different countries.

The paper is structured as follows: The second section reviews relevant literature, defines the research gap, and develops hypotheses. The third section describes research methods and sampling followed by the fourth section which details the results. The last section discusses the results and concludes the paper.

2. Related Research and Hypotheses development

2.1. Separating management accounting and financial accounting

Typically, management accounting and financial accounting focus on different purposes and address different users, namely that management accounting is used by managers and financial accounting is used by owners as well as by potential investors (Ikäheimo/Taipaleenmäki 2010). Management accounting emerged because financial accounting cannot provide the necessary information for managerial decision-making. Financial accounting provides tax-oriented financial information which is of little use to management and decision-making (Ikäheimo/Taipaleenmäki 2010). The separation of the two concepts occurred especially in German-speaking countries where management accounting (under the name "Controlling") is associated with cost accounting and management control and does not include financial reporting (Ewert/Wagenhofer 2009; Friedl et al. 2009). The differences between management accounting and financial accounting are still rather pronounced in Germany (Brandau et al. 2017). Despite some efforts from the accounting reform in 2009 ("Bilanzrechtsmodernisierungsgesetz" - BilMoG) to enhance information relevance of financial accounting in Germany, the empirical evidence points to an ongoing pursuit of German firms to prepare financial statements more in line with tax rules than with information purposes (Gross 2016). Such a strong divide between the two systems in this country is related to normative isomorphism (DiMaggio/Powell 1983). It is apparent in the influence of professional associations of controllers, namely the German "Internationaler Controller Verein" (ICV – IGC 2013) as well as academic traditions (Becker/Messner 2005; Weber 2011; Schäffer 2013; Günther 2013). As a result, German companies form "Controlling" departments within their organisational structure. Such departments focus on planning, cost accounting and reporting. Typically, strongly separated from them, financial accounting departments are responsible for external accounting and concerned with the preparation of financial statements and taxation.

Over the years this divide between management accounting and financial accounting in German companies was criticised and a trend emerged towards integrating management accounting with external accounting which is called "convergence of accounting". This phenomenon is related to the need to use a common financial language for communicating with internal and external addressees alike (Weide et al. 2011).

Convergence is explained by several theoretical threads. Firstly, from a shareholder-value perspective, goal congruence and the use of IFRS which is focused on the information needs of investors and owners alike eliminates the need for differing information in a management accounting system (Weißenberger/Angelkort 2011). Secondly, the pursuit of simplifying accounting in large, multinational and divisionalised firms may lead to the harmonization of management

accounting and financial accounting in order to achieve one common financial language in a firm (Weißenberger/Angelkort 2011). Information technology supports this as standardized information systems and improved analytical methods ensure such a common financial language, more effective control processes and higher value interaction between managers and management accountants (Weißenberger/Angelkort 2011; Taipaleenmäki/Ikäheimo 2013). The accounting legislation in the European Union (EU) also emphasizes the convergence of management accounting and financial accounting in EU member states through mandatory IFRS reporting for listed firms. The effect of IFRS reporting on management accounting and financial accounting seems to favour convergence, at least in some German-speaking countries (Weißenberger/Angelkort 2011)

This line of research focuses on large and listed firms reporting with IFRS although this is not applied by most German firms, (Küting et al. 2011), and a host of other countries. Therefore a general trend for convergence for all firms cannot be assumed. The degree of separation or convergence between management accounting and financial accounting for firms unlisted, not large and do not report with IFRS remains vague and research evidence is lacking. The rationale and relevance of this research gap are based on two strands of arguments.

Firstly, small firms are not “smaller” large firms so their accounting structure decisions may be strongly differing from that of larger firms. Additionally, many but not all SMEs are family owned and family owners often decide in different ways than external managers. For these type of firms, the implementation of an additional management accounting system besides the mandatory financial accounting system might be an extra burden given their propensity to preserve their socio-emotional wealth (SEW) (Gomez-Mejia et al. 2011) or having limited resources (Mitchell/Reid 2000: 386; Lopez /Hiebl 2015). Consequently, such firms use fewer and fewer formal instruments (Hiebl et al. 2015).

Additionally, "familiness" is an increasingly researched topic but seldom in the area of accounting, and certainly not in the separation or convergence of management accounting and financial accounting. Consequently, scholars call for more research in this area (Senftlechner/Hiebl 2015).

Compared to existing research on the separation or convergence of management accounting and financial accounting, this study focuses on SMEs and family firms which start as very small firms with mandatory financial accounting and might then chose to establish separate management accounting. Figure 1 illustrates this focus.

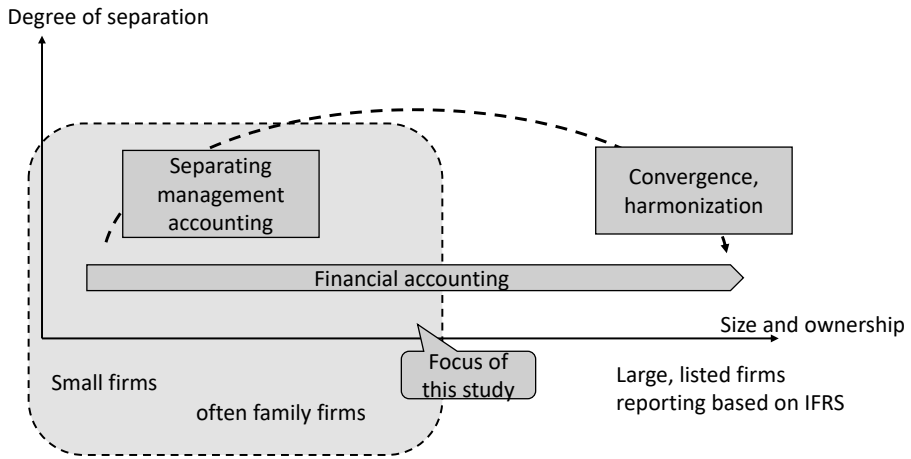

Figure 1: Focus of research in this study

2.2. Determinants of separation: family influence, size, and organizational pressure (Hypothesis 1,2,3,4)

The majority of studies on choices in accounting structure in companies neglect family firms (Dello Sbarba/Marelli 2018). But family firms are the dominant form of enterprises worldwide and play a significant role in many economies. It is therefore important to gain a better understanding of factors that determine their accounting choices. A broad definition states that family firms are those in which 'a family owner exercises great influence on the firm`s affairs', regardless of other non-family owners or management by non-family professional executive managers (Gomez-Mejia et al. 2011). The special relations between family and business are key features of family firms that are accompanied by specific internal stakeholders in family businesses: founders, next-generation successors, non-family members, as well as external managers. The family itself is treated as a stakeholder in family firms and its personal relations with managers, employees and other stakeholders can create a competitive advantage and determine their performance (Speckbacher/Wentges 2012) as well as decisions made in the organization (Prencipe et al. 2014). Finally, the intention to maintain family control over generations and succession are particular features of family businesses (Songini et al. 2013). In summary, family firms have distinct features that can impact accounting choices and for that reason, the results of studies on accounting systems in non-family firms cannot be transferred to family firms (Helsen et al. 2017). As the family is an important element of a family firm, non-economic factors such as family values and family members` emotions influence organizational goals and decisions. Moreover, relationships in this type

of company are characterized by loyalty, trust, altruism and will also impact accounting choices (Helsen et al. 2017).

Previous research has shown that accounting choices in family firms are influenced by the desire to preserve socioemotional wealth in addition to efficiency and economic considerations. It is also stated that those firms are less tax aggressive and are less likely to manage earnings as well as provide more honest reporting to the public. Preserving socioemotional wealth by maintaining a good reputation seems to be more important to owners than achieving financial goals (Gomez-Mejia et al. 2011). In addition, family firms rely more often on informal control mechanisms and less on management accounting information (Hiebl et al. 2015). Firms with a higher level of family influence are found to use fewer strategic and operational management accounting tools and employ fewer professional management accountants (Speckbacher/Wentges 2012; Hiebl et al. 2015; Hiebl/Mayrleitner 2019). The reason is that the level of family influence is associated with lower levels of formalization which in turn results in a lower professionalization of management accounting. Lower formalization and lower professionalization are connected with different control philosophies in family firms that rely more on reciprocal trust and clan controls than on bureaucratic forms of control as well as more on intuitive decision-making (Hiebl et al. 2015; Moores/Mula 2000). Based on this theoretical consideration and the state of the art in the literature, the first hypothesis can be developed:

Hypothesis H1: A higher level of family influence results in less formal management accounting and control, and thus less separation of management accounting and financial accounting.

Size is another important determinant for the differentiation of accounting systems as it is a proxy for organizational complexity. It not only determines the economic and social importance of a firm but also often relates to the number, characteristics, and needs of the stakeholders. Smaller firms have fewer financial statement users who are interested in short-term information and decision horizons. Their stakeholders have close relations with organizations, assuring additional information to that presented in financial statements. Owners are usually involved in management, reducing the need for financial information for dealing with agency conflicts. Moreover, small companies bear relatively higher costs of financial reporting and adhering to accounting regulations due to the lack of in-house accounting expertise and diseconomies of scale. As a result, size affects the relevance of particular accounting issues as well as accounting choices within companies (Eierle/Haller 2009; Becker et al. 2015). Firm size is a classic factor in many contingency-based studies on accounting choices suggesting that with increasing size, firms use more formalized and elaborated management accounting systems. This is due to the fact that increasing the firm's size typically increases organizational complexity and the need for formal accounting informa-

tion in order to allow coordination and communication (Chenhall 2003; Otley 2016). Small and medium-sized family firms use management accounting practices to a lesser degree than other organizations (Speckbacher/Wentges 2012; Hiebl 2013a; Becker et al. 2015) but such an informal management style is effective as long as a firm is relatively small in size (Speckbacher/Wentges 2012) and "so long as the business is concentrated enough to be comprehended by one brain" (Mintzberg/Waters 1982). Therefore, size interacts with family influence and both impact on accounting choices in firms (Speckbacher/Wentges 2012). The management accounting practices are more elaborated with higher professionalization, with decisions on business succession, and with the introduction of non-family managers to the company (Moores/Mula 2000; Hiebl 2013a), which in turn are a result of increasing firm size and fewer family business characteristics (Hiebl 2013a). Hiring professional executive managers means specific requirements of the financial and management information as these managers make decisions on logical and rational grounds (Hiebl 2013a). Contingency theory confirms that size affects management accounting practices as larger firms are more likely to formalize and professionalize management control (Hiebl 2013a; Hiebl et al. 2013b; Moores/Mula 2000; Speckbacher/Wentges 2012). Size is also related to the increased introduction of managerial techniques that allow transparent performance measurement, separation of business and non-financial family goals and facilitates the succession process (Songini et al. 2013). Accordingly, a second hypothesis has been developed:

Hypothesis H2: An increase in firm size results in more separation of management accounting and financial accounting.

Organizational pressure is another factor underlying the harmonization of management accounting and financial accounting. Difficult economic conditions influence the usage of management accounting as some companies, especially SMEs suffer a lack of resources necessary for implementing and using management accounting systems (Lopez /Hiebl 2015). These companies are not able to hire specialized management accountants or even full-time accountants (Lopez / Hiebl 2015). Due to the resource constrains, accounting techniques are simplified and adopted to the SMEs' needs (cf. Quinn 2011; Becker et al. 2011). Moreover, the lack of resources results also in poor management and management accounting skills due to the limited training of staff and/or owners (Mitchell/Reid 2000). Taking into consideration the apparent prohibitive costs of the implementation of management accounting systems (Mitchell/Reid 2000), financial accountants and managers with long professional experience try to develop an understanding of the business and its environment themselves as well as use some informal management accounting tools (Cassar/Holmes 2003; Hiebl et al. 2015). Organizational pressure as a factor for separation has so far not been widely considered in the empirical literature but as argued above, the authors of this study

believe it to be a missing element in the literature and to be an important factor to explain the separation of management accounting and financial accounting:

Hypothesis H3: Higher organizational pressure results in less separation of management accounting and financial accounting.

Previous studies have shown that managerial decisions in family firms are influenced by the desire to preserve socioemotional wealth apart from efficiency and economic aspects and that such firms rely more often on informal control mechanisms and less on management accounting information (Hiebl et al. 2015). However, there are also important variables that moderate such an influence in family firms, such as firm size and organizational pressure. As mentioned above, increasing firm size typically increases organizational complexity and the need for formal accounting information (Chenhall 2003; Otley 2016). This creates tension in family firms as whether to rely on and preserve socioemotional wealth or to professionalize management accounting. This tension can also result from a reduced level of family influence by hiring nonfamily managers who require more formalized accounting information (Hiebl et al. 2015). Another tension stems from the fact that although family firms may benefit from hiring nonfamily managers as they promote the introduction of managerial techniques that allow the transparent performance measurement, separation of business and nonfinancial family goals and facilitates succession process (Songini et al. 2013), smaller entities lack the economic resources necessary to afford such professional services.

Based on the above, it is reasonable to assume various interactions between the three factors previously introduced. Ownership is a dominant factor in the use of management accounting systems (Schachner et al. 2006; Lopez /Hiebl 2015). While many but not all SMEs are family-owned, an interaction of both variables on separation is to be expected. Depending on the relative strength of size or ownership, separation would be higher or lower. Size and organizational pressure may be also interrelated given the smaller a firm, the fewer resources a firm has (Mitchell/Reid 2000: 386; Lopez /Hiebl 2015). Therefore, we see an additional interaction between the two variables. Finally, it seems plausible to assume a third interaction between family ownership and organizational pressure. Thus, this study combines the concept of socioemotional wealth and contingent theory in order to study if this tension exists and how specific contingent factors and "familiness" (Habbershon et al. 2003) interact:

Hypothesis H4: Family influence, size and organizational pressure interact in their impact on separation of management accounting and financial accounting.

2.3. Accounting in Poland – the effects of isomorphism

Although financial and management accounting systems differ between countries (Granlund/Lukka 1998; Nilsson/Stockenstrand 2015), they are strongly influenced by institutional isomorphism resulting in the harmonization of their practices. DiMaggio and Powell (1983) introduce three types of isomorphism: coercive, mimetic and normative that spur homogeneity of systems. The first type of isomorphism results from political influences and concerns the problem of legitimacy, the second has its sources in typical responses to uncertainty, while the third is related to the processes of professionalization. Isomorphism can be formal or informal, because isomorphic pressure can come from direct partners, from other institutions on which the organization is dependent, the legal context in which the organization operates, or finally from public opinion (DiMaggio/Powell 1983). Several studies confirm the impact of isomorphism on accounting systems in organizations (Granlund/Lukka 1998). Especially coercive isomorphism represents an important element through which international legislation (e.g. EU directives), international trade agreements (e.g. WTO, NAFTA) and corporate influence on local subsidiaries shape the accounting system of organizations operating in global environments. Moreover, the professionalization of accounting, as well as university education in this field, stand for normative isomorphism, which is another factor contributing to the harmonization of accounting practices. The last group of factors is associated with the mimetic isomorphism mechanism which is induced by consulting companies and copying accounting practices among organizations (Granlund/Lukka 1998).

This paper argues that comparing Germany and Poland – two countries with many business relations but at different levels of economic development – enables a better understanding of management accounting and its contingencies. Nevertheless, differences between these countries exist in the development of accounting systems. German financial accounting and financial reporting based on the German Commercial Code ("Handelsgesetzbuch" – HGB) which was introduced in the 19th century (Brandau et al. 2017), whereas Poland implemented the Accounting Act after the economic transformation, which happened in 1990. Before this period, the accounting system in Poland was seen as a command and distribution system, only later did financial accounting start to meet the needs of companies. A similar situation exists in the case of management accounting (Szychta 2018). German management accounting began to be common in business practice as early as the first decades of the 20th century (Ewert/Wagenhofer 2009; Pfaff/Troßmann 2016), whereas management accounting in Poland gained importance in economic spheres only after 1990, and in particular since 2000 when the market economy was established. Numerous studies by Polish researchers underline the application of management accounting for planning and control in large domestic enterprises and in companies with foreign capital (Szychta 2018).

On the other hand, there are also similarities. Considering IFRS, both countries belong to a group of economies characterized by weak equity capital, being government-driven and tax-dominated. They are assigned as antagonist countries in terms of IFRS implementation (Leuz 2010). Another similarity is related to family firms. Most of the firms in both countries are family firms. In Germany, family firmsaccount for about 60 % of all companies and generate about 55 % of GDP (Astrachan/Boter 2018). In Poland, they form 92 % of all companies, employing more than 50 % of the workforce and their contribution to the GDP is about 67 %. About 66 % of family businesses in Poland plan to expand into foreign markets, mainly to Germany (Lewandowska et al. 2016). The vast majority of Polish family businesses are small and medium-sized enterprises, mainly micro civil partnerships (over 80 %), while in Germany, there is more diversification in this (Krenek 2018).

Poland is a transition economy that has undergone a transformation from a centrally planned economy to a market economy (Alawattage et al. 2007). The territorial proximity to Germany affects the level of trade and cooperation between Polish and German companies, as many subsidiaries of German companies are located in Poland. Germany is the biggest source of foreign direct investment (FDI) in Poland. The value of German capital invested in Poland only in 2018 amounted to 32 542.6 million PLN and was mainly (73.7 %) invested in trade; repair of motor vehicles and in manufacturing (Statistics Poland 2019). Thus, the economic relationship with Germany has its impact on accounting practices in Poland, which are subject to the strong influence of coercive, and mimetic isomorphism (Granlund/Lukka 1998). Coercive isomorphism is manifested by the transfer of accounting methods and tools by German companies to subsidiaries operating in Poland. Moreover, the subsidiaries are required to report for a group in accordance with IFRS which represents normative isomorphism affecting the harmonization of management accounting and financial accounting. Another important factor is copying practices of German companies by Polish contractors (mimetic isomorphism), which affects the shape of accounting systems of companies operating in such a young market economy.

To date, there are no extant comparative studies on the relation of management accounting and financial accounting in different countries, but it is possible to refer to more general large-scale studies comparing management practices among different countries. Bloom *et al*. (2012), and Bloom and van Reenen (2010) found in several survey waves similar management practices across countries, i.e. monitoring, target setting, and incentives. According to these authors, countries differ in the relative foci of management practices. A firm's specific focus on management practices depends on ownership structure, firm size, competitive pressure, or being a multinational firm (Bloom/van Reenen 2010). These factors are relevant across all countries but their relative strength and impact differ (for a similar conclusion see also the comparison of management ac-

counting practices of Yalcin (2012)). Based on that, it is expected to find some differences in harmonization in Poland and Germany but not to an extent that would prohibit a comparison. Rather dummy variables are included as controls for both countries for the total sample in order to analyse the relative strength of effects on harmonization in the respective countries.

2.4. Control variables

As is typical in contingency studies on accounting choices, control variables have been used that might influence harmonization of management accounting and financial accounting, namely firm age, accounting standards applied, and group affiliation. Since several studies indicate that firm age is an influencing factor on management accounting and control systems (Moores/Mula 2000; Speckbacher/Wentges 2012), it seems reasonable to include firm age as a control variable. Accounting standards as a control variable are also used due to the fact that research shows a strong relationship between the use of IFRS and harmonization of management accounting and financial accounting (Weißenberger/Angelkort 2011; Taipaleenmäki/Ikäheimo 2013; Endenich et al. 2016). The last control variable is group affiliation, which determines the accounting standards, accounting choices (Carney et al. 2011) as well as management practices in general (Bloom et al. 2012).

3. Research design

3.1 Separation of Management Accounting (dependent variable)

An important intersection of management accounting and financial accounting is the income statement because external as well as internal addressees focus on income statements to assess profitability and prospects of firms.

Studies on the convergence of accounting use a sum score for measuring the degree of convergence or divergence in the income statement between management accounting and financial accounting (Angelkort (2010), Weißenberger and Angelkort (2012) and Rieg *et al. (2017)*). The same items are applied in this paper that measure the extent of differences of technical aspects of both systems, i.e. differences in amounts stated, structure and components. Specifically, the following items are defined that reflect convergence or divergence of both accounting systems, all with a scale of 1 (do not agree) to 7 (fully agree):

- use of imputed costs;
- differences in amounts stated in profit and loss statements between management accounting and financial accounting;
- differences in line items and structure of profit and loss statements between management accounting and financial accounting;

- differences in amounts stated for cost of goods between management accounting and financial accounting.

In line with Weißenberger and Angelkort (2011), the scores of the underlying items are combined to an index by means of averaging. The scale is ordered increasingly so that a higher value indicates a higher degree of separation, hence this variable is called SEPARATE.

3.2 Definition and measurement of independent variables

As explained in section 2.2, the more a firm increases in size, the more it faces organizational complexity to deal with in accounting (Eierle/Haller 2009). Firm size (SIZE) is typically measured by the number of employees who are employed, for example in economics (Bloom et al. 2012), finance (Beck et al. 2005), and accounting (Hiebl et al. 2015).

The debate on measuring family influence (F-FPEC-P), the second independent variable, is still ongoing (Dawson/Mussolino 2014; Dienemann/Stubner 2014; Rau et al. 2018). While the involvement of family owners in businesses is multidimensional and encompasses several sub-scales (e.g. Frank et al. 2017), for this study it seems appropriate to focus on organizational and structural components of "familiness". Following Hiebl *et al*. (2015), the FPEC-P scale has been employed. This is a sub-scale of the measurement concept of Klein *et al*. (2005), which originally consists of dimensions of power, experience, and culture. The power dimension measures the governance and control structure of a family business through ownership of equity, and the composition of management and supervisory boards. In line with Hiebl *et al.* (2015), the authors of this paper believe that the power dimension is the main factor influencing decisions on structuring financial and management accounting.

An ever-increasing amount of complexity, a variety of tasks and needs for adaptations in financial accounting (e.g. Lantto 2014) as well as management accounting (e.g. Cooper 2006), require accountants to keep pace in order to provide appropriate services. Combined with changes in firms and managerial expectations, pressure on accountants' work increases (Maas/Matějka 2009). Accountants will experience work pressure if there are time constraints (Schmitt et al. 2015) and a scarcity of resources. The scarcity of resources is more commonly experienced in smaller firms since personnel resources are not divisible in any order. Given the mandatory nature of financial accounting, a way to handle such pressure is to reduce or abstain from the divergence between management accounting and financial accounting. This variable is called organizational pressure (PRESSURE) and items have been developed based on in-depth studies on the dynamics of work under pressure (Oliva 2001; Oliva/Sterman 2010). Three items are used when asking respondents to evaluate the statements: a) "often employees quit and work in other departments or leave the firm", b) "employees

often work overtime", and c) "quality of work does not live up to what one would expect".

3.3 Control variables and summary of variables

To understand the differences between the two countries in the sample, dummy variables are introduced for German (DE) and Polish (PL) cases.

Firm age (AGE) is a proxy variable for organizational learning: over the years, firms accumulate resources, managerial experience, and knowledge as well as improve management practices (Herriott et al. 1985; Levitt/March 1988). Firm age is measured in years since its foundation up to the year of data collection, i.e. 2018.

IFRS as the applied accounting standard tends to strongly affect accounting and convergence of management accounting and financial accounting as already discussed in section 2.1. Respondents were asked if their firms apply IFRS as the accounting standard (dichotomous variable).

For firms affiliated to a group, many structural decisions are made by the parent companies. Such decisions include accounting standards, systems and practices (Granlund/Lukka 1998; Bloom et al. 2012; Endenich et al. 2016). Group affiliation (GROUP) was measured with the question of whether the firm is affiliated to a group (dichotomous variable).

The following table 1 summarizes the variables and their measurement. Given different scales and the non-normality of data, most were transformed in order to achieve a better model fit.

Variable	Description	Measurement	Original scale	Transformed	References
SEPARATE	Degree of separation of managerial and financial accounting related to income statements	Index (average) of 4 items	Ordinal 1...7	-	Weißenberger/Angelkort 2011; Angelkort 2010; Rieg et al. 2017
F-PEC-P	Family influence	Index of 6 items	Interval 0...3	-	Hiebl et al. 2015
logSIZE	Size of firm	Number of employees	Metric	Log 10	Eierle/Haller 2009
zPRESSURE	Organizational pressure	Index (average) of 3 items	Ordinal 1...7	z-score	Oliva 2001; Oliva/Sterman 2010

Variable	Description	Measurement	Original scale	Transformed	References
DE	Dummy variable for country Germany	1 = Germany (DE),	Dichotomous	-	
PL	Dummy variable for country Poland	1 = Poland (PL)	Dichotomous	-	
logAGE	Age of firm	Years since foundation of firm	Metric	Log 10	Herriott et al. 1985; Levitt/ March 1988
IFRS	Application of IFRS for financial accounting	0 = no, 1 = yes	Dichotomous	-	
GROUP	Group affiliation	0 = no, 1 = yes	Dichotomous	-	Endenich et al. 2016

Table 1. Overview of variables used in the empirical study

3.4 Statistical inference

Many studies base statistical inference on the framework of Null Hypothesis Significance Tests (NHST) although this approach received severe criticism (Ioannidis 2005; Fanelli/Ioannidis 2013; Kline 2013). Not least the American Statistical Association recommends going beyond NHST (Wasserstein et al. 2019; Wasserstein/Lazar 2016). A proposed way beyond is to apply a Bayesian approach which estimates the probabilities of hypotheses to be true given the data at hand instead of the probabilities of getting the data if the null hypothesis is correct. The latter is not what researchers want to know (Kruschke/Liddell 2018).

Given that the Bayes-theorem formally estimates the following structure 'posterior estimate = likelihood based on data * prior estimate' the result is depending on the collected data as well as the prior probability of the hypothesis and estimates (Kruschke 2015). For applied statistics, it is recommended using either weakly informative priors or priors based on previous knowledge. Since there is no combined knowledge on effect sizes, a weakly informative prior is the first choice. Bayesian quantile regression uses asymmetric Laplace densities as priors (Dries/van den Poel 2017).

Since statistical methods usually deliver a point estimate and repeated measurement could result in different point estimates, it is a good statistical practice to report confidence intervals (CI) of effect sizes in NHST. For Bayesian analyses, credible intervals are used. Credible intervals represent the uncertainty of the estimated parameter given the data and prior probability while a confidence interval represents the uncertainty of the interval itself (Lambert 2018:133). Credible

intervals are estimated using Highest posterior density regions (HPD) (Roever 2018:17). Bayesian approaches use variants of Markov chain Monte-Carlo simulation procedures for estimation. Three thousand draws for simulation were used while discarding the first one thousand simulations in order to achieve more robust results (Kruschke 2015).

Bayesian quantile regressions were employed (Dries/van den Poel 2017). Quantile regressions have several benefits over ordinary least square regressions as they allow for the understanding of the effects of independent variables over the whole distribution of a dependent variable and through estimating median effects per quantile reducing impact of extreme cases on effect estimation.

For the first three hypothesis H1 to H3, the following regression equation was estimated for every quantile in the range from 0.1, 0.15, … up to 0.95:

$$zCONV = ß_0 + ß_1F\text{-}PEC\text{-}P + ß_2logSIZE + ß_3zPRESSURE + ß_4logAGE + ß_5IFRS + ß_6GROUP$$

To understand the impacts of 'country' on the results, two quantile regressions were estimated; one with the control variable DE for the German sample and one with the control variable PL for the Polish sample.

Finally, three additional regressions were estimated, one for each interaction (hypotheses H4a, H4b, H4c).

In order to obtain the data, a questionnaire was developed. The online questionnaire was divided into five parts. The first deals with the characteristics of the enterprise, respondents and data on family members on the board of directors and the supervisory board. The second part included questions on financial accounting and management accounting. The third part of the survey refers to the integration of financial and management accounting. The last two parts of the survey asked about accounting tasks performed by the studied organisations and aspects of their environment.

The questionnaire was pre-tested with practitioners. The surveys were conducted over the years 2017 and 2018 among enterprises operating in Germany as well as in Poland. The survey group consisted mainly of small and medium-sized enterprises. In the case of Germany, the firms were subject to HGB, while the Polish firms were subject to the Accounting Act. A total of 10,383 email addresses were selected at random from a database on firms. From that 2,416 could not be forwarded which reduced the number of emails to 7,967. From that, a total of 231 usable questionnaires were collected which leads to a response rate of 2.9 %.

4. Empirical results

4.1 Descriptive results

Table 2 shows descriptive statistics for the sample. Most respondents report a mean value for separation of 4.65 on a scale from 1 to 7 and an impact of family ownership (F-PEC-P = 1.03). The average size is 225 employees with a highly right-skewed distribution. The same right skewness exists for age. 20 % of all respondents report IFRS and 34 % belong to a group.

total sample		SEPARATE	SIZE	F_PEC_P	PRESSURE	AGE	IFRS	GROUP
N	Valid	231	231	231	231	231	231	231
	Missing	0	0	0	0	0	0	0
Mean		4.65	225.28	1.03	2.81	39.06	0.20	0.34
Median		5	108	1	2.33	26	0	0
Std. Deviation		1.49	400.51	0.73	1.78	36.05	0.40	0.47
Minimum		1	0	0	1	2	0	0
Maximum		7	3500	3	7	201	1	1

subsample DE		SEPARATE	SIZE	F_PEC_P	PRESSURE	AGE	IFRS	GROUP
N	Valid	113	113	113	113	113	113	113
	Missing	0	0	0	0	0	0	0
Mean		4.06	278.50	0.99	3.87	58.81	0.18	0.35
Median		4.25	98	0.99	3.67	45	0	0
Std. Deviation		1.62	544.16	0.69	1.82	42.39	0.38	0.48
Minimum		1	0	0	1	5	0	0
Maximum		7	3500	3	7	201	1	1

subsample PL		SEPARATE	SIZE	F_PEC_P	PRESSURE	AGE	IFRS	GROUP
N	Valid	118	118	118	118	118	118	118
	Missing	0	0	0	0	0	0	0
Mean		5.21	174.32	1.07	1.79	20.15	0.23	0.33
Median		5.25	120	1.00	1.67	20	0	0
Std. Deviation		1.10	162.89	0.76	0.96	9.85	0.42	0.47
Minimum		3	1	0	1	2	0	0
Maximum		7	600	3	6	71	1	1

Table 2. Descriptive Statistics

The differences between the two countries show especially in the independent variable SEPARATE where Polish firms report a higher level of separation of management accounting and financial accounting, also Polish firms are on average younger, smaller in size and respondents experience less organizational pressure. Yet, family influence seems to be similar in Germany and Poland.

Table 3 provides correlations between all variables. It is apparent that the largest (negative) correlation exist between PRESSURE and SEPARATE which at this point supports hypothesis H3 (*Higher organizational pressure results in less*

separation of management accounting and financial accounting) already. Significant correlations exist between size and age as well as between IFRS and GROUP.

		SEPARATE	SIZE	F_PEC_P	PRESSURE	AGE	IFRS	GROUP
SEPARATE	Pearson Correlation	1	0.001	0.038	-0.553	-0.191	0.125	0.096
	Bayes Factor		*19.130*	*16.245*	*0.000*	*0.276*	*3.135*	*6.713*
	N	231	231	231	231	231	231	231
Size	Pearson Correlation		1	-0.115	-0.043	0.214	0.085	0.281
	Bayes Factor			*4.225*	*15.525*	*0.093*	*8.397*	*0.002*
	N			231	231	231	231	231
F_PEC_P	Pearson Correlation			1	0.057	-0.044	-0.027	-0.085
	Bayes Factor				*13.263*	*15.323*	*17.576*	*8.294*
	N				231	231	231	231
PRESSURE	*Pearson Correlation*				1	0.136	-0.014	-0.071
	Bayes Factor					*2.297*	*18.710*	*10.833*
	N					231	231	231
AGE	Pearson Correlation					1	0.086	0.092
	Bayes Factor						*8.242*	*7.243*
	N						231	231
IFRS	*Pearson Correlation*						*1*	*0.390*
	Bayes Factor							*0.000*
	N							231
GROUP	Pearson Correlation							1
	Bayes Factor							
	N							231

Bayes factor: Null versus alternative hypothesis; the higher the Bayes factor the more evidence for the Null hypothesis of no correlation

Table 3. Correlations between variables

4.2 Hypotheses tests

As discussed, the impact of familiness, size and organizational pressure on convergence controlling for several other factors was hypothesized. Table 4 summarizes the results. The first regression estimates all variables except for country dummies while the second regression includes a dummy for Germany and the third regression a dummy for Poland. All regressions are accompanied by plots of effects over the range of 10 % to 95 % of the distribution of the dependent variable (Figure 2). Table 4 reports only the quantiles 25 %, 50 % and 75 % respectively to restrict the presentation. A 90 % credible interval is presented for all estimates.

Regression 1: all variables, except country dummies

quantiles	25% quantile			50% quantile			75% quantile		
coefficients	estimate	lower	upper	estimate	lower	upper	estimate	lower	upper
(Intercept)	4.104	3.689	4.688	4.864	4.397	5.399	5.349	4.753	5.797
logSIZE	-0.110	-0.301	0.023	-0.001	-0.130	0.123	-0.063	-0.222	0.103
F_PEC_P	0.041	-0.117	0.223	0.129	0.021	0.243	0.051	-0.108	0.208
zPRESSURE	-0.904	-1.024	-0.781	-0.897	-0.996	-0.804	-0.799	-0.945	-0.661
logAGE	-0.166	-0.468	0.105	-0.297	-0.598	-0.016	0.098	-0.141	0.402
IFRS	0.432	0.037	0.818	0.479	0.178	0.756	0.392	0.135	0.648
GROUP	0.165	-0.120	0.515	0.075	-0.113	0.291	0.016	-0.174	0.209

Bayes quantile regression with 90% credible intervals Dependent variable: SEPARATE

Regression 2: all variables including country dummy DE

quantiles	25% quantile			50% quantile			75% quantile		
coefficients	estimate	lower	upper	estimate	lower	upper	estimate	lower	upper
(Intercept)	4.028	2.130	4.710	4.946	2.709	5.521	5.182	3.063	5.795
logSIZE	-0.111	-0.352	0.191	-0.032	-0.226	0.323	-0.003	-0.199	0.256
F_PEC_P	0.057	-0.149	0.359	0.112	-0.045	0.321	0.086	-0.117	0.502
zPRESSURE	-0.808	-1.011	-0.590	-0.915	-1.055	-0.765	-0.803	-1.015	-0.606
logAGE	-0.036	-0.402	0.832	-0.318	-0.861	0.616	0.109	-0.151	0.798
IFRS	0.376	-0.017	0.821	0.522	0.156	0.856	0.370	0.043	0.708
GROUP	0.201	-0.125	0.608	0.057	-0.222	0.391	-0.001	-0.262	0.255
DE	-0.314	-0.860	0.105	0.068	-0.290	0.398	0.018	-0.238	0.308

Bayes quantile regression with 90% credible intervals Dependent variable: SEPARATE

Regression 3: all variables including country dummy PL

quantiles	25% quantile			50% quantile			75% quantile		
coefficients	estimate	lower	upper	estimate	lower	upper	estimate	lower	upper
(Intercept)	3.502	0.306	4.464	4.854	2.065	5.978	4.990	2.355	5.810
logSIZE	-0.092	-0.400	0.355	-0.015	-0.262	0.175	0.030	-0.185	0.282
F_PEC_P	0.077	-0.113	0.334	0.125	-0.043	0.323	0.108	-0.101	0.399
zPRESSURE	-0.768	-0.985	-0.463	-0.907	-1.068	-0.650	-0.799	-0.992	-0.589
logAGE	0.021	-0.448	1.062	-0.262	-0.912	1.135	0.168	-0.184	1.369
IFRS	0.354	-0.043	0.827	0.505	0.116	0.831	0.376	0.043	0.738
GROUP	0.199	-0.157	0.666	0.071	-0.176	0.401	0.005	-0.261	0.257
PL	0.453	-0.084	1.531	-0.024	-0.469	0.933	0.046	-0.312	0.687

Bayes quantile regression with 90% credible intervals Dependent variable: SEPARATE

Table 4: Results for Hypotheses H1 to H3

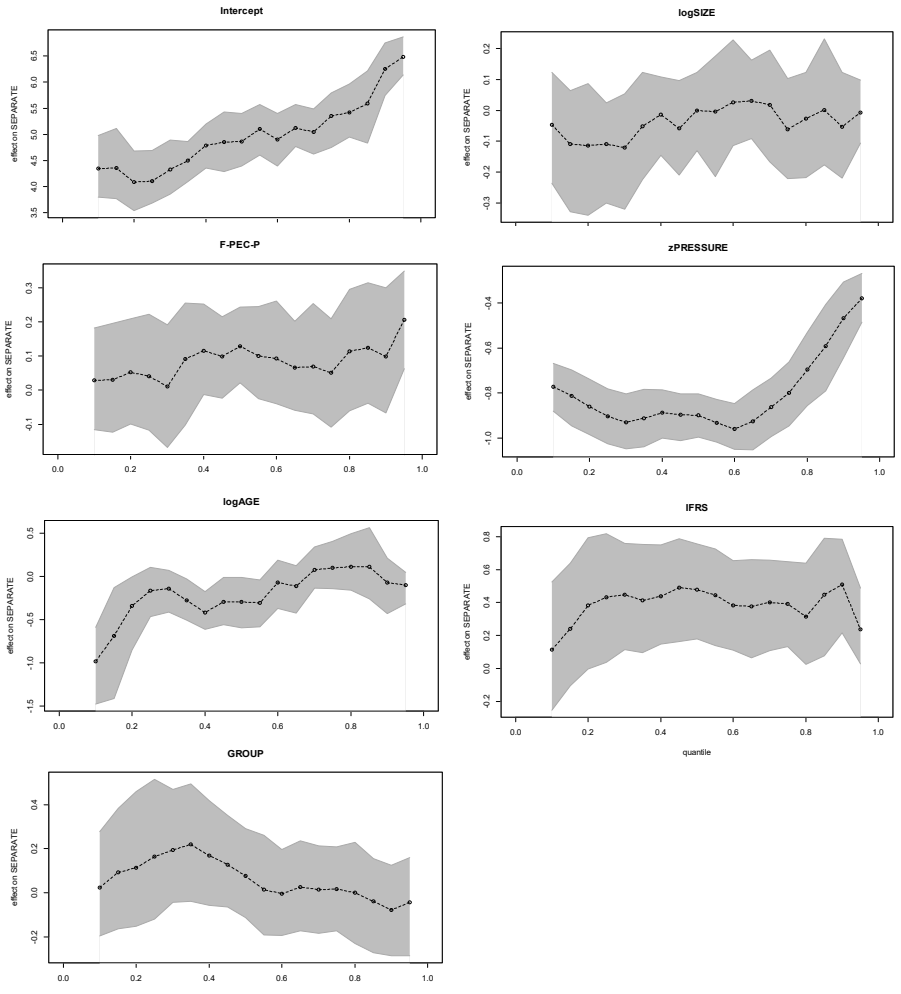

Figure 2: Plots for all variables over quantiles of SEPARATE

The results partly support the proposed hypotheses. FPEC-P tends to exert a small but slightly positive effect on separation which does not support H1. The same holds for size which has an effect near zero except for the first quartile of the distribution where it is negative. In contrast, organizational pressure affects separation strongly over the whole range of the distribution. Regarding the control variables, age exerts a negative impact on firms with lower separation while IFRS impacts separation positively. Concerning country differences, the estimates in table 4 (regression 2 and 3), as well as the plots in Figure 3, indicate only differences in the lower part of the distribution of separation. German firms

seem to have on average lower separation and Polish firms' higher separation in the first half of the distribution, that is for firms already with below-average values of separation. Since the coefficients in the respective regression equations do not differ strongly, support for isomorphism between the two countries can be seen, yet the level of separation seems to be different for some parts of the sample (figure 3).

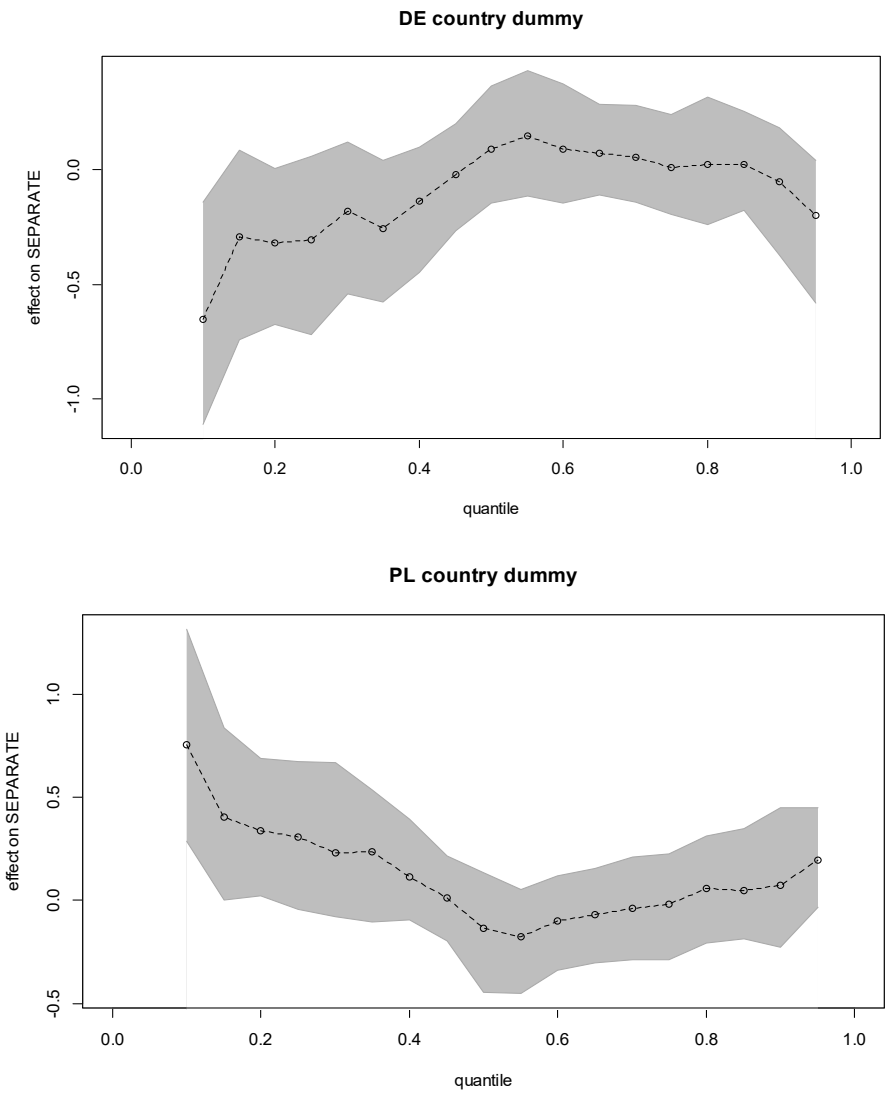

Figure 3: Plots for country dummy variables

The last hypothesis H4 deals with interaction effects. Table 4 shows the results for interaction effects on the dependent variable SEPARATE. We infer from the results that the second and third interaction show some positive effects but only by small amounts.

	quantiles	25% quantile			50% quantile			75% quantile		
interaction	coefficients	estimate	lower	upper	estimate	lower	upper	estimate	lower	upper
1: H4a	F_PEC_P x logSIZE	-0.185	-0.411	0.032	0.020	-0.157	0.291	0.021	-0.172	0.228
2: H4b	logSIZE x zPRESSURE	0.000	-0.228	0.264	0.291	0.134	0.469	0.400	0.139	0.618
3: H4c	F-PEC-P x zPRESSURE	0.199	0.005	0.376	0.254	0.075	0.415	0.251	0.023	0.473

Table 5: Results for interaction effects (Hypothesis H4)

5. Discussion and conclusion

The separation of management accounting and financial accounting describes the degree of differentiation between management accounting and financial accounting (see: Weißenberger/Angelkort 2011; Taipaleenmäki/Ikäheimo 2013). While the research to date has focused on large and listed firms often reporting according to IFRS standards, we argue that for smaller and family-owned firms the situation is different and not yet well researched. The study at hand focuses on Germany, where the discussion on harmonization is lively and longstanding, as well as Poland which is a country under the influence of German accounting practices.

Our study results show that firm size and familiness do not affect the separation of management accounting and financial accounting directly. This finding is not in line with previous SEW studies that showed the importance of distinct features of family firms for accounting choices and managerial decisions resulting from the desire to preserve socioemotional wealth and maintain control. According to the aforementioned studies, intentions to maintain family control (Songini et al. 2013) and preserve socioemotional wealth (Gomez-Mejia et al. 2011), apart from the size and complexity of the organizations, impede the use of formal control mechanisms (Moores/Mula 2000; Hiebl et al. 2015), and thus reduce the use of management accounting. Moreover, our study shows that an increase in firm size does not inevitably lead to a higher use of formal accounting information (Chenhall 2003; Otley 2016), and therefore an increase in separating both accounting systems. Focusing only on aspects of family features and size are in our opinion insufficient to comprise the essence of harmonization (Prencipe et al. 2014).

Taking into consideration organizational pressure on firms appears to be an effective way to answer the research question. The study demonstrates the strong effect of organizational pressure on harmonization in both countries. It seems that practical considerations and organizational constraints play a significant role in designing accounting structures. This supports the notion that organizational pressure affects the separation of both management accounting and financial ac-

counting systems in organizations (Granlund/Lukka 1998). Interestingly, we found that this effect is reduced when family ownership increases. As a result, firms with higher family impact and in a situation of economic pressure differentiate their accounting systems more, which is in line with socioemotional wealth theory (Gomez-Mejia et al. 2011). Summarising, the evidence supports only the impact of economic pressure on harmonization (H3) directly and the effects of family influence and size only for interactions of these variables.

Regarding the control variables, age exerts a negative impact for firms with lower separation (Moores/Mula 2000; Speckbacher/Wentges 2012), while IFRS impacts separation positively, contrary to what is predicted in the literature (Weißenberger/Angelkort 2011; Taipaleenmäki/Ikäheimo 2013; Endenich et al. 2016). Yet these studies focused on large, listed firms where convergence due to IFRS increases while our study focuses on smaller firms where applying IFRS might lead to larger deviations between financial accounting and managerial accounting due to different information needs (Hemmer/Labro 2008).

Regarding comparative accounting research, we found no substantial differences between the two countries in our study, which is similar to Bloom *et al*. (2012) and which allows a comparison on similar grounds. German firms seem to have on average slightly less separated accounting but the coefficients in the respective regression equations do not differ strongly. The small differences between the two countries result in our opinion from isomorphism (DiMaggio/Powell 1983). The identified similarities are not only due to a common accounting language used by companies, but they result from proximity, strength and type of business ties between German and Polish firms (Granlund/Lukka 1998; Tsamenyi et al. 2008; Acquaah 2013).

This study contributes to the extant knowledge of accounting in family firms and SMEs and their specific situations as well as decisions about their structure of accounting systems (Dello Sbarba/Marelli 2018). The paper widens SEW perspective studying the contingencies that significantly differentiates the accounting systems of SMEs and family-owned firms. Thus, its findings improve our understanding of accounting systems in such firms (Angelkort 2010; Weißenberger/Angelkort 2011; Senftlechner/Hiebl 2015). We have added a missing element through the importance of organizational pressure for the separation of management accounting and financial accounting (Mitchell/Reid 2000; Gomez-Mejia et al. 2011; Lopez /Hiebl 2015). Moreover, we have shed additional light on the comparative aspects of accounting choices in companies operating in well-developed and less well-developed countries in Europe (Granlund/Lukka 1998; Bloom et al. 2012; Endenich et al. 2016). We have also shown that the main structures of accounting and ownership are the same in Germany and Poland. Consequently, we have added knowledge about the impact of isomorphism on accounting systems (Granlund/Lukka 1998; Tsamenyi et al. 2008; Ac-

quaah 2013). From a methodological point of view, this study represents an example of using a Bayesian approach which is more convincing and reliable than NHST (Wasserstein/Lazar 2016; Wasserstein et al. 2019). Finally, our study may have implications for practitioners developing accounting systems in SMEs and for use of management accounting practices and information in family firms (Hiebl 2013a).

One limitation of our study is the sample size. Replication with more data could enable the generalization of the results and a meta-analytic combination of study results. Following Hiebl et al. (2015), we employed the FPEC-P scale. This is a sub-scale of the measurement concept of Klein et al. (2005), which consists of dimensions of power, experience, and culture. However, it does not measure all aspects of family influence that may have more of an impact on accounting. Therefore, to get a complete picture of the family's influence on accounting, other aspects of familiness should also be considered. Furthermore, an interesting direction for future research would be to understand concrete situations regarding harmonization via long-term field studies conducted in SMEs and family firms.

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