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Product development and (international) market development as reinforcing growth strategies – The role of family control

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It is a crucial question for strategic management and international business scholars if product development and (international) market development serve as two substitutive or reinforcing growth strategies in the short run. This question may be particularly pertinent to family firms, which are typically described as organisations with idiosyncratic resources and capabilities. Drawing upon recent research on resource orchestration and dynamic capabilities in family firms, we test if family firms are better able to grow via product development and (international) market development than non-family firms. Based on a comprehensive data set, we find that family firms can better capitalise on product development and (international) market development as combined growth strategies. The results of our structural equation model imply that product and (international) market development reinforce each other more strongly in family firms than in non-family firms.

Keywords: product development; (international) market development; growth; family firms; entrepreneurship; innovation; internationalization; dynamic capabilities; structural equation model

INTRODUCTION

Product development and (international) market development constitute two alternative strategies for growth (Ansoff, 1965). Since both strategies for growth draw upon a firm's available resources and capabilities, growth via one path is likely to be systematically related to growth via the other avenue (Kumar, 2009; Kyläheiko *et al.*, 2011). Particularly, recent developments in terms of globalisation, increasing competition, and technological advances affect this interrelationship and magnify the importance of intangible resources such as knowledge (Knight & Cavusgil, 2004; Tsao & Lien, 2013). Although these resources are socially complex, difficult to imitate, and a potential source of competitive advantage, transferring and redeploying the intangible resources from one growth activity to another is far from easy (Golovko & Valentini, 2011; Szulanski, 1996). Accordingly, strategic management and international business scholars devoted significant attention to the interrelationship between product and (international) market development and the question if these two growth avenues serve as substitutive or reinforcing growth strategies in the short run (Filipescu *et al.*, 2013; Golovko & Valentini, 2011; Hitt *et al.*, 2006; Kiss *et al.*, 2017; Kumar, 2009; Kyläheiko *et al.*, 2011).

This question may be particularly pertinent to family firms, which are often portrayed as firms with an idiosyncratic resource endowment. While one stream of family firm research acknowledges severe resource constraints and significant limits to growth in these enterprises (Fernández & Nieto, 2005; Okoroafo, 1999), another stream of research highlights that family firms draw upon unique resources and particular growth potential (Basly, 2007; Zahra, 2003). Recent scholarly inquiries into family firms sought to disentangle this ambivalence and overcome some of the shortcomings of the resource-based view (RBV; Barney, 1991) that seems to keep key strategic phenomena related to the management of knowledge and learning in the background (Chirico & Salvato, 2008). These studies built on resource orchestration and dynamic capabilities research (Helfat *et al.*, 2007; Rothaermel & Hess, 2007; Teece *et al.*, 1997) and argue that family firms capitalise on superior resource orchestration and stronger dynamic capabilities, providing ample opportunities for growth (Chirico & Salvato, 2016; Duran *et al.*, 2016; Lichtenthaler & Muethel, 2012; Röd, 2016). However, the current research on dynamic capabilities in family firms remains so far silent if the dynamic capabilities of family firms affect the likelihood, to which these firms capitalise on product development and (international) market development as substitutive or reinforcing growth strategies in the short run.

This study aims to address this research gap, by investigating the interrelationship between product and (international) market development in family vs. non-family firms. We base our arguments on the recent findings on the resource orchestration and dynamic capabilities in

family firms (Chirico & Salvato, 2016; Duran *et al.*, 2016; Lichtenthaler & Muethel, 2012) and analyse the triad of product development, (international) market development, and profitable firm growth in a structural equation model (SEM) on a comprehensive data set. Thereby, we propose that family control over a business raises the likelihood that product development and (international) market development contribute to firm growth as reinforcing strategies.

This study aims to contribute to current family firm research in several ways. First, we aim to extend prior research on family firms, which has so far largely neglected the interplay between product and (international) market development in the context of family firms (Tsao & Lien, 2013). Based on the strategic management and international business literature, one may infer that family firms face a trade-off concerning the decision on product development and (international) market development. Because they typically draw upon unique knowledge structures (Cabrera-Suárez *et al.*, 2001; Le Breton-Miller & Miller, 2006; Patel & Fiet, 2011), family firms would be expected to have severe transaction costs in replicating and processing knowledge generated through one of the two growth avenues (Filipescu *et al.*, 2013; Kumar, 2009). Accordingly, they would be advised to treat product development and (international) market development as substitutive growth avenues in the short term and to prioritise one of the two strategies over time (Kumar, 2009; Kyläheiko *et al.*, 2011). However, our results suggests that family firms might be able to capitalise on specifically strong replication processes, due to their unique dynamic capabilities (Duran *et al.*, 2016; Lichtenthaler & Muethel, 2012), fostering the interplay between product and (international) market development in these firms.

Further, this study assesses the effectiveness of product and (international) market development, based on each activity's effect on profit growth (Kyläheiko *et al.*, 2011). Although the strategic management literature reports mixed results on the effect of product and (international) market development on growth (Hitt *et al.*, 1994; Kafouros *et al.*, 2008), family firm scholars have rarely related innovation output to profitable firm growth or performance (Cucculelli, 2013; Tsao & Lien, 2013). An abundant amount of research has examined innovation input and growth in family firms (e.g. Anderson & Reeb, 2003; Block, 2012; McConaughey & Phillips, 1999), but innovation input and innovation output can strongly diverge from each other in family firms (Duran *et al.*, 2016; Matzler *et al.*, 2015).

Also, this study identifies family firms' transgenerational orientation as a key contingency in the context of product development and (international) market development. We follow prior scholars who suggest that a binary distinction between family and non-family firms may not suffice to fully account for the strong heterogeneity among family firms (Chrisman *et al.*, 2015; Lichtenthaler & Muethel, 2012). By acknowledging that family firms are heteroge-

neous enterprises (Duran *et al.*, 2016), we explore the effect of different levels of family control on product and (international) market development in a supplementary analysis. In accordance with the defining characteristics of family businesses, we differentiate between family *ownership*, family *management*, and family *succession* (Chua *et al.*, 1999).

The remainder of the paper is structured as follows. Section 2 introduces the theoretical framework and develops the hypotheses concerning product development, (international) market development, and the interplay between both growth strategies. Section 3 presents the data and methodology, and section 4 elaborates on the results of the main and the supplementary analysis. In section 5, we discuss the findings and conclude in section 6 with the limitations and potential arrays for future research.

THEORY

Product development and (international) market development as growth strategies

Both entry into new product segments and entry into foreign markets can impact a firm's performance on a variety of dimensions. Yet, we focus in this study on the impact on a firm's profit growth (Hitt *et al.*, 1994; Kyläheiko *et al.*, 2011). In the quest for growth, the firm may aim at catering new product segments or new foreign markets, typically referred to as product and (international) market development (Ansoff, 1965; Roper & Love, 2002).

Developing new products is likely to facilitate a firm's performance and growth in a number of ways (Kumar, 2009). In accordance with the Schumpeterian perspective (1942) on innovation, new products generate some limited degree of market power and allow the innovative firm to capitalise on the position of an oligopolistic or quasi-monopolistic competitor in uncontested product markets (Cantwell, 2000; Grossman & Helpman, 1990). This is likely to foster competitiveness and differentiation (Golovko & Valentini, 2011; Zahra, 2003) and to engender growth through an additional stream of sales and profits (Kafouros *et al.*, 2008).

As another conduit of firm performance and growth, developing international markets may be achieved by a variety of means (Golovko & Valentini, 2011; Oviatt & McDougall, 2005). Among other modes of international expansion, firms can perform foreign market development by means of foreign direct investment (FDI) or exporting. Because it is associated with a relatively low degree of commitment and risk (Golovko & Valentini, 2011), exporting is regarded as the most convenient and efficient mode of international expansion (Arregle *et al.*, 2012; Liu & Buck, 2007). By exporting their products to foreign customers, international firms can enlarge their customer base and achieve a higher sales volume (Liu & Buck, 2007). Since they may draw on their established advantages in overseas countries at little additional

costs (Westhead *et al.*, 2001), exporting may enable international firms to capitalise on economies of scale and benefit from a particularly strong upsurge of profit (Kafouros *et al.*, 2008).

While the majority of researchers has investigated the impact of product development and (international) market development on growth as if they had independent effects, we seek to follow more recent research in strategic and international management that has acknowledged a strong interrelationship between both growth avenues (Filipescu *et al.*, 2013; Kumar, 2009; Kyläheiko *et al.*, 2011). This research stream offers compelling arguments to expect a positive interdependence between product and (international) market development (Golovko & Valentini, 2011). However, at least in the short run, there are several constraints to the simultaneous exploitation of product as well as (international) market development, such as the limits owing to transferring tacit or causally ambiguous knowledge (Hitt *et al.*, 2006; Kumar, 2009; Zander & Kogut, 1995). Accordingly, researchers in this field suggest that the ability to benefit from both growth strategies in the short run depends on the extent, to which a firm can transfer and replicate knowledge and competencies, including the tacit or causally ambiguous elements (Golovko & Valentini, 2011; Kumar, 2009; Kyläheiko *et al.*, 2011).

This ability is captured in the notion of resource orchestration and dynamic capabilities (Hitt *et al.*, 1994; Teece, 2007). The recent research on resource orchestration and dynamic capabilities emerged as an extension of the resource-based view (Hitt *et al.*, 2006; Sirmon *et al.*, 2011). The resource-based view suggests that the firm's value creation and competitive advantage is attributable to the type and level of its resources (Barney, 1991). However, the possession of valuable, rare, inimitable, and non-substitutable resources may be a necessary but not sufficient condition for the development of a sustainable competitive advantage (Chirico & Salvato, 2008; Sirmon & Hitt, 2003; Sirmon *et al.*, 2011). Instead, the development of a competitive advantage is also dependent on a firm's ability to accumulate, bundle, and leverage these resources and capabilities (Rothaermel & Hess, 2007; Sapienza *et al.*, 2006; Teece, 2007). Sustainable value-creating strategies are thus rather built through a resource recombination process (Sirmon & Hitt, 2003). Due to the intersection of family and business in family firms, recent research emphasised that the resource recombination and dynamic capabilities might be unique in these organisations (Chirico *et al.*, 2011; Chirico & Salvato, 2016; Duran *et al.*, 2016; Lichtenthaler & Muethel, 2012).

Product development and (international) market development in family firms

The unique dynamic capabilities in family firms are typically rooted in the personal characteristics of the family business owners and managers, and in their interaction with internal and external stakeholders (Chirico & Nordqvist, 2010). Family members' strong emotional invol-

vement and commitment as well as the strong intimacy characterising the relationships among family members and with non-family employees or outside partners is likely to lead to unique knowledge structures and knowledge combinability in family firms (Patel & Fiet, 2011). The recent empirical evidence showed that the unique dynamic capabilities in family firms foster the realisation of opportunities (Lichtenthaler & Muethel, 2012), conversion of innovation input into output (Duran *et al.*, 2016), and new product development (Chirico & Salvato, 2016).

In their study on German manufacturing firms, Lichtenthaler and Muethel (2012) identified that family involvement is positively related to the extent of dynamic innovation capabilities. In turn, the authors argue that these dynamic capabilities may not only raise a family firm's ability to discover opportunities but also to realise these. Building on a comprehensive meta-analysis, Duran *et al.* (2016) suggested that the superior resource orchestration in family enterprises allows these firms to convert their innovation input to innovation output more efficiently. Family firms were shown to "do more with less", particularly owing to their strong relationships with firm-internal and firm-external stakeholders. In their recent study on Swiss family firms, Chirico and Salvato (2016) found that family firm idiosyncrasies lead to unique knowledge internalisation mechanisms among family members. In turn, the authors identified that knowledge internalisation can serve as a critical mediator of the effect of the family firm idiosyncrasies on new product development.

First, this leads to the question whether family firms may not only be able to convert innovation input into innovation output more efficiently (Duran *et al.*, 2016) but also if family firms may be better able to turn new products and new (international) markets into profitable firm growth. Secondly, the recent findings on the dynamic capabilities in family firms lead to the question if the interrelationship between product development and (international) market development should also be considered unique in these firms.

Figure 1 presents the research framework of this study. The analysis tests the effect of family control over a business on product development and on (international) market development. As such, we follow the suggestion of Lichtenthaler and Muethel (2012) that innovation may be a crucial mediator in the relationship between family control and firm growth, and test the indirect effect of family control on firm growth via new products and via new (international) markets. Lastly, we include an examination of the interrelationship between innovation and internationalisation and incorporate family control as potential moderator in this analysis.

Also, we carry out a supplementary analysis that treats family control as a categorical variable. In accordance with the defining characteristics of family firms, comprising family *ownership*, family *management*, and family *succession* (Chua *et al.*, 1999), we acknowledge

that a family might exert a varying degree of control over a firm, depending on its presence in the top management team and the intention to maintain transgenerational family control.

[INSERT FIGURE 1 ABOUT HERE]

HYPOTHESES DEVELOPMENT

Family control, product development, and growth

Building on recent research on idiosyncratic resource orchestration and dynamic capabilities in family firms (Chirico & Salvato, 2016; Duran *et al.*, 2016; Lichtenthaler & Muethel, 2012), we suggest that family firms might be more likely than other firms to recognise new opportunities for product development. We argue that family firms tend to develop unique knowledge structures, providing them with an advantage in identifying market incongruities and opportunities for new products (Chirico & Salvato, 2016; Patel & Fiet, 2011; Sirmon & Hitt, 2003).

Family firms are expected to have an advantage in accessing the knowledge residing with family managers, family business employees, and external business partners (Chirico & Nordqvist, 2010). Due to the high level of emotional attachment and commitment, family managers and family firm employees are likely to develop unique firm-specific tacit knowledge related to the firm's evolving strategy, mission, and environmental changes (Cabrera-Suárez *et al.*, 2001; Sirmon & Hitt, 2003). In line with the recent research on dynamic capabilities, the intimate relationships with their employees enable family firms to identify and value the knowledge held by their organisational members (Patel & Fiet, 2011). Specifically, family owners and managers are likely to do their best to recognise the specialised knowledge residing with internal and external stakeholders (Chirico & Salvato, 2016). This is expected to raise a firm's sensing capacity and facilitate the identification of new product opportunities in family firms (Lichtenthaler & Muethel, 2012; Sardeshmukh & Corbett, 2011). Accordingly, Bammens *et al.* (2015) reveal that the supportive and stimulating working climate motivates family firm employees to contribute novel ideas and suggestions for improvements. This supports earlier empirical evidence highlighting that family firms devote a greater share of their human capital to the development of new products than non-family firms (Llach & Nordqvist, 2010). Since family firm managers and employees cannot develop all relevant knowledge within the family business (Chirico & Salvato, 2008), family firms typically conduct most of the stages of the new product development process in collaboration with external stakeholders (De Massis *et al.*, 2015). The resulting access to external information and knowledge allows family firms to stay ahead of technological and market trends (Chirico & Nordqvist, 2010; Duran *et al.*, 2016) and develop the capability to sense new opportunities (Lichtenthaler &

Muethel, 2012). Therefore, we argue that family firms show a greater propensity to develop new products than non-family firms (Path A^1 in the research framework):

H1: Family control has a positive influence on product development.

However, in order to become an effective innovator, a firm is not only required to develop new products, the firm also needs to appropriate the value that these new products yield (Golovko & Valentini, 2011). Indeed, there is empirical evidence that innovation may not necessarily have a positive impact on profitable firm growth (Kafouros *et al.*, 2008), pointing toward severe risks and pitfalls involved in turning new products into successful ones (Cooper, 1990; Cooper & Kleinschmidt, 1986). In this regard, the management of the new product development process is described as the most decisive success factor for product development (Ernst, 2002; Knight & Cavusgil, 2004). Dynamic capabilities are not only related to the creation and recognition of knowledge but also to collective learning and experience accumulation (Chirico *et al.*, 2011; Sirmon & Hitt, 2003; Zollo & Winter, 2002). Particularly, transferring and collecting highly tacit knowledge and experiences comes with significant effort and costs, which can often impede an economical exploitation and appropriation of knowledge-based assets (Martin & Salomon, 2003; Szulanski, 1996).

We argue that family firms may be better able than non-family firms to turn new products into successful ones, because they conduct a particularly idiosyncratic new product development process (De Massis *et al.*, 2016b; Röd, 2016), enabling the firms to assimilate and leverage the knowledge embedded in internal and external networks more efficiently (Chirico & Salvato, 2016; Patel & Fiet, 2011). This essential dynamic capability (Rothaermel & Hess, 2007; Teece, 2007) is expected to provide family firms with a better ability to appropriate the value from innovation and to grow more strongly based on product development than non-family firms. Usually, family members and family firm employees share common values and norms, and they tend to speak a shared language (Le Breton-Miller & Miller, 2006; Sirmon & Hitt, 2003). This facilitates a sense of reciprocity and mutual respect among a family firm's organisational members (Chirico & Salvato, 2016). Building on a constructive social interaction and efficient communication, family firms are more likely than other firms to develop the recombination and learning ability required to respond adequately to environmental changes (Chirico *et al.*, 2011; Patel & Fiet, 2011). Also, the trust-based relationships to external stakeholders such as alliance partners or customers tend to give family firms a proprietary ability to absorb and leverage the knowledge residing with external stakeholders more efficiently than non-family firms (Patel & Fiet, 2011; Sirmon & Hitt, 2003). This seems to be well reflected by related empirical evidence, which suggests that family firms apply a particularly open and

outward-looking product development strategy (De Massis *et al.*, 2016b), develop new products based on a special market orientation (Beck *et al.*, 2011), and raise their performance by a specific market knowledge flowing into their new products (Alberti & Pizzurno, 2013). To summarise, we suggest that family firms are not only more likely to develop new products (H1), family firms may also be better able to capture value from their innovation (Path A^1*A^2 in the research framework):

H2: Product development positively mediates the influence of family control on firm growth, (i.e. family firms grow more strongly through new products than non-family firms).

Family control, (international) market development, and growth

Drawing on the research on idiosyncratic resource orchestration and dynamic capabilities (Sapienza *et al.*, 2006; Sirmon *et al.*, 2011; Teece, 2007), we suggest that family firms are more likely to spot novel opportunities for (international) market development (Patel & Fiet, 2011). The proprietary access to the information and knowledge residing with family managers and external partners (Chirico & Nordqvist, 2010) is likely to provide a family business with important advantages in (international) market development. The development or acquisition of industry-specific knowledge as a result of family managers' strong affective commitment to the firm is described as a capability that can be effectively devoted to internationalising the business (Chirico & Salvato, 2016; Duran *et al.*, 2016; Sirmon & Hitt, 2003). Since the deep industry-specific knowledge enables a family business to become better acquainted with local, national, and international customer needs (Westhead *et al.*, 2001), this type of knowledge is particularly likely to foster the sensing of opportunities in international markets (Lichtenthaler & Muethel, 2012; Sardeshmukh & Corbett, 2011). In order to identify the opportunities in foreign countries, family firms are considered to draw upon alliance building with international partners in a unique form (Arregle *et al.*, 2017; Pukall & Calabrò, 2014; Zahra *et al.*, 2000).

Though family firms may enter fewer relationships to external stakeholders than non-family firms (Gómez-Mejía *et al.*, 2010; Graves & Thomas, 2006), they tend to build stronger relationships with their alliance partners than non-family firms (Kontinen & Ojala, 2010). Specifically, family firms often bond with other family firms in foreign countries (Okoroafo, 1999; Pukall & Calabrò, 2014). Thus, we expect family firms to have better access to the new and diverse ideas from different cultural perspectives (Hitt *et al.*, 1994; Sapienza *et al.*, 2006) and to tap into especially rich sources of foreign market knowledge (Tsao & Lien, 2013). We follow prior research in this regard (Basly, 2007; Sciascia *et al.*, 2012; Zahra, 2003), but argue from a capability-based perspective and suggest that family firms show a greater

propensity to enter new (international) markets than non-family firms (Path B[1] in the research framework):

H3: Family control has a positive influence on (international) market development.

However, internationalising through exports does not necessarily imply that a business can reap the returns from (international) market development (Sapienza *et al.*, 2006). International expansion via exporting may not necessarily be positively related to performance and profitable firm growth (Hitt *et al.*, 1994; Morck & Yeung, 1991; Tsao & Lien, 2013). Foreign market entry may be specifically hampered by economic and cultural barriers in other countries (Pukall & Calabrò, 2014), and the need to take account of the local circumstances in foreign markets (e.g. in terms of culture, institutions, regulations) amplifies the complexity associated with (international) market development (Kumar, 2009). Especially geographic dispersion can strongly raise information-processing demands (Hitt *et al.*, 1994). We maintain that family firms are better able than other firms to overcome these barriers and the strong information-processing demands related to international market development (Patel & Fiet, 2011). Their unique (international) market development process (Arregle *et al.*, 2012; 2017; Kontinen & Ojala, 2011) is expected to provide family firms with a better ability to exploit and appropriate the returns from (international) market development.

Family firms may be better able to capture value from international expansion, since they can leverage the knowledge embedded within the networks to external stakeholders more efficiently. There seems to be strong consensus in the internationalisation literature that the significant obstacles to a successful international expansion can only be overcome by the use of external partnerships to local players (Basly, 2007; Golovko & Valentini, 2011; Knight & Cavusgil, 2004). Leveraging the competencies residing with external network partners is considered to be a key dynamic capability (Rothaermel & Hess, 2007; Teece, 2007), critical to succeed in new foreign markets (Basly, 2007). Although family firms seem to cooperate less often with other firms than non-family firms (Gómez-Mejía *et al.*, 2010), their relationships to external partners in foreign countries appears to be characterised by a strong network density (Kontinen & Ojala, 2011). Owing to the intimate ties to local partner firms, family firms are more likely to assimilate the different types of know-how, including knowledge of the market and knowledge of ways to cater the market (Kontinen & Ojala, 2011). This advantage in absorptive capacity (Cohen & Levinthal, 1990; Hitt *et al.*, 1994) is likely to enable family firms to integrate and exploit the complementary knowledge of local partners more efficiently than other firms (Patel & Fiet, 2011; Sirmon & Hitt, 2003; Zahra *et al.*, 2000). To summarise, we argue family firms are not only more likely to engage in (international) market development

(H3), family firms may also be better able to appropriate the value from (international) market development (Path B^1*B^2 in the research framework):

H4: (International) market development positively mediates the influence of family control on firm growth, (i.e. family firms grow more strongly through (international) markets than non-family firms).

Family control and the interrelationship between product & market development

The above sections highlight that product development and (international) market development constitute two ways for firms to grow organically (Ansoff, 1965; Kumar, 2009). Since both growth alternatives draw on a firm's available resources and capabilities, growth along one avenue is likely to be systematically related to growth along the other one (Kyläheiko *et al.*, 2011). Decisions related to the extent of growth along the two avenues are likely to be taken simultaneously rather than independently (Kumar, 2009). Since both strategies seem to compete for finite resources and capabilities, product development and (international) market development could be considered to be substitute strategies (Kyläheiko *et al.*, 2011; Roper & Love, 2002). At least in the short run, both growth avenues may therefore need prioritisation over time (Golovko & Valentini, 2011; Kumar, 2009). Accordingly, there seems to be an ongoing debate in the strategic management literature if product development and (international) market development were positively or negatively related to each other (Chatterjee & Singh, 1999; Hitt *et al.*, 2006; Kiss *et al.*, 2017; Kumar, 2009). Several researchers argue that the interrelationship between both growth strategies corresponds to a trade-off decision (Hitt *et al.*, 2006; Kumar, 2009; Kyläheiko *et al.*, 2011) while other scholars suggest that product and (international) market development serve as reinforcing activities, so that each activity's marginal contribution to profitable growth is larger if the other activity is also in place (Filipescu *et al.*, 2013; Golovko & Valentini, 2011; Kiss *et al.*, 2017).

In line with the research on dynamic capabilities, the extent to which firms can benefit from one activity for the purpose of the other activity may depend on their replication abilities (Kumar, 2009; Sirmon *et al.*, 2011). In this dynamic perspective, an organisational capability reflects a firm's ability to perform value-creating tasks and routines repeatedly (Knight & Cavusgil, 2004). Accordingly, replication involves re-deploying capabilities utilised in one business setting to another (Zander & Kogut, 1995; Martin & Salomon, 2003; Szulanski, 1996). In particular, the extent to which an organisation can benefit from both product development and (international) market development simultaneously may therefore depend on the firm's ability to learn, accumulate, and apply knowledge gained by virtue of one activity for the purpose of the other (Golovko & Valentini, 2011; Kumar, 2009; Kyläheiko *et al.*, 2011).

Though the replication of organisational capabilities is far from easy (Szulanski, 1996; Teece, 2007), recent family firm research suggests that the short-run constraints associated with re-deploying these capabilities might be overcome by the unique dynamic capabilities in family firms (Chirico & Salvato, 2016; Duran *et al.*, 2016; Lichtenthaler & Muethel, 2012; Tsao & Lien, 2013). Based on their unique dynamic capabilities, enabling family firms to better leverage the knowledge acquired from one activity for the purpose of the other (Golovko & Valentini, 2011; Zahra *et al.*, 2000), we suggest product development and (international) market development reinforce each other more strongly in family firms than in non-family firms.

On the one hand, we assume that the firms that have engaged in product development may be more successful in (international) market development. Firms that have developed a novel product for their domestic market have a strong incentive to enter foreign countries, in order to raise the sales volume and to spread the fixed costs associated with the development of a new product over a larger number of markets (Liu & Buck, 2007; Kafouros *et al.*, 2008; Kiss *et al.*, 2017). We argue that family firms that have developed new products grow more strongly through (international) market development than non-family firms which have developed new products (Path C^1*B^2 in the research framework). As argued above, even though a firm develops a new technologically superior product, the firm needs to learn other skills to position its product successfully in foreign markets and to assimilate the competencies required for superior performance (Knight & Cavusgil, 2004; Zahra *et al.*, 2000). Specifically, the intimate relationships with internal and external stakeholders are expected to provide family managers with an advantage in collecting and applying the specialised knowledge of their family firm employees and their external network partners (Chirico & Salvato, 2016; Duran *et al.*, 2016; Patel & Fiet, 2011). Once they built the knowledge to cater new product segments effectively, family firms may be particularly successful in their (international) market development activities (Sapienza *et al.*, 2006; Filipescu *et al.*, 2013). As such, we suggest that the technological learning generated through the development of new products serves as a foundation for entry capabilities (Knight & Cavusgil, 2004; Sapienza *et al.*, 2006), which family firms can leverage better for international expansion than non-family firms.

One the other hand, we assume that the firms that have engaged in (international) market development may be more successful in product development. The firms pursuing an (international) market development strategy typically develop valuable learning and adaptability capabilities through internationalising their business (Basly, 2007; Sapienza *et al.*, 2006). International exposure gives exporters access to novel and diverse knowledge and technology inputs in foreign markets and offers the opportunity to capture ideas from a greater number of

new and different markets (Filipescu *et al.*, 2013; Hitt *et al.*, 1994). We maintain that family firms that have developed foreign markets grow more strongly through product development than non-family firms that have developed foreign markets (Path C^2*A^2 in the research framework). The trust-based relationships to external partners in foreign countries are likely to help family firms better assimilate the diverse knowledge inputs available in other markets (Basly, 2007; Sapienza *et al.*, 2006). In turn, the strong ties among family firms' managers and employees can raise the ability to share the newly acquired knowledge more efficiently (Duran *et al.*, 2016; Lichtenthaler & Muethel, 2012). Building on more information-processing (Tsao & Lien, 2013) and replication activities (Kumar, 2009; Teece, 2007), family firms may therefore be better able to leverage the knowledge for the purpose of successful product development (Filipescu *et al.*, 2013; Golovko & Valentini, 2011; Zahra *et al.*, 2000). In accordance with both argumentation lines, we argue (Path C^1*B^2 and Path C^2*A^2 in the research framework):

H5: In family firms, product development (market development) positively mediates the influence of market development (product development) on growth to a greater extent than in non-family firms, (i.e. product and (international) market development reinforce each other more strongly in family firms).

DATA & METHODOLOGY

The empirical analysis is based on the Mannheim Innovation Panel (MIP) executed in 2015, which is the German version of the Community Innovation Survey (CIS) (Astor *et al.*, 2016). This survey was conducted by the Centre for European Research (ZEW) under supervision of the Statistical Office of the European Commission (Eurostat). In line with the OECD Oslo Manual (OECD, 2005) for collecting innovation data, the survey draws upon a multi-annual approach, in which innovation-related questions refer to the time period between 2012 and 2014. Because this is expected to yield a more adequate reflection of the nature of innovation and international expansion than a single-annual approach, the multi-annual method is expected to produce more effective measures of new product development and (international) market development activities (Schmidt & Rammer, 2007). In particular, the multi-annual reference period allows to capture the effects of product development and (international) market development on profitability and growth (Behrens *et al.*, 2017).

Operationalisation of variables

Dependent variables. The first aim of this study is to analyse the differences between product and (international) market development of family and non-family firms. For the operationalisation of both product and (international) market development, we combine a binary measure

with a continuous variable. While a dichotomous variable assesses the *propensity* to develop a new product or an (international) market, a continuous variable measures the *intensity*, with which firms develop new products or (international) markets. This terminology stems from prior research, which has typically conceptualised international market development based on firm export *propensity* and export *intensity* (Fernández & Nieto, 2005), and is analogously applied to the two product development measures.

Product development is operationalised based on the decision to introduce new products (*product development propensity, PDP*) and the share of revenues generated with novel products (*product development intensity, PDI*). (International) market development is measured based on the decision to export products into foreign countries (*international market development propensity, IMDP*) and the proportion of revenues derived from exported products (*international market development intensity, IMDI*). The second objective of this study is to test the distinct effects of product and (international) market development among family and non-family firms on growth. In line with previous research, *growth* is assessed based on the change in profitability (Hitt *et al.*, 1994; Kyläheiko *et al.*, 2011). *Growth* takes account of the difference in return on sales between 2013 and 2014 (Lu & Beamish, 2001).

Independent variables. Family firms are defined as such businesses based on family *ownership* (above 50%). If the ownership majority of the firm resides with a family, respondents of the CIS questionnaire were asked to indicate that their business represents a family firm. This definition coincides with prior scholars, who recommend applying the "essence-approach" for the definition of family firms (Llach & Nordqvist, 2010). It meets the objective of this study, in which the family firm definition needs to correspond to the family's discretion to determine product and market development activities (De Massis *et al.*, 2013). In a supplementary analysis, we use family *management* and family *succession* as two additional defining features.

The supplementary study is devoted to the investigation of differences among distinct types of family firms. Regarding family *management*, we use the prevalence of non-family members in a family firm's top management team (Kraiczy *et al.*, 2014). Family-managed family enterprises are only those firms, in which every top manager belongs to the family. Regarding family *succession*, we distinguish between family firms with and without a transgenerational orientation (TGO; Chua *et al.*, 1999; Habbershon & Williams, 1999). TGO is conceptualised based on a family firm's decision to engage in succession planning. Defined as the deliberate and formal process facilitating the transfer of managerial control (Marshall *et al.*, 2006), succession planning is understood as a strong indicator for the intent to pass the firm to succeeding generations (Le Breton-Miller & Miller, 2006; Sharma *et al.*, 2003).

Control variables. The analysis comprises a variety of control variables. In order to account for the typical innovation and internationalisation advantage of large organisations (Hauck & Prügl, 2015; Zahra, 2003), *size* is incorporated in the analysis as the number of employees in a given year. Also, we control for the impact of domestic *competition* on firms' motivation to develop new products and to enter foreign markets (Lu & Beamish, 2001). While the dummy variable *industry* is included to control for differences in manufacturing and services, *sector* corresponds to varying levels of knowledge intensity across industries (Rammer *et al.*, 2015).

Also, the analysis uses *R&D* intensity as a covariate. Thereby, we recognise that R&D intensity might serve as a poor innovation indicator in a cross-industry analysis (Hagedoorn & Cloodt, 2003; Walsh *et al.*, 2016). As an indicator of technological resources, R&D intensity has also been used in prior internationalisation research (Liu & Buck, 2007). Firms with high R&D intensity tend to exploit their technological resources in foreign countries more effectively than firms with weak R&D intensity, raising the incentive for technological firms to expand internationally. To grasp the effect of innovation and internationalisation as two organic growth paths, we account for *inorganic growth* by means of mergers and acquisitions.

Descriptive statistics

The entire sample collected by the CIS survey comprises 6,097 observations, of which 3,297 companies account for the sample of family businesses. Due to missing values and few non-plausible values, we performed the SEM analyses separately for each of the five dependent variables (Kaplan & Vakili, 2015) and draw upon different sample sizes. Sample sizes range from 2,508 observations (*Product development propensity* and *(International) market development propensity* sample), to 2,508 observations (*Product development intensity* sample) and 2,499 observations (*International) market development intensity* sample), and 1,865 observations (*Profit growth* sample).

[INSERT TABLE 1 ABOUT HERE]

Table 1 displays the descriptive statistics of this study (based on *Profit growth* sample) and Table 2 highlights the correlations between the variables of this analysis.

[INSERT TABLE 2 ABOUT HERE]

Method

The principal objective of this analysis is to examine if family control incline organisations to grow more strongly via the means of product and (international) market development. Hence, we assert that product development and (international) market development mediate the ante-

cedent effect of family control on growth (Lichtenthaler & Muethel, 2012). Mediation occurs when the causal effect of an independent variable on an dependent variable is transmitted by a mediating variable (Hayes, 2009). In accordance with our primary research objective, we seek to assess *by what means* family firms grow more strongly than non-family firms (Preacher *et al.*, 2007). Thus, because we are particularly in the mechanisms underlying the triad between family control, PD, and IMD, we follow Lichtenthaler and Muethel (2012) and consider a mediator-oriented analysis to be the most effective research method (Baron & Kenny, 1986).

SEM was chosen as the most effective type of analysis for this research endeavour. SEM is the preferred option, because it allows controlling for measurement error and provides more flexibility than regression analyses (Frazier *et al.*, 2004). Specifically, SEM permits simultaneous examination of multiple predictor, outcome, and mediator variables. The desire to conceptualise an analysis construct based on a combination of antecedent, intervening, and outcome variables suggests that SEM represents the most effective mode of analysis (Frazier *et al.*, 2004; Imai *et al.*, 2010; Kaplan & Vakili, 2015).

However, the nature of the intervening variables constrains the selection of the specific SEM model (Iacobucci, 2012). Because applying linear SEM in an examination of binary intervening variables could elicit biased results, this analysis draws upon a generalised structural equation model (GSEM). GSEM permits generalised linear response functions with continuous and binary measures. By using maximum likelihood estimation, GSEM offers consistent, efficient, and asymptotically normal estimates for every path of the model (Kaplan & Vakili, 2015). To adjust estimates for bias and compute indirect and total effects as well as standard errors and confidence intervals (CIs), the analysis uses non-parametric bootstrapping with 1,000 replications (Imai *et al.*, 2010).

Bootstrapping produces an empirical representation of the sampling distribution of the indirect effect by repeatedly resampling and imitating the original sampling process (Hayes, 2009). Since bootstrapping makes no assumption about the sampling distribution of an indirect effect, it is considered to be more powerful than the Sobel test (Chirico & Salvato, 2016) or other causal tests to explore mediating effects (Hayes, 2012; Williams & McKinnon, 2008). All significance levels are based on bias-adjusted bootstrap CIs (Efron & Tibshirani, 1993; Hayes, 2009). We scrutinise the indirect effects to assess the mediating influence of product and market development on growth. Though the GSEM is expected to yield accurate estimates of indirect effects and standard errors (Kaplan & Vakili, 2015), we use Iacobucci's (2012) analysis as a robustness check to test the indirect effects' significance levels. The z-

statistics computed for each indirect effect show that all significance levels conform to the results of the GSEM analyses.

RESULTS

Results of the main GSEM analysis

To test the hypotheses, we evaluate the direct and indirect effects. Table 3 displays all direct and indirect effects of the first GSEM analysis, testing differences between family and non-family firms. Thus, Table 3 presents the direct and indirect effects of family ownership (FF) on product development (PD), (international) market development (IMD), and growth.

[INSERT TABLE 3 ABOUT HERE]

Expressed by a significantly greater product development propensity (PDP), Table 3 reveals that family firms (FF) are more likely to develop new products than non-family firms, lending support to H1. However, the indirect effect of family ownership on growth via product development emerges as non-significant, indicating that the product development advantage of family over non-family firms may not translate into a resulting growth advantage. The results imply that family firms are more likely to develop new products, but they cannot grow more through product development than non-family firms. This leads to the rejection of H2.

Expressed by a significantly greater (international) market development propensity (IMDP), the results highlight that family firms are more likely to develop new (international) markets than non-family firms, suggesting the acceptance of H3. Additionally, the significant positive indirect effect of family ownership on growth through (international) market development indicates that family firms grow more strongly by means of (international) market development than non-family firms. This leads to the acceptance of H4.

The significant positive reciprocal relationship of product development on (international) market development displays that the likelihood of product development increases with the decision to internationalise through the development of foreign markets (Path C^1 in the research framework) and that the likelihood of (international) market development rises with the decision to innovate through the development of new products (Path C^2 in the research framework). The significant positive indirect effect of product development on growth via (international) market development (Path C^1*B^2 in the research framework) illustrates that (international) market development positively mediates the product development-growth relationship. Similarly, the significant positive indirect effect of (international) market develop-

ment on growth via product development (Path C^2*A^2 in the research framework) implies that innovation positively mediates the (international) market development-growth relationship.

[INSERT TABLE 4 ABOUT HERE]

In order to test H5, which predicts that product development and (international) market development reinforce each other more strongly in family firms than in non-family firms, we compare the interrelationship between product and (international) market development in those two types of firms on the basis of the split samples (family firm sample and non-family firm sample). Table 4 shows that the effect of (international) market development on growth via product development (Path C^2*A^2) is non-significant for both types of firms. However, the effect of product development on growth through (international) market development (F = 0.407 at $p < 0.01$) emerges as significant in the family firm sample (Path C^1*B^2), indicating that product development activities reinforce (international) market development activities more strongly in family firms than in non-family firms. This finding leads us to accept H5.

Results of the supplementary GSEM analysis

In a supplementary analysis, we extend the binary distinction between family firms and non-family firms. Specifically, we assess family control as a categorical variable based on two additional defining characteristics of family influence on a firm (Chua *et al.*, 1999). In addition to the influence by means of ownership, a family is likely to influence a business to a varying extent based on the presence of family members in the top management team and on the desire to retain family control over generations (i.e. transgenerational orientation).

Table 5 shows the results of the supplementary analysis focusing on family firms and the direct and indirect effect of family management (FAM) and transgenerational orientation (TGO) (Table 4 shows these features as control variables in the family firm sample). Table 5 reveals that family-managed firms underperform non-family firms regarding the (international) market development activities. Specifically, family-managed family businesses appear to generate a significantly lower proportion of their sales from products sold in foreign countries than non-family firms. In contrast, non-family managed family firms show a greater (international) market development propensity and intensity than non-family firms. These firms can also outperform non-family firms in product development propensity and intensity.

[INSERT TABLE 5 ABOUT HERE]

In addition, the results of the supplementary analysis show that family firms, which are not oriented toward future generations, may not significantly differentiate themselves from the

non-family firms in terms of product development and (international) market development activities. Instead, only those family firms that possess a transgenerational orientation (TGO) are significantly more likely to develop new products and foreign markets.

Robustness of results

Several measures are adopted to ensure the reliability and robustness of results. First, in order to ascertain if a potential selection or non-response bias exists, the ZEW performed a comprehensive non-response survey. Based on the information from the non-response survey, weighting techniques were used to correct for the potential selection bias (please refer to Behrens *et al.* (2017) for a detailed review). Consequently, the MIP results used in this study are considered to be representative for the entire population of German companies.

In current research, exporting constitutes the most extensively applied indicator for international activities (Liu & Buck, 2007). Though it is considered to be a resource-consuming activity, exporting is seen as the most convenient and efficient means of international expansion (Arregle *et al.*, 2012). However, because firms may internationalise by other means than exporting, an alternative internationalisation measure is analysed as another robustness check. In line with Zahra (2003), the alternative (international) market development measure assesses the scale and scope of firms' international activities. The results are consistent for both the main analysis and the supplementary analysis and are obtainable upon request.

DISCUSSION

The findings of this study contribute to the research field on family firms and on the triad of product development, (international) market development, and growth. We draw on a simultaneous evaluation of product development and (international) market development as combined growth strategies. Building on the literature on resource orchestration and dynamic capabilities (Teece, 2007; Rothaermel & Hess, 2007), strategic management and international business scholars devoted significant attention to the interrelationship between product development and (international) market development and the question if these two growth avenues serve as substitutive or reinforcing growth strategies in the short run (Denis *et al.*, 2002; Filipescu *et al.*, 2013; Kumar, 2009; Kyläheiko *et al.*, 2011). First, by analysing the interplay between product development and (international) market development in a specific organisational type, our study yields specific implications for the product development, (international) market development, and growth-related research. Second, the most recent research on family firms has highlighted that these types of organisations capitalise on an idiosyncratic resource orchestration and unique dynamic capabilities (Chirico & Salvato, 2016; Duran *et al.*, 2016;

Lichtenthaler & Muethel, 2012). Our research builds on these studies and tests if these idiosyncrasies enable family businesses to grow more strongly through product development and (international) market development.

Implications for innovation and internationalisation research

This study highlights that product development and (international) market development might serve simultaneously as avenues of growth (Golovko & Valentini, 2011). The findings imply that product development and (international) market development should be viewed as reinforcing growth strategies rather than substitute growth strategies (Kyläheiko *et al.*, 2011). In particular, the results suggest that firms, which have developed new products, have a strong incentive to enter foreign markets. Since the overseas transfer of novel products can occur at little or no marginal costs (Davis & Harveston, 2000), innovative firms may strive for higher returns from their investments and spread the fixed costs of new products over a larger number of markets (Liu & Buck, 2007). The findings also highlight that international firms have a strong motivation to develop new products. Exposure to diverse knowledge in foreign countries may give international firms access to inputs necessary to develop new products in their domestic markets (Golovko & Valentini, 2011; Zahra, 2003).

By investigating the interplay between innovation and internationalisation in a specific organisational context (i.e. family firms), we seek to add new insights to this research stream. Specifically, family firms are regarded as organisations with highly tacit knowledge (Cabrera-Suárez *et al.*, 2001; Le Breton-Miller & Miller, 2006). Particularly in the short run, a high degree of knowledge tacitness in an organisation is expected to raise a firm's transaction costs associated with the coordination and the exchange of knowledge (Kumar, 2009). Accordingly, the ability to transfer knowledge from one growth activity to the other could be impaired for these firms and they would be advised to prioritise product development and (international) market development over time (Kyläheiko *et al.*, 2011). However, the interdependence between product development and (international) market development is also dependent upon a firm's ability to learn and re-deploy the knowledge acquired from one growth activity for the purpose of the other (Golovko & Valentini, 2011; Sirmon *et al.*, 2011). Based on the finding that product development and (international) market development reinforce each other more strongly in firms with highly tacit knowledge (i.e. family firms), our results suggest that the constraints, owing to the specific tacitness of an organisation's knowledge, can be compensated by particularly effective replication and information-processing capabilities (Golovko & Valentini, 2011; Filipescu *et al.*, 2013; Tsao & Lien, 2013).

Implications for family firm research

This study aims to add to the discourse on product development, (international) market development, and growth in family and non-family firms. We extend prior research related to product development (Bammens *et al.*, 2015; De Massis *et al.*, 2015; Röd, 2016) and (international) market development in family firms (Arregle *et al.*, 2017; Basly, 2007; Zahra, 2003), by relating family firms' product development and (international) market development activities to firm growth. Our results corroborate the recent findings on the unique resource orchestration and dynamic capabilities in family businesses (Chirico & Salvato, 2016; Duran *et al.*, 2016; Lichtenthaler & Muethel, 2012). We discover that family firms' (international) market development activities serve as more efficient conduit for profitable firm growth than the (international) market development activities of non-family firms. In line with the arguments of resource orchestration and dynamic capabilities scholars, our results imply that family firms have an advantage in *leveraging* the knowledge residing with internal and external stakeholders (Chirico & Salvato, 2016; Duran *et al.*, 2016; Lichtenthaler & Muethel, 2012).

In a related vein, we extend the family firm studies, which have investigated product development and (international) market development as if they had independent effects (e.g. Chirico & Salvato, 2016; Classen *et al.*, 2014). The results indicate that product development and (international) market development reinforce each other particularly strongly in family firms. Our results coincide with the results from recent research on the resource orchestration and dynamic capabilities, which has highlighted a distinct ability among family firms to spot and seize novel opportunities (Duran *et al.*, 2016; Lichtenthaler & Muethel, 2012). Yet, our findings extend these studies, by assessing the interrelationship between new product opportunities and (international) market opportunities in family and non-family firms. We find evidence for a unique interrelationship of these two growth avenues in family businesses: family control over a firm facilitates the influence of product development on growth by means of (international) market development. In other words, family firms engaging in product development are more successful in their (international) market development efforts. In line with a resource orchestration and dynamic capabilities perspective, we suggest that the technological learning generated through the development of new products may serve as a foundation for entry capabilities (Filipescu *et al.*, 2013; Sapienza *et al.*, 2006) that family firms might more successfully apply to international expansion than non-family firms. Particularly owing to the privileged and rich access to external networks in foreign countries (Duran *et al.*, 2016; Kontinen & Ojala, 2011), family firms are more likely than non-family firms to learn the skills

necessary to position their new products successfully in foreign markets and develop the competencies required for superior performance (Knight & Cavusgil, 2004; Zahra *et al.*, 2000).

Besides, we aim to contribute to research on family firm heterogeneity. Expressed by significant differences in the level of product development and (international) market development activities, a varying extent of family influence seems to evoke strong heterogeneity among family firms. Our supplementary analysis reveals a family firm's management composition and transgenerational orientation as two key contingencies affecting their product development and (international) market development. The results indicate that increased family influence on a firm may act as a "dual-edged sword" with regard to a family firm's product and (international) market development (Bennedsen & Foss, 2015; Minichilli *et al.*, 2010). Increased family control through family management appears to impede a family firm's (international) market development. Yet, family control through a transgenerational orientation seems to facilitate a family firm's product and (international) market development. Accordingly, the results of our supplementary suggest that distinguishing between different defining characteristics of family firms helps to take account of the heterogeneity among family firms.

Implications for managers in family firms and non-family firms

This study yields major implications for family and non-family firm managers. First, product development and (international) market development can be leveraged as combined and reinforcing growth strategies. Family firm managers should be advised that investing in one of the growth strategies might simultaneously ease the pursuit of the other growth avenue. Second, a transgenerational orientation tends to generate a level of product development and (international) market development, which cannot be accomplished by non-family firms or other family firms. Accordingly, we urge family firm managers to look beyond their own managerial tenures and to appreciate the benefits that come from abandoning the often-cited reluctance to let go of their managerial power. Third, non-family management seems to initiate a level of product development and (international) market development exceeding that of non-family firms or other family firms. Rather than distorting the unique resource endowment of family firms, non-family executives seem to be better able than family managers to leverage the idiosyncratic resources residing with internal and external stakeholders of family firms. Fourth, having highly tacit knowledge in an organisation may not necessarily be a hindrance to the simultaneous exploitation of product development and (international) market development as combined growth strategies. Instead, non-family firm managers should be advised that activities that aim at collecting and replicating knowledge from one growth strategy (i.e. product develop-

ment) can enable organisations to grow more efficiently through another growth strategy (i.e. (international) market development).

LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

This paper is subject to the following limitations. Because the sample utilised in this analysis comprises exclusively German firms, the generalisability of findings might be limited. In particular, family firms' strong domestic market position in Germany may elicit an exceptionally strong country-of-origin cue for foreign consumers, facilitating family businesses' success in (international) market development. Future studies thus need to substantiate the results of this study in different countries. Further, although the ZEW (i.e. data provider) conducted many robustness checks to validate the overall representativeness of the study's sample (Behrens *et al.*, 2017), the results need to be interpreted in light of a potential endogeneity bias (Eddleston *et al.*, 2013). For instance, non-family management involvement may be the result and not the cause of increased product development and (international) market development activities of family firms. Non-family managers may have been assigned, as the magnified organisational complexity through product and (international) market development activities urged family firms to seek for new and different managerial competencies (Vandekerkhof *et al.*, 2014).

Additionally, the analysis is bound to the limitations of cross-sectional survey data. Although the comprehensive CIS data enable the simultaneous examination of product development and (international) market development as combined growth strategies of family and non-family firms, the opportunity to explicitly measure potentially underlying differences in the firms' human capital (Bammens *et al.*, 2015; Llach & Nordqvist, 2010) and social capital (Arregle *et al.*, 2017; Kontinen & Ojala, 2011) or knowledge replication activities (Chirico & Salvato, 2016; Tsao & Lien, 2013) is limited. To substantiate the findings of this study, future scholars could consider complementary analyses such as experimental research and conjoint studies to be particularly insightful (Thiele, 2017).

Since our main research objective involved examining the mediating role of product development and (international) market development for family firms' growth, we could only devote limited attention to differences among the family firms in the form of a supplementary analysis. To our knowledge, our initial effort is the first testing a family firm's transgenerational orientation as a key contingency affecting the product development and (international) market development activities. In this regard, our study corresponds to previous empirical evidence that reveals a positive impact of an incumbent's long-term vision on family firm innovation (Laforet, 2013; Zahra *et al.*, 2004). A transgenerational orientation and the intent to

transfer the firm to the next generation is also likely to encourage an incumbent manager to search and identify innovation- or internationalisation-related market opportunities (Sciascia *et al.*, 2012). Our supplementary results suggest that an incumbent manager views product or (international) market development as testing ground (Gallo & Sveen, 1991) or development tool for succeeding generations (Gallo & Pont, 1996). As we were not able to explore these arguments in greater depth, future researchers might be interested to test the specific influence of this defining feature of family firms (Chua *et al.*, 1999) on product development, (international) market development, and firm growth.

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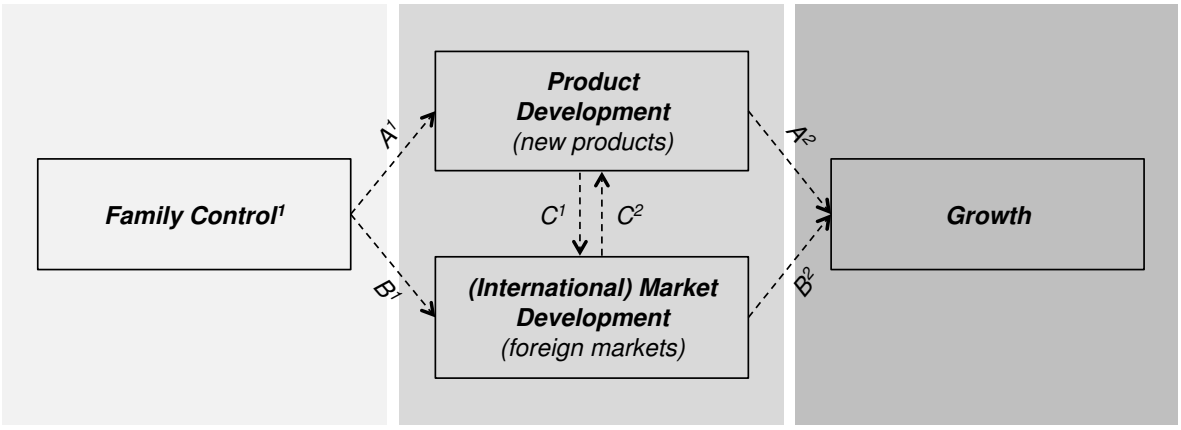
Figure 1 – Research framework with direct and indirect effects of family control



[1]*Measured by (1) family ownership in main analysis, measured also by (2) family management and (3) family succession in supplementary analysis*

Table 1 – Descriptive statistics with description of all variables

		FFs[1]	*NFFs*[2]
Variable	**Description**	**Mean/SD**	**Mean/SD**
Profit growth	Change of return on sales between 2013 and 2014	0.14 (1.29)	0.10 (1.32)
PDP[4]	New product/service introduction (2012-2014)	0.22 (0.42)	0.20 (0.40)
PDI[5]	Sales share of new products/services (2012-2014)	0.03 (0.09)	0.03 (0.10)
IMDP[6]	New market entrance through exports (2012-2014)	0.56 (0.50)	0.46 (0.50)
IMDI[7]	Sales share of exported products (2012-2014)	0.15 (0.24)	0.15 (0.26)
Firm size	Standardised number of firm employees (2014)	-0.06 (0.30)	0.11 (1.82)
Domestic competition	Degree of competitiveness in home market	1.79 (0.92)	1.58 (0.98)
FAM[7]	Family members in family firm top management	0.69 (0.46)	-
TGO[8]	Succession planning of family firms	0.56 (0.50)	-
Industry affiliation	Affiliation to industry (or services) branch	0.66 (0.47)	0.53 (0.50)
Sector affiliation	Affiliation to R&D- or knowledge-intensive sector	0.37 (0.48)	0.49 (0.50)
R&D intensity	Expenditures for R&D relative to sales (2014)	0.02 (0.07)	0.03 (0.15)
Inorganic growth	Inorganic growth via mergers or acquisitions (y/n)	0.03 (0.16)	0.04 (0.19)

[1]*1,015 observations (family firm sample);* [2]*850 observations (non-family firm sample);* [3]*Product development propensity;* [4]*Product development intensity;* [5]*(International) market development propensity;* [6]*(International) market development intensity;* [7]*Family management involvement;* [8]*Transgenerational orientation*

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1)	**Profit growth[1]**	1.00											
(2)	**Product development (PD)[2]**	0.04	1.00										
(3)	**(Int.) market development (IMD)[3]**	0.04*	0.33*	1.00									
(4)	**Family ownership (FF)**	0.02	0.03	0.10*	1.00								
(5)	**Firm Size**	0.03	0.22*	0.32*	-0.13*	1.00							
(6)	**Domestic competition**	0.00	-0.08*	0.02	0.11*	0.05*	1.00						
(7)	**Industry affiliation**	0.03	0.17*	0.37*	0.14*	0.18*	0.01	1.00					
(8)	**Sector affiliation**	-0.01	0.19*	0.10*	-0.13*	-0.03	-0.13*	0.24*	1.00				
(9)	**R&D intensity**	0.04*	0.57*	0.43*	0.00	0.24*	-0.10*	0.19*	0.34*	1.00			
(10)	**Inorganic growth**	-0.01	0.04	0.04*	-0.03	0.10*	-0.00	-0.02	0.07*	0.08*	1.00		
(11)	**FF management (FAM)[4]**	-0.06*	-0.15*	-0.21*	-	-0.40*	0.02	-0.11*	-0.10*	-0.17*	-0.05	1.00	
(12)	**FF trans. orient. (TGO)[4]**	0.06*	0.10`*	0.11*	-	0.15*	-0.01	0.06*	-0.02	0.14*	-0.01	-0.04	1.00

*[1]Based on full sample (1,865 observations); [2]Product development (PD) based on product development propensity (PDP); [3](International) market development (IMD) based on (international) market development propensity (IMDP); [4]Based on family firm sample (1,015 observations); Note: *p<0.10*

Table 2 – Correlation matrix with all variables

Table 3 – Results of *full* sample GSEM analysis with direct and indirect effects

	Product development (PD)		*(Int.) market dev. (IMD)*		*Profit growth*		
	Propensity	**Intensity**	**Propensity**	**Intensity**	**Direct effect**	**IE[1] via PD**	**IE[1] via IMD**
Independent							
FF	0.157*	0.004	0.211**	-0.001	0.029	0.034	0.050†
PD[2]	-	-	0.825**	0.131**	0.214	-	0.197*
IMD[3]	0.746**	0.014**	-	-	0.239*	0.160†	-
Control							
Size	1.018**	0.001	0.778*	0.026	-0.021	0.218	0.186
R&D	2.965**	0.319**	1.678†	0.125	0.136	0.635	0.401
Comp	-0.067*	-0.005**	0.098**	0.003	0.028	-0.014	0.023†
Indus	0.402**	0.010**	1.062**	0.159**	0.175	0.086†	0.254*
Sector	0.401**	0.013**	0.456**	0.103**	-0.020	0.086†	0.109*
Inorg	0.162	0.007	0.055	0.043	0.566*	0.035	0.013
Cons.	-1.825**	0.006	-1.272**	-0.030**	-0.848**	-	-
Obs.	2,508	2,508	2,508	2,499	1,865	1,865	1,865

*Note: **p<0.01; *p<0.05; †p<0.1; [1]Indirect effect; [2]Product development as dichotomous variable; [3](International) market development as dichotomous variable*

	Family firm sample							*Non-family firm sample*						
	Product development (PD)		***(Int.) market development (IMD)***		***Profit growth***			***Product development (PD)***		***(Int.) market development (IMD)***		***Profit growth***		
	Propen-sity	**Inten-sity**	**Propen-sity**	**Inten-sity**	**Direct effect**	**IE[1] via PD**	**IE[1] via IMD**	**Propen-sity**	**Inten-sity**	**Propen-sity**	**Inten-sity**	**Direct effect**	**IE[1] via PD**	**IE[1] via IMD**
Independent														
PD[2]	-	-	0.816**	0.103**	0.121	-	0.407**	-	-	0.892**	0.154**	0.325	-	0.016
IMD[3]	0.730**	0.008	-	-	0.499**	0.088	-	0.787**	0.020**	-	-	0.018	0.256	-
Controls														
FAM	-0.293**	-0.015**	-0.359**	-0.062**	-0.082	0.035	0.179*	-	-	-	-	-	-	-
SUC	0.199*	0.005	0.188*	0.005	-0.088	0.024	0.094†	-	-	-	-	-	-	-
Size	0.732	0.000	1.395	0.102	-0.281	0.089	0.696	0.938**	0.000	0.410	0.020	-0.020	0.304	0.007
R&D	4.986**	0.347*	0.551	0.170	1.336	0.603	0.275	2.265**	0.256**	2.237	0.115	-0.309	0.735	0.040
Comp	-0.099†	-0.007**	0.081*	0.004	0.093	-0.012	0.040†	-0.020	-0.006*	0.117**	0.003	-0.041	-0.007	0.002
Indus	0.340**	0.009†	1.151**	0.146**	0.047	0.041	0.575**	0.417**	0.010	0.929**	0.171**	0.222	0.135	0.017
Sector	0.309**	0.009	0.425**	0.107**	-0.101	0.037	0.212*	0.537**	0.021**	0.467**	0.099**	0.101	0.174	0.008
Inorg	-0.051	-0.014†	0.079	0.017	0.369	-0.006	0.039	0.103	0.024	0.032	0.076	0.821†	0.033	0.001
Cons.	-1.776**	-0.012†	-1.227**	-0.038†	-0.933**	-	-	-1.979**	0.002	-1.278**	-0.038*	-0.737**	-	-
Obs.	1,329	1,338	1,329	1,336	1,015	1,015	1,015	1,179	1,170	1,179	1,163	850	850	850

*Note: **p<0.01; *p<0.05; †p<0.1; [1]Indirect effect; [2]Product development as dichotomous variable; [3](International) market development as dichotomous variable*

Table 4 – Results of *split* sample GSEM analysis with direct and indirect effects

Table 5 – Summary of the supplementary GSEM analysis

	Product development (PD)		*(Int.) market dev. (IMD)*		*Growth*
	Propensity	**Intensity**	**Propensity**	**Intensity**	**Direct effect**
BASE MODEL[1]					
Non-family firms[2]					
Family firms (FFs)	0.157*	0.004	0.211**	-0.001	0.029
DIFFERENTIATED MODEL[3]					
Non-family firms[2]					
Non-family-managed FFs	0.315**	0.011†	0.454**	0.044**	0.099
Family-managed FFs	0.057	0.001	0.119†	-0.020*	0.020
Non-family firms[2]					
Non-transgen.-oriented FFs	0.052	0.003	0.093	-0.004	0.094
Transgen.-oriented FFs	0.255**	0.005	0.285**	0.002	0.023
Observations	2,508	2,508	2,508	2,499	1,865

*[1]Full base model as part of Table 3; [2]Non-family firms as reference group; independent variables analysed in separate models; [3]Full differentiated model available obtainable upon request; Note: **p<0.01; *p<0.05; †p<0.1*