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Family firms and the labor productivity controversy: A distributional analysis of varying labor productivity gaps

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ABSTRACT

The question of whether family firms have a higher or lower labor productivity than nonfamily firms has led to a stream of inconsistent evidence. We address this polarized debate by arguing that the idiosyncratic workforce characteristics combined with the dual (socioemotional versus financial) wealth concerns of family firms may differ across the labor productivity distribution, which has a varying impact on the labor productivity differences of family firms versus nonfamily firms. Therefore, we use the method of unconditional quantile regression in our empirical testing on a rich data set containing firm-level data from a national survey of nearly 6,400 Chilean businesses, which allows us to account for the heterogeneous behavior of family firms throughout the entire labor productivity distribution rather than to focus on the difference in mean productivities merely. In line with our theoretical arguments, we find that family ownership generates a productivity advantage for firms located in the lower tail of the labor productivity distribution, whereas it exhibits a negative effect on labor productivity in the upper tail compared to their nonfamily counterparts. Our findings are robust to potential endogeneity of family ownership and offer a reconciling perspective on the contrasting labor-related agency and stewardship arguments dominating the labor productivity debate in family firms so far by showing which argument dominates depending on where the firm is located on the labor productivity distribution.

1. Introduction

Since the seminal paper of Anderson and Reeb (2003) put forward that family ownership is positively related to firm performance, the inquiry into the relationship between family ownership and organizational efficiency has become one of the dominant themes in the family business field, a debate which is far from settled to date (Pindado & Requejo, 2015; Yu et al., 2012). Given that labor productivity is widely recognized as being one of the most important organizational efficiency measures (Datta et al., 2005), it is surprising that only a limited number of papers on family firm efficiency focused on labor productivity. Furthermore, the scant research endeavors that went on this exciting research route reported mainly inconsistent evidence and found positive (Barbera & Moores, 2013; Christensen-Salem et al., 2021; Kirchhoff & Kirchhoff, 1987; McConaughy et al., 1998), negative (Chrisman, Devaraj, & Patel, 2017; Neckebrouck, Schulze, & Zellweger, 2018) as well as mixed relationships (Hu et al., 2018; Sraer & Thesmar, 2007) about whether family firms tend to under- or outperform their nonfamily counterparts in terms of (labor) productivity. Moreover, theoretical arguments used in these studies are strongly contrasting and have currently led to a polarized debate, i.e., on the one hand, the stewardship perspective pictures the family firm workplace as organizational caring (e.g., job security & implicit labor contracts, employee welfare) leading to higher labor productivity (e.g., Christensen-Salem et al., 2021) while at the other hand, the agency perspective points to family firm workplace features like altruism, nepotism and cronyism which will lead to lower labor productivity (e.g., Neckebrouck et al., 2018; Chrisman et al., 2017).

We aim to contribute to this controversial debate by postulating that the equivocal evidence of the family ownership-labor productivity

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relationship may be explained by the *overlooked variability of labor productivity gaps* between family and nonfamily firms across different parts of the distribution of productivity performances other than the conventional mean, that is, the *difference in labor productivity* between family and nonfamily firms is *not constant across the full labor productivity distribution*. Indeed, prior general productivity research suggested that the labor productivity distribution is different for distinct types of firms (e.g., Fariñas & Ruano, 2005; Damiani et al., 2018). Moreover, productivity antecedents may have "adverse effects on certain parts of the productivity distribution other than the mean" (Mueller, 2015, p308). These observations suggest that family firm workplace features and preferences may affect labor productivity differently depending on where the firm is precisely situated on the labor productivity distribution.

Therefore, the objective of this study is to investigate, building on the labor-related agency and stewardship perspectives on family firms (e.g., Cruz et al., 2011) and on recent developments in the socioemotional wealth (SEW) perspective (Chrisman & Patel, 2012; Gomez-Mejia et al., 2018), whether the labor productivity difference between family and nonfamily firms changes both in magnitude and in sign by looking at variations across different segments of the labor productivity distribution. To test our hypotheses, we use a rich dataset from a national survey in 2015 of nearly 6,400 businesses in Chile, an emerging country with a strong presence of family firms which contribute significantly to its economy and productivity (Martinez, 2003). In line with our arguments, the findings indeed show that family ownership generates a productivity advantage for firms located in the lower tail of the labor productivity distribution, whereas it exhibits a negative effect on labor productivity in the upper tail compared to their nonfamily counterparts.

Our study contributes to the literature in three ways. First, by integrating insights from SEW theory (and more specific the SEW stream that started to investigate dual wealth concerns under prosperity versus vulnerability conditions (e.g., Chrisman & Patel, 2012; Gomez-Mejia et al., 2018)) in the labor-related agency and stewardship perspectives on family firms (Cruz et al., 2011), we offer a new angle in understanding labor productivity differences in family firms versus nonfamily firms which reconciles the agency and stewardship arguments dominating the theoretical debate so far by showing which argument dominates depending on where the firm is located on the labor productivity distribution.

Second, recent literature (e.g., Bennedsen et al., 2010; Chrisman & Patel, 2012; Miller & Le Breton-Miller, 2021a) suggests that family firms will behave in a much *more heterogeneous* way than nonfamily firms across a variety of outcome distributions and that many family firms tend "to gravitate toward opposite extremes in their behavior toward stakeholders" depending on their owners' (SEW) priorities (Miller & Le Breton-Miller, 2021a, p13). These insights point toward the need to understand the extremes as well as the central tendencies of the labor productivity distribution when investigating productivity differences between family and nonfamily firms (Chrisman & Patel, 2012; Miller & Le Breton-Miller, 2021a). Previous labor productivity research focused on the "average firm" using classical linear regression techniques and variants. However, these techniques fail to uncover what happens at the extremes of the labor productivity distribution. We seek to overcome this critical limitation by relying on the Unconditional Quantile Regression (UQR) method, introduced by Firpo et al., (2009). This technique allows us to examine the heterogeneity of the relative labor productivity differences between family and nonfamily firms across different quantiles of the unconditional distribution of labor productivity.

Third, it is a common challenge for family firm research to build on latent concepts which cannot (or at least difficult) be measured directly, such as SEW (Christensen-Salem et al., 2021) and implicit labor contracts (Sraer & Thesmar, 2007) which are by definition "implicit". We propose a new methodological route to address this challenge in the family business field by executing a Blinder-Oaxaca decomposition of labor productivity gaps (Blinder, 1973; Oaxaca, 1973). This decomposition analysis allows us to get a better grip on the "labor-related tacit family component" (i.e., the bundle of a family firm's preferences and labor-related resources/weaknesses), measured by the "unexplained" part in the Blinder-Oaxaca analysis. This decomposition technique is often used in the labor market and discrimination literature and "subsumes the effects of group differences in unobserved predictors" (Jann, 2008, p453). Subsequent studies investigating tacit family firm features would benefit by using a similar decomposition approach.

2. Theory and hypotheses

2.1. Labor-related agency vs. stewardship perspectives on labor productivity in family firms

To date, the family firm labor productivity debate is dominated by two contrasting theoretical perspectives. The agency perspective proposes that family firms are vulnerable to specific agency problems such as adverse selection problems from labor market sorting (e.g., the best employees prefer to work for nonfamily firms as career and reward prospects are substantially better) (Chrisman et al., 2017), nepotism (Hu et al., 2018), hiring from a limited talent pool (Neckebrouck et al., 2018) and moral hazard problems (e.g., misalignment of interests between family owners and nonfamily employees) (Damiani et al., 2018; Neckebrouck et al., 2018). These potential sources of labor inefficiency in family firms will lead to a less able and motivated workforce (Chrisman et al., 2017). Accordingly, the labor-related agency perspective predicts a negative relationship between family ownership and labor productivity.

Several papers found empirical support for the agency view (see Table 1).[1] For example, Neckebrouck et al. (2018) reported that family firms display lower labor productivity than nonfamily firms, which points to lower organizational stewardship. Similar results were reported by Classen et al., (2014) and Chrisman et al. (2017) but this latter study also found that the labor productivity gap (a gap of 3.3%) between family and nonfamily firms narrows down to 0.5% for firms that offer their employees incentive compensation plans, suggesting that these plans may mitigate specific personnel-related agency problems in family firms. In addition, Hu et al. (2018) found that higher family involvement in middle management (as an indication of nepotism) negatively affects labor productivity.

In contrast, the labor-related stewardship perspective (Davis et al., 1997) pictures an organizational work environment characterized by loyalty (Sirmon & Hitt, 2003), trust (Barth et al., 2005), an informal work environment (Cruz et al., 2011), the existence of implicit labor contracts in the form of higher job security (Bassanini et al., 2013; Bjuggren, 2015; Block, 2010) and perceived organizational caring (Christensen-Salem et al., 2021). These characteristics suggest a positive relationship between family ownership and labor productivity. This view also found empirical support. Sraer and Thesmar (2007) discovered that founder-led family firms show higher labor productivity while descendant-led firms manage their labor force more efficiently (lower wages) than nonfamily firms. In contrast, professionally-managed family firms have lower labor productivity, but they use capital more efficiently. Damiani et al. (2018) basically found a negative relationship between family ownership/management and labor productivity (in line with the predictions of the agency perspective), but they also found that the labor productivity gap may be partially closed when a family firm adopts firm-level bargaining with workers about labor related issues like working time, incentive pay and training programs, which is in support of the stewardship perspective. In a similar vein, Christensen-Salem

[1] We focus in Table 1 on studies that investigate labor productivity. For an overview of family business studies on the broader productivity debate, we refer to Barbera and Moores (2013).

Table 1
Overview of Earlier Work on Labor Productivity in Family vs. Nonfamily Firms.

Authors	Sample	Time period	Measures labor productivity	Findings
Sraer and Thesmar (2007)	Panel of French listed firms	1994–2000	Ratio of value added per employee	Founder-led family firms show a higher labor productivity than non-family firms. Labor productivity is lower in family firms run by professionals.
Classen et al. (2014)	2087 German SMEs from the Mannheim Innovation Panel/ Community Innovation Survey	2006	Ratio of sales per employee in 2006 (in log)	Given the level of product and process innovation, family SMEs underperform regarding labor productivity in comparison to non-family SMEs.
Chrisman et al. (2017)	332,936 nonagricultural businesses from the Survey of Business Owners (U.S. Census Bureau)	2007	Ratio of firm sales to number of employees (log)	Overall, labor productivity in family firms was 3.3% lower than in nonfamily firms. The labor productivity gap between family and nonfamily firms was reduced to 0.5% for firms with incentive compensation programs.
Neckebrouck et al. (2018)	14,961 private Belgian firms selected from the Belfirst database of Bureau Van Dijk	1996–2014	Ratio of value added for the year divided by the average number of (FTE) employees (log)	Private family firms exhibit lower labor productivity, higher voluntary turnover, lower compensation, lower investments in employee training than nonfamily firms which points towards poor organizational stewardship.
Hu et al. (2018)	1284 private family firms from the 9th survey of Chinese privately owned enterprises (POERPT)	2010	Ratio of firm sales to number of employees (log)	A higher percentage of family involvement in middle management has a negative impact on labor productivity in family firms when the CEO is a family member, for larger firms and for firms located in a region with lower labor mobility.
Damiani et al. (2018)	7700 Italian firms from the merged Employer and Employee Surveys RIL-AIDA	2007 & 2010	Ratio of value added per employee (log)	Family ownership and management show a negative relationship with labor productivity gains. Firm-level bargaining (strategic choices on working time, incentive pay, training programs & labor organization) may partially close the labor productivity gap.
Christensen-Salem et al. (2021)	118 Brazilian firms from the FIA survey and archival data.		Change in net revenue per employee	Family firm status is negatively related to labor productivity. Employee perceived organizational caring has a positive relationship with a change in labor productivity in family firms.

et al. (2021) reported a negative correlation between family firm status and labor productivity but their main conclusion was that higher employee perceived organizational caring in family firms will lead to a positive change in labor productivity building on the argument that "family owners strive to protect and enhance their socioemotional endowments by fostering stronger perceptions of organizational caring among employees compared to those working for non-family firms" (Christensen-Salem et al., 2021, p1).

In the next section, we will build further on this latter SEW argument and couple it with arguments from the SEW stream that started to investigate dual wealth concerns under prosperity versus vulnerability conditions (e.g., Chrisman & Patel, 2012; Gomez-Mejia et al., 2018) which allows us to reconcile the two opposing theoretical perspectives by proposing which argument (i.e., agency vs. stewardship) will dominate *depending on where a specific firm is situated on the labor productivity distribution*.

2.2. Socioemotional versus financial wealth priorities in family firms

Currently, it is widely acknowledged that family firms' decision-making is driven by financial and non-financial motives (e.g., Gomez--Mejia et al., 2011). Nonfinancial motives are said to be derived from several sources, including preserving the family dynasty (Berrone et al., 2012), caring for family members, or enjoying the exercise of authority (Schulze et al., 2003). These nonfinancial aspects of the firm that meet the family's affective needs have been labeled as socioemotional wealth (SEW) (Gomez-Mejia et al., 2007). Combining agency and prospect theory insights, the behavioral agency model (Wiseman & Gomez-Mejia, 1998) proposes that decision makers' risk preferences can shift depending on the reference point used to compare anticipated outcomes. Behavioral preferences of individuals are shaped by problem framing and loss aversion (Kahneman & Tversky, 1979), which means that in the context of family firms, aversion to the loss of SEW is a primary driver of family firms' behavior. Indeed, family firm leaders will exhibit risk-averse behaviors when facing possible gains to SEW and risk-seeking behaviors when facing SEW losses (e.g., Berrone et al., 2012; Gomez-Mejia et al., 2010). When considering decisions that may result in SEW losses, family firms are likely to tolerate threats to their financial welfare to preserve their SEW (Gomez-Mejia et al., 2007).

Most of the existing literature assumes that the preservation of SEW in family firms translates into suboptimal organizational efficiency – i.e., SEW gains and financial gains are inversely related (Martin & Gomez-Mejia, 2016). However, some recent studies (e.g., Chrisman & Patel, 2012; Martin & Gomez-Mejia, 2016; Gomez-Mejia et al., 2018) challenged the taken-for-granted assumption about the detachment of financial and socioemotional wealth maximization and discussed the conditions under which they will converge or diverge. These studies built further on the notion that SEW has several distinct dimensions (Berrone et al., 2012), and these dimensions will have different weights depending on the owning family's preferences. Some features of SEW (e.g., family control related to nepotism and favoritism) may be negatively related to financial performance, while others (e.g., greater commitment to the firm, long term orientation) are positively related to the achievement of financial goals (Martin & Gomez-Mejia, 2016). In short, it is recognized that family firms will show different behaviors depending on the predominant SEW dimensions that serve as point of reference (e.g., Cruz et al., 2016; Martin & Gomez-Mejia, 2016) which in turn will also depend on where the firm is situated on the outcome (labor productivity) distribution (Chrisman & Patel, 2012; Gomez-Mejia et al., 2018), whereas the pursuit of financial objectives mainly drives decision making in nonfamily firms (e.g., profitability or firm value).

2.3. Divergence of socioemotional and financial wealth priorities in high labor productive family firms

Family firms characterized by superior labor productivity, and thus exhibiting stronger organizational efficiency, are assumed to have more financial comfort and funds available (Datta et al., 2005), which allow them to attach a higher weight to SEW in their decision making. Indeed, organizational efficiency and the resulting financial performance are the basis of financial slack in the form of additional cash that can be used to enhance their SEW (Myers, 1984; Martin & Gomez-Mejia, 2016). Therefore, family firms positioned in the *upper* part of the labor productivity distribution (i.e., high productive family firms) are likely, for

example, to increase their family control and to take advantage of their comfortable financial situation by appointing relatives (even if there is no formal job position available) which increases their family involvement and consequently, their SEW (Martin & Gomez-Mejia, 2016).

From a human resources (HR) perspective, family ownership seems to have a negative relationship with the presence of professional HR practices as a consequence of socioemotional wealth considerations (Cruz et al., 2011). For example, family firms tend to demonstrate favoritism toward family members in employee selection (Daspit et al., 2018) and pay practices (Schulze et al., 2001). They can hire and promote family members that do not have the necessary abilities, skills, and experiences required by the job as well as invest in hiring more family members (regardless of their competencies) than essential from an economic efficiency point of view (Cruz et al., 2011; Daspit et al., 2018). In addition, family employees often have privileges and receive perquisites that are not available to other employees (Lubatkin et al., 2005). These features do not have to be problematic for the motivation of nonfamily employees. Indeed, nonfamily employees often seek employment at family firms because of nonmonetary rewards such as (lifetime) job security and an informal work environment characterized by lower dependence on extrinsic controls and strict performance indicators that typically push employees to their labor productivity limits in nonfamily firms (Cruz et al., 2011).

Although favoritism and nepotism towards family members (i.e., a bifurcation bias) may be a common characteristic of family firms (Daspit et al., 2018), it is rational to assume that this idiosyncratic (less efficient) HR behavior in family firms is much easier to justify toward different stakeholders (e.g., passive family shareholders, nonfamily shareholders as well as creditors) *in a situation of high organizational efficiency*, i.e., for family firms at the upper tail of the labor productivity distribution, as these family firms already reach a satisficing level on the economic side. Obviously, nonfamily firms will not suffer from this kind of labor-related family firm inefficiencies.

In sum, building on the notion that the connection between financial objectives and SEW is a two-way relationship, we derive from this literature that strong labor productivity (i.e., being on the upper part of the labor productivity distribution) will provide family firms with financial slack and flexibility to "favor HR strategies that enhance the family's noneconomic utilities and/or prevent SEW losses" (Cruz et al., 2011, p. 188). However, these SEW priorities will bring about a labor productivity disadvantage compared to nonfamily firms *in similar high workforce performance conditions*. All these arguments suggest that family firms positioned in the *upper* part of the productivity distribution will show *diverging* dual wealth concerns (financial and socioemotional), resulting in a *labor productivity discount* vis-à-vis nonfamily firms. Thus, we propose:

Hypothesis 1. *At the upper end of the labor productivity distribution, family ownership impairs productivity performance, giving rise to a labor productivity discount (loss) in family firms relative to nonfamily firms.*

2.4. Convergence of socioemotional and financial wealth priorities in low labor productivity family firms

Family firms exhibiting low labor productivity outcomes, finding themselves positioned in the *lower* part of the productivity distribution (with performances perceived to be far below aspiration levels), might get caught up in a situation of severe financial vulnerability and increased risk of business failure. In the worst case of bankruptcy, a family firm faces a complete loss of SEW related to the family's authority and control over the firm, as well as with the firm's reputation and transgenerational succession (Gomez-Mejia et al., 2010). To reverse such an ill-starred state of affairs, it becomes more attractive for family firms (as opposed to nonfamily firms, where SEW goals are usually absent) to align family goals with financial goals (Chrisman & Patel, 2012). That is, rather than envisaging the short-term pursuit of SEW dimensions of discretionary power, current control, and propagation of perquisites, family owners/managers are more willing to improve organizational efficiency and ensure the firm's competitiveness and durability. After all, this would allow family firms to pass on (long-term) authority and control over a prosperous firm to the family's next generations (Gomez-Mejia et al., 2018; Martin & Gomez-Mejia, 2016).[2] Thus, prior literature suggested that family firms are expected to have a stronger *incentive* to reverse hazard situations than nonfamily firms because they have more combined financial and socioemotional wealth at stake.

Having an incentive to change a threatening situation is not a sufficient condition. Equally important is *how* family firms will cope with the adverse situation and whether they have the resources to do so. Among the available (strategic) options to reverse the hazard situation, *increasing workforce performance* – i.e., more efficient use of labor resources (Barth et al., 2005; Sraer & Thesmar, 2007) – takes a prominent place as (labor) productivity is found to have a significant positive effect on bankruptcy risk reduction (Aleksanyan & Huiban, 2016) and a negative impact on the likelihood of firm exit (Aga & Francis, 2017; Fariñas & Ruano, 2005). Indeed, Cruz et al., (2011, p186) advance that "the SEW perspective posits that any strategic decision-making process in family-owned firms can be explained under the logic of preserving the socioemotional endowment" and further, "Given that HR practices are a reflection of the strategic decisions made by firms (Gomez-Mejia et al., 2012), we contend that family owners will also follow this "decision making process based on a SEW logic" when making decisions pertaining to HRM".

In addition, family firms commonly have unique labor-related resources comprising an employee-friendly working environment that puts them in a winning position over nonfamily firms when it comes to aligning the interests of workers and the company they are working in. Such an organizational caring employee environment will encourage both (internally) recruited family members and (external) nonfamily employees to show pro-organizational behavior under challenging times, i.e., when it really matters to ensure the long-term continuity of the firm (Kang & Kim, 2020). Thus, family firms can achieve higher labor productivity vis-à-vis their nonfamily counterparts in vulnerable times by exploiting their unique human resource advantages. The family business literature pointed toward three routes by which family firms can realize these advantages.

First, employed *family* members usually have an enhanced willingness to exhibit cooperative and collective behavior, considering the typical loyalty- and trust-based relationships and the shared values and goals that exist among family members (Cruz et al., 2011; Dawson, 2012), which contribute to the development of a strong family firm identity (Zellweger et al., 2010). Integrating family elements into the organizational identity allows the family firm to develop unique resources such as survivability capital[3] (Zellweger et al., 2010). In turn, proper management of survivability capital can help sustain the family firm during poor economic times by enhancing labor productivity. Indeed, survivability capital in the form of free labor and loaned labor is less common in nonfamily firms due to the lack of loyalty, strong ties, or long-term commitments along with their employees (Sirmon & Hitt, 2003). It is also important to note that prior research has found that a family firm identity can be extended to nonfamily employees which reduces agency problems and stimulates supportive behavior from all employees (family as well as nonfamily), which is an important asset in turbulent times (Karra et al., 2006; Zellweger et al., 2010). Family firms

[2] The advantages of the long-term pursuit of SEW preservation in family firms show up precisely when a family's ownership (or firm survival) is at stake, e.g., in times of economic downturn. Therefore, family firms are generally more resilient than nonfamily firm, being more able to absorb exogenous shocks (Minichilli et al., 2016).

[3] The pooled resources that family members are willing to loan, contribute, or share for the benefit of the family firm (Sirmon & Hitt, Sirmon & Hitt, 2003).

tend to invest in long-term employee relations with their nonfamily employees (Kang & Kim, 2020) such that family businesses are more willing to make recurrent investments in on-the-job training, helping nonfamily employees to acquire the accumulated tacit knowledge specific to the firm and internalizing the values and objectives of the family owners. This, in turn, is expected to benefit the family firm through a dedicated and more productive workforce that is capable of sustaining the firm's competitive position during periods of financial vulnerability (Duran et al., 2014).

Second, family firms are known to have a comparative advantage in sustaining *implicit labor contracts*. Indeed, family firms are found to hoard labor in economic bad times and hire less in economic good times compared to nonfamily firms (Sraer & Thesmar, 2007) which points toward the existence of implicit employment protection for family firms' employees in crises (Bjuggren, 2015; Ellul et al., 2017). The risk of losing their job is lower for employees in family firms versus non-family firms (Block, 2010; Stavrou et al., 2007). In family-owned and controlled firms, downsizing might not match with family values and goals since it may disrupt harmony, stability, and reputation (Stavrou et al., 2007).

Higher job security in family firms will lead to higher employee morale, commitment, motivation, and loyalty (Bjuggren, 2015; Cruz et al., 2011) which have a positive impact on labor productivity (Sahdev et al., 1999). In addition, Bennedsen et al., (2019) found that employees in family firms show consistently lower absenteeism figures which were found to be a primary driver of labor productivity, i.e., less absenteeism will lead to higher labor productivity.

Third, family firms will "show a higher likelihood of selecting employees on the basis of a person-organization fit rather than a person-job fit" because a focus on SEW preservation calls for employees that support and maintain the values and cultural ethos of the firm which will contribute to a familial, organizational atmosphere, further nurtured by informal communication channels (Cruz et al., 2011, p. 189) and relationship closeness between employees and family owners (Zhu et al., 2013). Relationship closeness at work is found to stimulate feelings of psychological ownership which will increase commitment, job satisfaction (Sieger et al., 2011), stewardship behaviors like dedication and organizational enhancement (Hernandez, 2012; Zhu et al., 2013), and (key) employee retention (Cruz et al., 2011; Zhu et al., 2013) which are essential assets in reaching a higher workforce performance when facing financial vulnerability.

To sum up, the particular working environment in family firms, the investments in employee-friendly policies and workforce empowerment (Kang & Kim, 2020), and the greater job security will put family firms in a better position to reverse situations of vulnerability (Chrisman et al., 2017; Cruz et al., 2011; Gomez-Mejia et al., 2018). It also enables these firms to curtail the problems of shirking, absenteeism, and employee turnover (Bennedsen et al., 2019) and to claim for increased efforts from their employees. Accordingly, these idiosyncratic labor-related family firm features will stimulate the willingness of nonfamily employees to reciprocate in a cooperative way by "going for an additional mile", if needed, to reverse the financial vulnerability and to re-align the family firm's labor productivity with the family owners' aspiration levels (Azoury et al., 2013). All these arguments suggest the existence of a *labor productivity premium* of family firms vis-à-vis nonfamily firms at the lower tail of the labor productivity distribution. Therefore, we propose:

Hypothesis 2. *At the lower end of the labor productivity distribution, family ownership fosters productivity performance, leading to a productivity premium (gain) in family firms relative to nonfamily firms.*

3. Methods

3.1. Sample

This study uses cross-sectional data from the 2015 (biennial) firm-level survey of the Chilean *National Institute of Statistics* (INE, 2016). As a major developing country, Chile is a suitable case for our study since the country has a market-oriented economy characterized by a high level of foreign trade and a reputation of strong financial institutions and policies. Accordingly, the companies present in Chile are fairly similar to those one would expect to see in many developed countries. Moreover, like many other countries globally, Chile sees a strong presence of family firms contributing to its economy (IFERA, 2003; Martínez, 2003).

The original dataset covers information for about 8084 family and nonfamily firms. However, we selected only those firms operating in non-agricultural industries, given the many difficulties typically encountered in measuring productivity inputs and outputs for the agricultural sector. Moreover, firms in the industry of "Financial and insurance activities" (banks, insurance companies, pension funds, etc.) have been excluded because this industry is heavily regulated, while having its own underlying forces and dynamics and specific productivity measures (Martínez et al., 2007; Sraer & Thesmar, 2007). Finally, firms with a government stake (even a small stake) have also been excluded from the sample population. Taking all these adjustments along with the presence of zero-values into account, we were left with an estimation sample containing 6394 firm observations.

3.2. Variables

3.2.1. Definition of family firms

In line with earlier family-business research, we use a binary indicator (dummy) to distinguish family firms from nonfamily firms, following a classification based on family ownership. Specifically, we define family firms as those firms (coded 1) in which either *one family* or a *group of families* owns more than 50% of the company shares, which is the ownership concentration needed to achieve family control (Chua et al., 1999; Martínez et al., 2007). Firms that do not meet these conditions are assigned to the group of nonfamily firms (coded 0).

Based on this definition, we find that 42% of the firms in our sample data set can be designated as family firms, of which more than three-quarters are owned and controlled by a single family. The structure of our data also matches closely with other datasets used in earlier studies within a Chilean context (e.g., Basco & Calabrò, 2016).

3.2.2. Control variables

As regards control variables, we include a core set of firm characteristics other than the prime inputs (capital, labor, and materials/services), including the firm's age (number of years since the formation of the firm), publicly-traded or privately-held, involvement in R&D activities (recruitment of R&D personnel), export intensity (share of export value in sales revenue), membership of a business group, and private foreign equity participation (percentage of equity shares). The average firm age is 18–19 years, with only a small average export intensity of 6%. 2.3% of the domestic firms are publicly-traded (1.3% and 3.1% for family and nonfamily firms, respectively). Thus, a great majority of the firms in our sample population are privately held. Furthermore, 23% of the firms are employing R&D personnel, which can therefore be labeled as potentially innovative firms. Finally, about 10% of the firms report foreign equity participation (only 3% for family firms and 15% for nonfamily firms). An overview of all variables can be found in Table 2.

3.3. Econometric strategy: unconditional quantile regression

Most applied econometric research has been concerned with estimating *average* effects – i.e., knowing how changes in an explanatory variable affect the mean of an outcome variable – rather than with heterogeneous *distributional* effects. Due to its singular focus on the mean, the conventional approach (using OLS or other mean estimators) masks the fact that the distribution of the outcome variable may change in ways not revealed by an examination of averages. Thus, in order to examine what happens to (the shape of) the *entire* distribution of the

Table 2
Overview of variables.

Variable	Detail	Measurement unit
FAM	Ownership indicator, where 1 = family firm, and 0 = nonfamily firm. Family firms are those firms in which either one family or a group of families owns more than 50% of the company share.	Binary indicator
Log(SALES/LABOR) = log(labor productivity)	Sales revenue divided by number of employees.	Log points
Log(ASSETS/LABOR)	Value of tangible assets divided by number of employees.	Log points
Log(MATERIALS/LABOR)	Value of materials (including raw materials, energy) divided by number of employees.	Log points
Log(LABOR)	Number of employees.	Log points
FIRM AGE	Number of years since the formation of the firm.	#Decades
PUBLICLY TRADED	Ownership indicator, where 1 = publicly-traded, and 0 = privately-held	Binary indicator
R&D PERSONNEL	Recruitment of R&D personnel, where 1 = employing R&D personnel, and 0 = otherwise.	Binary indicator
EXPORT/SALES	Share of export value in sales revenue.	Fraction
BUSINESS GROUP	Membership of a business group, where 1 = member of a business group, and 0 = otherwise.	Binary variable
FOREIGN PARTICIPATION	Percentage of equity shares.	Fraction

dependent variable, we use the *unconditional quantile regression* (UQR) estimator proposed by Firpo et al. (2009)[4]. This estimator provides us with a more informative picture (beyond the simple mean) of the varying impact of family ownership on productivity along the productivity distribution.

The UQR estimator builds upon the concept of *re-centered influence function* (RIF). In practice, the RIF is established as a particular transformation of the outcome variable Y for different quantiles of its unconditional[5] distribution. Following Firpo et al. (2009), the RIF of the τ-th quantile of the distribution of Y, for $\tau \in [0,1]$, is defined as

$$\mathrm{RIF}(\mathrm{Y};\ \mathrm{q}_\tau) = \mathrm{q}_\tau + \frac{\tau - \mathrm{I}\{\mathrm{Y} \le \mathrm{q}_\tau\}}{\mathrm{f}_\mathrm{Y}(\mathrm{q}_\tau)}, \tag{1}$$

where a *feasible* RIF can be computed based on the sample data (as the true RIF is not observed) by estimating the *sample* quantile $\widehat{q}_\tau$, estimating the density $f_Y(q_\tau)$ at the point $\widehat{q}_\tau$ using a (Gaussian) kernel method and forming an indicator function $\mathrm{I}\{Y \le \widehat{q}_\tau\}$, which indicates whether the value of the outcome variable Y is below $\widehat{q}_\tau$.

A useful feature of the RIF of the dependent variable Y is that its expectation is equal to the specified quantile; that is, $\mathrm{E}[\mathrm{RIF}(Y;q_\tau)] = q_\tau$. This means that the RIF of Y represents the expected value of the productivity outcome at the τ-th quantile of the productivity distribution, q_τ, even if the RIF of Y is *conditioned* on a key independent variable X and a set of control variables W; that is, $\mathrm{E}_X\{\mathrm{E}[\mathrm{RIF}(Y;q_\tau)|X,W]\} = q_\tau$ (which clearly contrasts with the properties of CQR). Then, if the expectation of $\mathrm{RIF}(Y;q_\tau)$ is modeled as a function of the variable of interest X, and covariates W, we obtain the UQR equation, given by

$$\mathrm{E}[\mathrm{RIF}(\mathrm{Y};\mathrm{q}_\tau)|\mathrm{X},\mathrm{W}] = \mathrm{X}\beta_\tau + \mathrm{W}'\gamma_\tau, \tag{2}$$

where β_τ measures the change in the τ-th quantile of the unconditional distribution of Y resulting from a marginal change in the key variable of interest, X, while holding the other covariates (control variables), W, constant.

3.4. Empirical model specification

To guide our empirical analysis of the effect of family ownership on firm-level productivity, we use an augmented Cobb-Douglas production function. The conventional log-linear specification of the production function in labor-productivity form, augmented with a binary family-ownership indicator, is given by

$$\mathrm{E}\left[ln\left(\frac{\mathrm{Q}}{\mathrm{L}}\right)_i \middle| \mathbf{x}_i\right] = \beta_0 + \beta_K ln\left(\frac{\mathrm{K}}{\mathrm{L}}\right)_i + \beta_M ln\left(\frac{\mathrm{M}}{\mathrm{L}}\right)_i + \beta_L ln\mathrm{L}_i + \beta_{\mathrm{FAM}}\mathrm{FAM}_i + \gamma\{\mathrm{Controls}\}, \tag{3}$$

where Q_i is sales revenues (output) of firm i, and K_i, L_i, and M_i denote the value of tangible assets (capital cost is not surveyed), number of employees (labor), and value of materials (including raw materials, energy), respectively. Our dependent variable is *labor productivity*, defined as the natural logarithm of the Q_i/L_i ratio (output per employee),[6] following earlier work by, e.g., Datta et al. (2005); Bloom and Van Reenen (2010); Bartelsman et al., (2015) and Chrisman et al. (2017). While this measure is frequently used in earlier productivity studies, it is considered particularly suitable here, as labor productivity is largely contingent upon worker ability and effort.

The production function in Eq. (3) includes the usual variables related to the prime K, L, and M inputs. Our key variable of interest is the binary indicator FAM, which identifies the family firms in the sample population. Eq. (3) further includes a set of control variables to reduce the influence of potential confounding factors. Finally, we introduce industry dummies (at ISIC Rev. 4 code level) and region dummies (15 regions) to account for sectoral and regional variations in firm productivity.

The RIF regression model for each quantile of the productivity distribution, in accordance with Eq. (2), is specified as

$$\mathrm{E}\left\{\mathrm{RIF}\left[ln\left(\frac{\mathrm{Q}}{\mathrm{L}}\right)_i;\mathrm{q}_\tau \middle| \mathbf{x}_i\right]\right\} = \beta_{\tau,0} + \beta_{\tau,\mathrm{K}} ln\left(\frac{\mathrm{K}}{\mathrm{L}}\right)_i + \beta_{\tau,\mathrm{M}} ln\left(\frac{\mathrm{M}}{\mathrm{L}}\right)_i + \beta_{\tau,L} ln\mathrm{L}_i + \beta_{\tau,\mathrm{FAM}}\mathrm{FAM}_i + \gamma_\tau\{\mathrm{Controls}\} \tag{4}$$

where the coefficient on FAM, $\beta_{\tau,\mathrm{FAM}}$, measures the difference in labor productivity between family and nonfamily firms *at the τ-th quantile* of the unconditional productivity distribution representing the whole sample population of family and nonfamily firms under study.

[4] It should be emphasized that the widely-used *conditional quantile regression* (CQR) estimator, proposed by Koenker and Bassett (1978), is *not* appropriate for answering our central research questions (and therefore not used here), as the latter are clearly posed in terms of the entire, *unconditional* productivity distribution, representing all the firms in the population, rather than in terms of the distribution associated with a given set of values of the covariates, showing only the heterogeneity *within* selected *subgroups* of firms in the population. Moreover, within the CQR framework any change in the covariates would redefine the quantiles of the unconditional distribution of the outcome variable and, therefore, complicate the interpretation of the CQR results. Good and accessible expositions of the difference between UQR and CQR can be found in, e.g., Mueller (2015); Porter (2015); Peeters et al., 2017.

[5] In this paper, the terms "quantiles" and "percentiles" are used interchangeably, even though, technically, percentiles are only one kind of quantiles (as are deciles, quartiles, quintiles, etc.).

[6] Some authors use the ratio of value added (rather than sales revenue) to number of employees as a measure of labor productivity (e.g., Damiani et al., 2018; Neckebrouck et al., 2018). We found that the two measures are highly correlated ($r = 0.80$) and the results for both measures are similar. Moreover, the sales revenue-based productivity measure exhibits greater dispersion, hence returning more reliable results.

4. Results

4.1. Baseline results

Table 3 presents basic descriptive statistics regarding the observed characteristics of the firms in our sample population, both for the full sample and separately for the subgroups of family and nonfamily firms. Our focus is on the productivity differences between family and nonfamily firms. As indicated in (the second line of) column 5 of Table 3 (Log(SALES/LABOR)), the average productivity disadvantage of family firms relative to their nonfamily counterparts is -20.3% ([exp(−0.252) – 1]× 100). Correlations[7] are included in Table 4. We also see in this table that FAM has a negative correlation with our labor productivity measure.

Table 5 presents the baseline results of our cross-sectional study of productivity differences between family and non-family firms. Column 1 of this table reports the estimates obtained using conventional OLS, while columns 2–6 present the estimated effects returned by RIF-OLS (UQR) for five different quantiles of the productivity distribution (τ = 0.10, 0.25, 0.50, 0.75, 0.90).

In addition to the tabulated results in Table 5, a sequence of point estimates has been visualized in Fig. 1 by means of a quantile plot for 19 quantiles of the distribution (τ = 0.05, 0.10,…, 0.95), along with the corresponding point-wise 95% confidence intervals.

In what follows, we focus on the outcomes related to the coefficient on the family-ownership indicator FAM.

4.2. OLS results – point estimate of average effect

The conventional OLS results are presented in column 1 of Table 5. They serve as a benchmark against which the productivity gap between family and nonfamily firms at other points of the distribution can be compared. The percentage gap in labor productivity between family and nonfamily firms is measured as $\widehat{\Delta} = [exp(\widehat{\beta}_{FAM}) - 1]\times 100$. The estimated coefficient on the indicator is -0.046 (significant at the 1% level), which means that *on average* labor productivity in family firms is estimated to be 4.5% lower than that of nonfamily firms due to ownership type, other things equal. This *average* outcome is in line with findings in previous studies, such as Chrisman et al. (2017) for the United States and Neckebrouck et al. (2018) for Belgium, both of which reported *lower* productivity for family firms at the *mean* compared to nonfamily firms due to ownership type. However, even though this estimate is negative and statistically significant (at the 1% level), a single-point OLS estimator is actually bound to do a poor job in revealing the expected non-uniform labor productivity gaps between family and nonfamily firms in the tails of the productivity distribution.

4.3. UQR results – point estimates of quantile effects

We now turn to our key results obtained using the UQR estimator for different quantiles of the labor productivity distribution, which are more informative about the distributional impacts of family ownership than the simple average effect based on conventional mean regression. The quantile estimates obtained using RIF-OLS are presented in columns 2–6 of Table 5 and are further visualized by means of the quantile plot presented in Fig. 1. The quantile plot clearly shows that the productivity differences between family-owned relative to nonfamily firms change in a monotonically decreasing way from positive to negative as one moves upward along the productivity distribution, with a sign reversal occurring around the median.

The estimates for the different quantiles of the productivity distribution are to be interpreted as follows. Family firms positioned in the lower tail of the productivity distribution, say, at the 10th percentile, tend to exhibit a productivity advantage of 15.5% ([*exp*(0.144) - 1] × 100) due to family ownership relative to comparable nonfamily firms. However, at the upper tail of the distribution, say, at the 90th percentile, the picture is reversed, where family firms have a tendency to show a productivity disadvantage of 28.1% ([*exp*(-0.330) - 1] × 100) compared to nonfamily firms. Conversely, family ownership does not seem to matter at the *median* of the productivity distribution, as the point estimate at the 50th percentile is not significantly different from zero.[8]

Lastly, the RIF-OLS estimate in column 7 of Table 5 (−0.366, significant at 1% level) indicates that family ownership significantly reduces the variance of the productivity distribution. That is, family firms display a narrower spread of their productivity outcomes relative to nonfamily firms.

4.4. Blinder-Oaxaca decomposition of productivity gaps

To further assess the relative importance of the underlying sources of the overall productivity disparities between family and nonfamily firms, we present the results of "twofold" Blinder-Oaxaca (BO) decompositions (Blinder, 1973; Firpo et al., 2018; Oaxaca, 1973; Rios-Avila, 2020) in the panels (b) and (c) of Table 5. The first component measures the "explained" part of the overall productivity gap, which is due to differences in observed firm characteristics (i.e., measured by the covariates included in the model such as factor inputs, industry, region, etc.). The second component refers to the "unexplained" part, which is due to idiosyncratic tacit family firm features such as unobserved "implicit labor contracts" and socioemotional wealth preferences present in family firms but not in nonfamily firms.

Taking the approximate BO decompositions in panel (b) as the baseline reference, we see that the productivity shortfall of family firms in the lower tail of the productivity distribution (10th percentile) due to differences in firm characteristics (-0.097), significant at the 1% level) turns out to be more than offset by the differential productivity returns (gain/premium or loss/discount) due to unobservable idiosyncratic family firm factors (0.144, significant at the 1% level), giving rise to a *net* overall productivity gain (0.047) of family firms relative to nonfamily firms – be it not significantly different from zero – *after controlling for* differences in the distribution of observable firm characteristics. Conversely, in the upper tail of the productivity distribution (90th percentile), both components contribute negatively to the overall labor productivity discount (-0.754, significant at the 1% level) of family firms relative to their nonfamily counterparts, where the explained (-0.424, significant at the 1% level) and unexplained (−0.330, significant at the 1% level) components are responsible for roughly 60% and 40%, respectively, of the size of the overall productivity gap.

In sum, the preceding analysis has shown that there exist two

[7] We also tested for multicollinearity by calculating the VIFs. The highest VIF was 5.97, besides one of the regional dummies (14.14). Accordingly, multicollinearity is not considered to be a concern in this study.

[8] The null hypothesis of homogeneous productivity differences throughout the distribution is firmly rejected. Using a bootstrap procedure based on 400 replications, we formally tested the equality of the point-wise estimates of the coefficient on the family-ownership FAM indicator at the quantiles τ = 0.10, 0.50, and 0.90 of the productivity distribution. In so doing, we found that the corresponding 90–10, 90–50, and 50–10 differentials are strongly significant (at the 1% level), where $\widehat{\beta}_{0.90} - \widehat{\beta}_{0.10} = -0.474$ ($t = -5.68$); $\widehat{\beta}_{0.90} - \widehat{\beta}_{0.50} = -0.340$ ($t = -4.68$); and $\widehat{\beta}_{0.50} - \widehat{\beta}_{0.10} = -0.134$ ($t = -2.70$). Furthermore, the 90–50 differential is larger (in absolute value) than the 50–10 differential, which indicates that the distribution for nonfamily firms is more heavily (positively) skewed than that for family firms. The same conclusions can also be drawn by noticing that the 95% confidence intervals of the point-wise quantile estimates at the two ends of the productivity distribution, shown in Fig. 1, do not overlap, nor do they overlap with the 95% confidence interval for the single-point OLS estimate.

Table 3
Descriptive Statistics.

Variable	Measurement unit	Mean all firms (1)	S.D. all firms (2)	Mean family firms (3)	Mean nonfamily firms (4)	Difference between (3) and (4) (5)
FAM	Binary indicator	0.424	0.494	1	0	
Log(SALES/LABOR) = log(labor productivity)	Log points	8.537	1.334	8.392	8.644	− 0.252 * **
Log(ASSETS/LABOR)	Log points	8.534	1.784	8.345	8.673	− 0.328 * **
Log(MATERIALS/LABOR)	Log points	7.566	1.981	7.458	7.646	− 0.188 * **
Log(LABOR)	Log points	6.173	1.774	6.063	6.253	− 0.190 * **
FIRM AGE	#Decades	1.855	1.420	1.926	1.803	0.123 ***
PUBLICLY TRADED	Binary indicator	0.023	0.151	0.013	0.031	− 0.018 * **
R&D PERSONNEL	Binary indicator	0.232	0.422	0.222	0.239	− 0.017
EXPORT/SALES	Fraction	0.062	0.209	0.054	0.067	− 0.013 * *
BUSINESS GROUP	Binary variable	0.300	0.458	0.225	0.356	− 0.131 * **
FOREIGN PARTICIPATION	Fraction	0.098	0.288	0.032	0.147	− 0.115 * **
N		6394		2710	3684	
% of observations		100.0%		42.4%	57.6%	

*** Significant at 1%, * * 5%.
The statistics presented in the table are for the *estimation* sample used for the baseline regressions (see Table 5). Labor productivity is the dependent variable in the econometric estimations implemented in this study. FAM is a binary ownership indicator, where 1 = family firm, and 0 = nonfamily firm. The original (raw) monetary variables are expressed in Chilean pesos (CLP).

Table 4
Correlation Table.

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1)	Log(SALES/LABOR)	1										
(2)	FAM	-0.093 * **	1									
(3)	Log(ASSETS/LABOR)	0.757 * **	-0.091 * **	1								
(4)	Log (MATERIALS/LABOR)	0.821 * **	-0.047 * **	0.582 * **	1							
(5)	Log(LABOR)	-0.129 * **	-0.053 * **	-0.082 * **	-0.070 * **	1						
(6)	PUBLICLY TRADED	0.117 * **	-0.060 * **	0.160 * **	0.081 * **	0.116 * **	1					
(7)	FIRM AGE	0.059 * **	0.043 * **	0.136 * **	0.072 * **	0.231 * **	0.113 * **	1				
(8)	R&D PERSONNEL	0.036 * **	-0.020	0.040 * **	0.027 * *	0.190 * **	0.037 * **	0.062 * **	1			
(9)	EXPORT/SALES	0.195 * **	-0.029 * *	0.170 * **	0.181 * **	0.104 * **	0.033 * **	0.043 * **	0.104 * **	1		
(10)	BUSINESS GROUP	0.258 * **	-0.140 * **	0.340 * **	0.189 * **	0.323 * **	0.135 * **	0.048 * **	0.099 * **	0.113 * **	1	
(11)	FOREIGN PARTICIPATION	0.224 * **	-0.197 * **	0.203 * **	0.181 * **	0.128 * **	0.047 * **	-0.009	0.033 * **	0.179 * **	0.260 * **	1

* ** Significant at 1%, * * 5%, * 10%.

conceptually distinct BO components. These two distinct BO components are different and increasingly responsible for the overall productivity shortfall of family firms relative to nonfamily firms as one moves upward along the unconditional productivity distribution. Furthermore, the pattern that we find along the distribution for the unexplained component provides strong support for our theoretical argumentation that the varying tacit labor-related bundle of family firm features (i.e., unobservable implicit labor contracts, tacit workplace features, and SEW preferences) plays an important role in explaining labor productivity differences in family versus nonfamily firms across the labor productivity distribution.

4.5. Robustness checks

4.5.1. Family firm heterogeneity – CEO ownership involvement

Family business studies often distinguish between family firms with different types of CEOs. As we have ownership data of the CEO, we classify the family firms into four distinct groups: (a) family firms with a CEO having 0% ownership share, (b) family firms with a CEO having 0% < ownership share ≤ 50%, (c) family firms with a CEO having 50% < ownership share < 100%, and (d) family firms with a CEO having 100% of the shares. We created a dummy variable for each group and estimated the model specification in Eq. (4) again, replacing the family firm dummy with these four new dummies, hence appointing nonfamily firms to act as the reference group. Although we do not have information about whether the CEO is a family member or not, it is rationale to assume that group (a) contains mainly nonfamily CEOs (*professionally managed family firms*), group (d) mainly consists of founder-managed family firms, while the other two groups contain later generation family firms of which group (b) will have potentially greater involvement of multiple family members than group (c). Accordingly, these groups largely resemble – although not perfect - the family firm classification of Sraer and Thesmar (2007) (founder-managed (group (d)), heir-managed (group (b/c)), and professionally managed family firms (group (a))).

Table 5
Results for Baseline Models – Point Estimates and Blinder-Oaxaca (BO) Decompositions.

	OLS	RIF-OLS (UQR)					
	Mean	q10	q25	q50	q75	q90	Variance
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel (a): Point estimates for mean and selected quantiles of productivity distribution							
FAM	− 0.046 * **	0.144 * **	0.073 * **	0.010	− 0.129 * **	− 0.330 * **	− 0.366 * **
	(−3.09)	(3.62)	(2.74)	(0.37)	(−3.52)	(−5.15)	(−4.84)
Log(ASSETS/LABOR)	0.289 * **	0.199 * **	0.175 * **	0.226 * **	0.340 * **	0.556 * **	0.406 * **
	(23.51)	(10.91)	(14.31)	(16.13)	(17.75)	(16.39)	(8.41)
Log(MATERIALS/LABOR)	0.378 * **	0.296 * **	0.252 * **	0.349 * **	0.412 * **	0.564 * **	0.310 * **
	(20.80)	(16.61)	(18.84)	(18.70)	(16.48)	(15.31)	(5.87)
Log(LABOR)	− 0.045 * **	0.033 * *	0.023 * *	− 0.014	− 0.083 * **	− 0.185 * **	− 0.239 * **
	(−7.82)	(2.32)	(2.50)	(−1.48)	(−7.08)	(−8.32)	(−8.03)
PUBLICLY TRADED	0.098	− 0.162 *	− 0.095	0.060	0.070	0.476	0.434
	(1.38)	(−1.77)	(−1.33)	(0.61)	(0.47)	(1.46)	(0.99)
FIRM AGE	− 0.019 * **	− 0.033 * *	− 0.019 * *	0.000	− 0.002	− 0.028	0.008
	(−3.05)	(−2.28)	(−2.03)	(0.01)	(−0.12)	(−1.03)	(0.26)
R&D PERSONNEL	0.045 * **	0.134 * **	0.087 * **	0.024	0.040	− 0.051	− 0.119
	(2.77)	(3.19)	(2.87)	(0.72)	(0.91)	(−0.65)	(−1.25)
EXPORT/SALES	0.189 * **	− 0.209 * **	− 0.053	0.161 * *	0.206 *	0.814 * **	0.664 * **
	(5.55)	(−3.49)	(−1.03)	(2.49)	(2.12)	(3.61)	(2.86)
BUSINESS GROUP	0.047 * *	− 0.194 * **	− 0.060 *	0.017	0.123 * *	0.455 * **	0.683 * **
	(2.13)	(−4.31)	(−1.94)	(0.48)	(2.52)	(4.93)	(6.57)
FOREIGN PARTICIPATION	0.112 * **	− 0.053	− 0.025	0.210 * **	0.393 * **	0.043	− 0.150
	(3.76)	(−1.08)	(−0.64)	(4.22)	(4.94)	(0.26)	(−0.81)
INDUSTRY dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
REGION dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	6394	6394	6394	6394	6394	6394	6394
N_{FAM}	2710	2710	2710	2710	2710	2710	2710
N_{NFAM}	3684	3684	3684	3684	3684	3684	3684
R-square	0.810	0.254	0.381	0.530	0.506	0.393	0.195
Panel (b): Approximate (no reweighting) BO decompositions of overall productivity difference (Blinder, 1973; Oaxaca, 1973)							
Overall productivity gap	− 0.252 * **	0.047	− 0.043	− 0.168 * **	− 0.390 * **	− 0.754 * **	
Explained (observed firm characteristics)	− 0.206 * **	− 0.097 * **	− 0.116 * **	− 0.178 * **	− 0.261 * **	− 0.424 * **	
Unexplained (returns on unobservables)	− 0.046 * **	0.144 * **	0.073 * **	0.010	− 0.129 * **	− 0.330 * **	
Panel (c): Reweighted BO decompositions of overall productivity difference (Firpo, Fortin, & Lemieux, 2018)							
Overall productivity gap	− 0.252 * **	0.038	− 0.036	− 0.164 * **	− 0.406 * **	− 0.741 * **	
Explained (observed firm characteristics)	− 0.206 * **	− 0.086 * **	− 0.118 * **	− 0.197 * **	− 0.312 * **	− 0.455 * **	
Unexplained (returns on unobservables)	− 0.046 * **	0.124 * **	0.082 * *	0.033	− 0.098 * *	− 0.286 * **	

Robust t-statistics in parentheses. * ** Significant at 1%, * * 5%, * 10%.
The dependent variable for the OLS estimation in column 1 is the log of labor productivity (logLP). The RIF-OLS regressions in columns 2–7 use the RIFs of logLP as the dependent variable. The Stata commands used for the mean and quantile regressions are *regress* (OLS, column 1) and *rifreg* (RIF-OLS, columns 2–7). The Stata commands used for the BO decompositions are *oaxaca* (Jann, 2008) and *oaxaca_rif* (Rios-Avila, 2020) in panel (b) and panel (c), respectively. The point estimates of the coefficients on the FAM group indicator returned by the RIF-OLS regressions in panel (a), which are replicated in bottom row of panel (c), provide local approximations of the BO decompositions, since the impact of changes in the counterfactual distributions of covariates (firm characteristics) may be poorly approximated by the RIF-OLS regressions (Firpo et al., 2018). To give a sense of the approximation errors, we also provide the BO decompositions (panel (c)) obtained using the *oaxaca_rif* Stata command with reweighting option, which allows for the creation of a proper counterfactual productivity distribution. Both the approximate and reweighted unexplained BO components capture the portions of the overall productivity differences between family and nonfamily firms due to differences in unobserved variables, given the same (counterfactual) distribution of covariates other than ownership type (family firm vs. nonfamily firm). The specification and reweighting errors have not been reported in panel (c) to save space. Note that the *R*-squares are not comparable across the columns in the above table, given that the dependent variables in the UQRs are based on the RIFs of logLP.

Fig. 2 shows that all four types of family businesses are homogenous with respect to labor productivity compared to nonfamily firms at the upper tail of the distribution (i.e., negative effect) which provides consistent support for H1. At the lower tail of the distribution, we find a significant positive effect in groups (a) and (b), with group (b) providing the strongest effect. This finding is consistent with the arguments of H2. Although imperfect, this test provides credence to our proposed theoretical drivers of labor productivity differences among family and nonfamily firms. Indeed, group (b) is likely to be dominated by heir-managed family firms with multiple family members as owners or managers. Prior research found that "the involvement of multiple family members could potentially increase the families' overall SEW" (Leitterstorf & Rau, 2014, p. 756) and that "dynastic management endows the family with enough credibility to enforce implicit contracts" (Sraer & Thesmar, 2007, p. 729) like employment insurance. Therefore, in support of our theoretical arguments, we find the strongest labor productivity differences for family firms versus nonfamily firms in group (b).

4.5.2. *Endogeneity of family ownership – IV estimations*

A legitimate concern may be raised about the potential endogeneity of family ownership, as we have so far treated the binary ownership indicator FAM as an exogenous variable. The reason for this concern is the obvious fact that family ownership is not random but rather the outcome of a deliberate decision by entrepreneurs to *self-select* into their preferred choices, which means that the family-ownership indicator (FAM) is *endogenous*. As a result, the OLS and RIF-OLS estimates reported in Table 5 are likely to be marred by endogeneity biases, due to omitted variables – i.e., unobserved variables that (a) are systematically related to family ownership, and (b) have an influence on the firm's labor productivity performance.

To overcome this endogeneity concern, we apply an instrumental-variable (IV) estimator as an additional robustness check. In effect, IV estimations represent an interesting way of testing the significance of implicit family-centered preferences and goals in explaining (ex-post) productivity outcomes. But then another difficulty crops up, namely

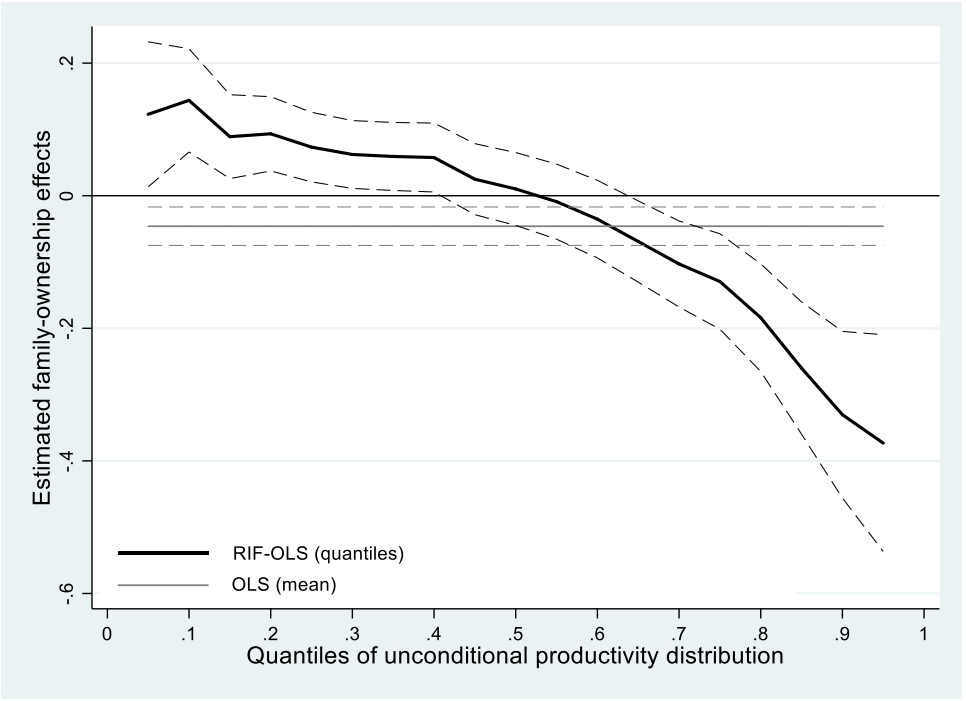

Fig. 1. Estimated Family-Ownership Effects Along the Labor Productivity Distribution. The black curve represents the estimated productivity effects due to family-ownership (coefficients on binary FAM indicator) for 19 quantiles of the unconditional productivity distribution. The grey horizontal line represents the family-ownership effect at the mean of the distribution (average effect). The dashed lines represent the 95% confidence intervals.

finding an "appropriate" instrument that is both relevant and exogenous. Given the difficulties of finding appropriate "external" instruments (due to data limitations and lack of any theoretical guidance), we were forced to make a bold choice: namely, we take ownership status in the previous period 2013 (FAM_{2013}) as an "internal" instrument for the (potentially) endogenous ownership indicator FAM in the base period 2015. Even though this instrument is highly informative on (or predictive of) FAM_{2015}, with a partial correlation equal to 0.53 (given the tenacious nature of family ownership), it is unlikely to be a "perfectly exogenous" instrument – an issue that will be further addressed shortly. Either way, IV estimates obtained using an "imperfect" (Nevo & Rosen, 2012; Clarke & Matta, 2018), "semi-endogenous" (Larcker & Rusticus, 2010), or "partly exogenous" (Bennedsen et al., 2007) instrument are preferred to OLS estimates.

Armed with this instrument, we implement the IV estimations using the subsample of 3251 firm-level observations contained in a combined two-period (2013–2015) data set, constructed by one-to-one merging of the data from the 2013 and 2015 (rotating) surveys. We apply the IV estimator for *quantile treatment effects* (IVQTE), proposed by Frölich and Melly (2010, 2013), to estimate *local average treatment effects* (LATEs) for a subset of the population. For the purpose of comparison, we also apply a standard (2SLS) IV estimator aimed at identifying the *average treatment effect* (ATE) for the entire population.[9]

The results obtained using IV_ATE and IVQTE_LATE are presented in column 1 and columns 2–6, respectively, of Table 6. Inspection of the IVQTE results points instantly to the *strengthened* effects of family ownership on productivity at both ends of the productivity distribution, which would produce a slight clockwise rotation of the quantile plot relative to the one shown in Fig. 1. This finding is not surprising, though, considering that ownership decisions taken by compliers are most likely to be based on their knowledge of the benefits associated with their choices. In other words, our finding tells us that the subgroup of the compliers are precisely those firms that are gaining the most by a continuance of their ownership structure.

Despite this stimulating finding, we are aware of the fact that concerns about the validity of our identification strategy may still be present, as the exogeneity of our instrument can be questioned based on the suspicion that family ownership in 2013 is just as endogenous as that in 2015 – and thus also correlated with the error term in the structural equation (which, unfortunately, cannot be formally tested in the case of a sole instrument). To mitigate these remaining concerns, we perform a test proposed by Nevo and Rosen (2012). This test is based on the use of "imperfect" instrumental variables (IIV), which is capable of providing bounds on the possible values of our parameter of interest (β_{FAM}) under two weaker-than-traditional assumptions. The first assumption ("Assumption 3″) asserts that the (potentially) endogenous family-ownership indicator X (FAM_{2015}) and the instrument Z (FAM_{2013}) are *correlated in the same direction* with the error term u in the structural equation ($\rho_{Xu}\rho_{Zu} \geq 0$), while the second ("Assumption 4″) adds the condition that the instrument Z is *less endogenous* than *X* ($|\rho_{Zu}| \leq |\rho_{Xu}|$). Both assumptions are considered reasonably realistic in the present empirical application.

For the purpose of estimation, we ran a set of OLS/RIF-OLS regressions using the same subsample of panel data as the one used for the above IVQTE estimations. The results of these regressions, which have been reported extensively in Table A.1 and visualized in Figure A.1 of online Appendix A, yield a fairly coherent picture and are informative in several respects, which is essential for the credibility of our results.

The relatively tight bounds on the plausible estimates (under Assumptions 3 and 4), along with the implied 95% confidence intervals, tell us that (a) the estimates obtained based on the OLS/RIF-OLS regressions are invariably *outside* the IIV bounds on our parameter of

[9] It is a well-known result that IVQTE estimators return estimates of local average treatment effects (LATEs) for the subset of compliers only, rather than for a randomly selected firm (see also Bennedsen et al., 2007, p. 664). In the present case, compliers are firms among the "non-switchers" whose estimated probability of being a family (nonfamily) firm in the base period 2015 is correlated with a higher probability of having been also a family (nonfamily) firm in the previous period 2013, after removing "always-takers" and "never--takers" (Angrist et al., Angrist et al., 1996).

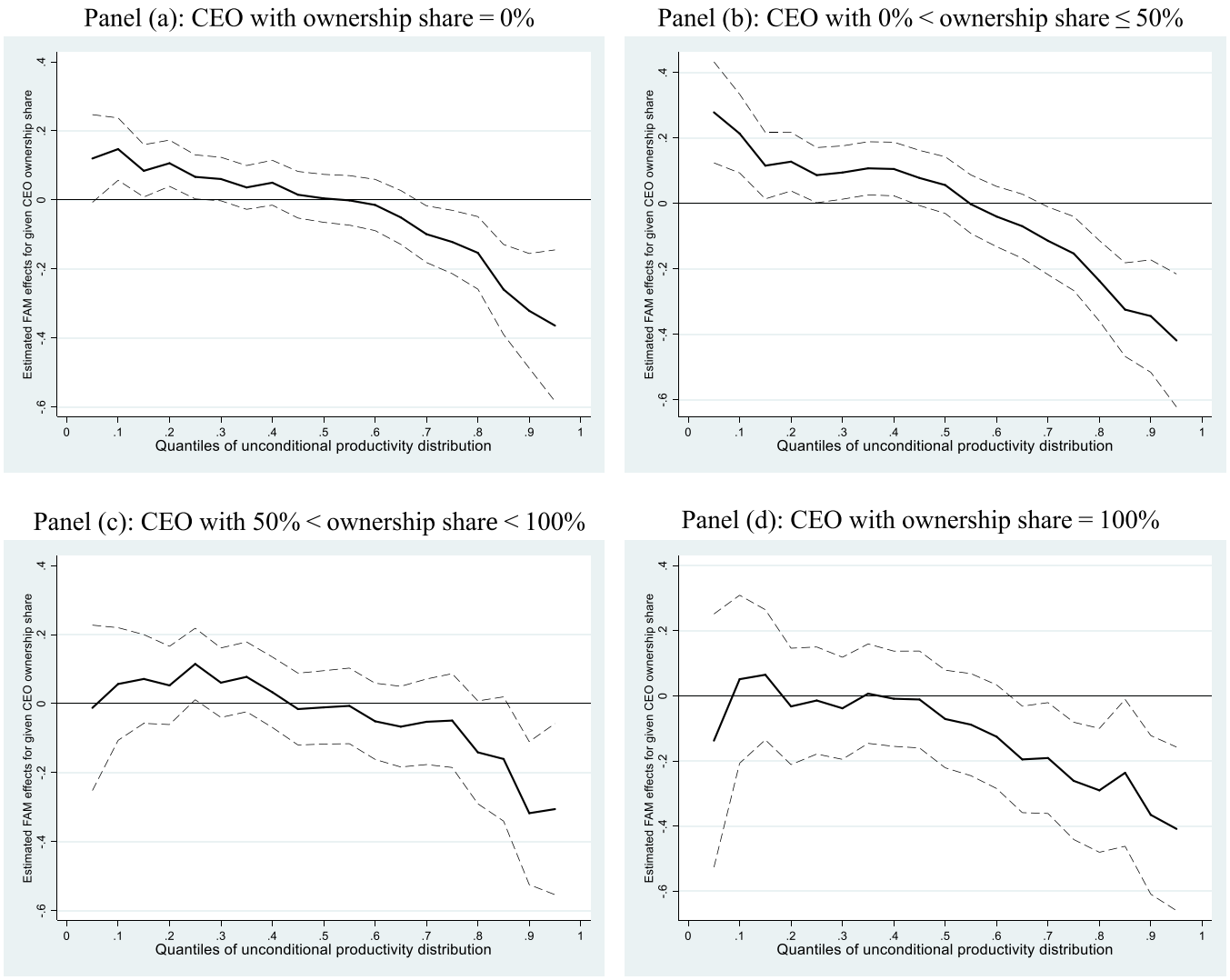

Fig. 2. Estimated Family-Ownership Effects for Family Firms Under Varying CEO Ownership-Participation Regimes. The (fat) solid curves represent the estimated productivity effects of family ownership for family firms under varying CEO ownership participation regimes, across the quantiles of the productivity distribution, obtained using the RIF-OLS estimator (Firpo et al., 2009). The dashed curves represent the corresponding 95% confidence intervals. Panel (a) shows the estimated family-ownership effects for family firms, where the CEO has 0% ownership share relative to nonfamily (no family-ownership) firms; the panels (b), (c), and (d) do the same for family-owned firms, where the CEO has, respectively, between 0% and 100% ownership share.

interest; (b) the estimates obtained using OLS/RIF-OLS and IV/RIF-IV – as well as those obtained using the IVQTE estimator[10] – are well within the ranges implied by the corresponding 95% confidence intervals; (c) the RIF-IV estimates in the tails on both sides of the productivity distribution are larger (in absolute value) than the RIF-OLS estimates, and are also significantly different from one another (as well as from the mean). Taken together, the results of the Nevo-Rosen validity tests are reassuring, given that they are confirmative of our expectations that family firms have a significant productivity advantage (disadvantage) attributable to family ownership at both sides of the productivity distribution. These IV results suggest that correcting for endogeneity brings about enhanced family-ownership productivity effects at both ends of the productivity distribution, hence lending additional support to our hypotheses H1 and H2.

However, a rather unexpected result emerging from the estimated IV estimations is that none of the estimated coefficients ($\widehat{\theta}$) on the reduced-form residuals ($\widehat{\nu}$) is significantly different from zero (the 90th-percentile coefficient is only marginally significant).[11] This means that endogeneity does *not* seem to be a big issue, statistically speaking, at least not in the present application (which could partly be explained by the fact that the combined sample is almost half the size of the original estimation sample). Nevertheless, we find (a) that the IV estimates change in the expected direction compared to the OLS estimates and (b) that the changes are pretty substantial in a *practical* (quantitative) sense: the RIF-IV estimates at the 10th and the 90th quantiles of the productivity distribution (column 2 of Table A.1) are, respectively, about 40–60% higher (in absolute value) than the RIF-IV estimates (column 1 of Table

[10] The fact that the estimated (marginal) LATEs returned by IVQTE (Table 6) are very similar to the estimated (average) ATEs obtained using the RIF-IIV regressions (Table A.1 of Appendix A). This enhances our confidence in the generalizability of the estimated LATEs to a larger population than just the subset of compliers.

[11] This finding is also in line with the endogeneity test result reported in panel (b) of Table 6.

Table 6
Robustness Checks – Results for IV Estimations – Two-Period Panel 2013–2015.

	IV_ATE	IVQTE_LATE				
	2sls	q10	q25	q50	q75	q90
	(1)	(2)	(3)	(4)	(5)	(6)
Panel (a): Point estimates						
FAM	− 0.105 * *	0.279 * *	0.074	− 0.028	− 0.250	− 0.695 * *
	(−2.51)	(2.45)	(0.88)	(−0.25)	(−1.48)	(−2.53)
N	3251	3251	3251	3251	3251	3251
N_{FAM}	1354	1354	1354	1354	1354	1354
N_{NFAM}	1897	1897	1897	1897	1897	1897
$N_{non\text{-}switchers}$	2575	2575	2575	2575	2575	2575
$N_{switchers}$	676	676	676	676	676	676
$N_{compliers}$		1331	1331	1331	1331	1331
Panel (b): Endogeneity test						
F test (H_0: FAM = exogenous)	0.428					
[p-value]	[0.513]					

Bootstrapped t-statistics (based on 400 replications) are given in parentheses.
* * Significant at 5%.
The dependent variable is the log of labor productivity (logLP). Among the switchers, 332 nonfamily firms have become family firms, while 334 family firms have become nonfamily firms. Among the non-switchers, 1022 family firms have remained so, while 1553 nonfamily firms have remained so. Recall that family firms have been defined here as those firms where one or more families have a majority share in the ownership (i.e., more than 50% of the shares). The number of compliers (which cannot be identified individually) was estimated at 51.7% of the group of non-switchers, or 40.9% of the sample population in the panel. (Defiers are always excluded, by assumption). The Stata commands used for estimation are: *ivtreatreg (direct-2sls)* in column 1 (Cerulli, 2014) and *ivqte* in the columns 2–6 (Frölich & Melly, 2010). The ownership indicator FAM (FAM_{2015}) is instrumented using the two-years lagged ownership type FAM_{2013}. In the case of the average treatment effect (ATE), the instrument affects all firms equally in the sample population, whereas in the case of the local average treatment effects (LATE), the instrument affects compliers only. The test results reported at the bottom of the table tell us that the null hypothesis of exogeneity (no endogeneity or selection-on-unobservables) cannot be rejected on the basis of the IV_ATE estimations.

A.1).[12]

In concluding this section on endogeneity, it is worth pointing to an attractive feature of the quantile IV estimator to reduce omitted variable biases due to unobserved (multifaceted) firm-specific heterogeneity. While many researchers would raise concerns about using cross-sectional data and therefore prefer conducting a longitudinal analysis using the familiar fixed-effects (FE) estimator to assert causality, it should be emphasized that the FE estimator is not a panacea. Several limitations of FE[13] have been discussed in Hill et al.,(2019) and Allison et al., (2017), among others. As a result, we are not convinced that the use of FE serves our specific purposes. Conversely, Wooldridge (2015) points out that changing the focus on quantiles (rather than the mean) of the distribution of the outcome variable "often restricts the amount of heterogeneity that one may have in a model" (p. 443) at any given quantile of interest (see also Sasaki, 2015). Obviously, this feature represents a major advantage of our much less familiar quantile estimator, which is consistent with the argument that family firms *within* a given segment (i.e., lower or upper part) of the unconditional productivity distribution are very likely to share fairly similar (unobserved) preferences and workplace behaviors, while at the same time allowing for differential family firm preferences and conducts *across* different segments of the distribution.

5. Discussion

Every family business faces difficult and sometimes agonizing choices because of the many paradoxes—or "Janus-faced" preferences (Miller et al., 2015) the family has to cope with (e.g., the choice between serving business or family interests), which are typically alien to nonfamily firms. Recent studies suggested that these dual wealth concerns (socioemotional and financial wealth) could converge or diverge depending on whether the family firm faces a situation of vulnerability or prosperity (Gomez-Mejia et al., 2018; Martin & Gomez-Mejia, 2016). In addition, family firms have several specific and implicit labor characteristics (e.g., higher job security, lower absenteeism) (Bennedsen et al., 2019) that could be vital resources under vulnerability conditions. We theorize that these idiosyncratic labor-related family firm characteristics have an impact on the labor productivity differences between family and nonfamily firms. Accordingly, our objective was to find out whether labor productivity differences between family and nonfamily firms could be non-uniform when comparing firms located on different parts of the labor productivity distribution. Using a unique dataset of Chilean firms, our findings show that family ownership generates a relative productivity advantage at the lower end of the labor productivity distribution, while bringing about a discount at the upper tail of the distribution. Stated technically, the productivity distribution for family firms has thinner tails, or exhibits less dispersion, than that of nonfamily firms.

These findings have important implications for extant literatures. First, our study contributes to the labor productivity literature by reconciling the contrasting (agency vs. stewardship) theoretical arguments on labor productivity differences between family and nonfamily firms building on the SEW perspective. Prior literature mainly used arguments from an agency or stewardship perspective. Agency theory suggests a negative relationship between family ownership and labor productivity (e.g., Chrisman et al., 2017; Neckebrouck et al., 2018), while stewardship theory predicts a positive effect of family ownership on labor productivity (e.g., Barth et al., 2005; Bassanini et al., 2013; Cruz et al., 2011; Sirmon & Hitt, 2003). In contrast, we use arguments from SEW theory to reconcile these two seemingly opposing theories.

[12] We also examined to what extent the IV results affect the BO decomposition of the productivity gaps between family and nonfamily firms along the productivity distribution. A detailed account of the results is given in Appendix B (online appendix) to this paper, along with a visual illustration (by means of a simulation) of the way in which the explained and unexplained BO components alter the location and the shape of the productivity distribution of family firms relative to that of nonfamily firms.

[13] Some major limitations of FE are identification of the (unexplained) productivity gap between family and nonfamily firms exclusively based on the constrained within (time) variation of the firm-level FAM indicator, attenuation biases due to a small number of panels (small T, typically causing Type-II errors), and neglect of (unobserved) time-varying confounders correlated with the FAM indicator, to name only a few.

While classical agency and stewardship theories focus on maximizing shareholder wealth (Tosi et al., 2003), this assumption may need to be relaxed in family firms to consider both financial and nonfinancial ("socioemotional") objectives in their decision making process (e.g., Berrone et al., 2012; Cruz et al., 2016; Gomez-Mejia et al., 2007; Miller & Le Breton-Miller, 2014). Focusing on the SEW perspective sheds new light on the role of family ownership structure in shaping firms' labor productivity distributions and which particularistic behaviors family firms display, i.e., more specific agency behavior (e.g., nepotism) at the upper tail of the labor productivity distribution versus more stewardship-oriented behavior (e.g., providing higher job security) at the lower tail. This latter lower tail finding also provides new insights on how family firms can cope with vulnerability. Although strategic changes such as changing their innovation and acquisition strategy may be an important way out of vulnerability (Chrisman & Patel, 2012; Gomez-Mejia et al., 2018), we add to this conversation by pointing to an overlooked internal solution which is taking advantage of *better workforce performance* (labor productivity) to recover from an adverse situation. Indeed, Cruz et al. (2011) pointed to the fact that HR practices and policies are an important element in strategic decision making and therefore, can be seen as an equally important solution than strategic change efforts which were often the focus in earlier work. In contrast to nonfamily firms, family firms have the incentives as well as the abilities/resources to take the HR policy and workforce performance escape route away from vulnerability. Our results are consistent with this argument.

Second, prior empirical studies examined the conditions under which financial and socioemotional wealth concerns diverge or converge in family firms and how their interplay affects strategic decision making and firm performance versus those of nonfamily firms (Chrisman & Patel, 2012; Gomez-Mejia et al., 2010; Gomez-Mejia et al., 2018; Minichilli et al., 2016; Patel & Chrisman, 2014). These studies substantially enhanced our understanding of the circumstances under which family firms' decision makers prioritize socioemotional over financial wealth concerns (or vice versa). However, these prior studies ignored the fact that outcome differences between family and nonfamily firms might vary along the entire outcome distribution. Because the behavior of family firms is much more heterogeneous than nonfamily firms throughout the whole labor productivity distribution, it is needed to understand the extremes as well as the central tendencies of the labor productivity distribution. To address this challenging research question, we contribute by using the novel and underexplored method of unconditional quantile regression. The advantage of this estimator lies in the fact that it takes into account unobserved firm heterogeneity in a way that differs markedly from that of conventional panel-data estimators (using a within-estimator was precluded anyway in the present study). The quantile-based method goes beyond the estimation of average effects of ownership structure on firms' labor productivity, allowing for a more comprehensive and nuanced understanding of labor productivity differences between family and nonfamily firms—that is, one that takes into account the family firms' *varying weighing* of the trade-off between SEW and financial wealth in decision making as well as the strengths (e.g., stronger employee commitment and perceived organizational caring) (Christensen-Salem et al., 2021) and weaknesses (e.g., nepotism) of the labor conditions in family firms (Neckebrouck et al., 2018). Our findings show the importance of this novel empirical approach in understanding family business behavior and answer the recent call of Miller & Le Breton-Miller (2021a) to investigate the opposite extremes of the distribution as well. Indeed, our results show that the most interesting aspects in understanding family firm behavior can be found at the tails of a distribution.

Finally, we contribute by performing a Blinder-Oaxaca (BO) analysis which is an interesting alternative way of examining the effects of a varying bundle of *tacit* family firm features (across the labor productivity distribution) that are central in our theorizing. This decomposition approach is especially beneficial when measures of latent constructs are not available in the data. Indeed, the results of our BO analysis allow us to lend further credibility to our theoretical arguments as the 'unexplained' component in this BO analysis is a measure of what makes family firms distinct from nonfamily firms with regards to labor productivity, i.e., implicit labor contracts and SEW preferences. In line with our predictions, the BO analysis shows that the family ownership advantage of the 'unexplained' component at the lower tail cancels out the negative 'explained' part while the family ownership disadvantage at the upper tail strengthens the negative effect of the 'explained' part which is an important finding that stays unnoticed with traditional regression techniques. Future family business research investigating tacit family firm features would benefit from a BO decomposition approach when investigating difficult-to-measure latent and tacit constructs common in family business research, such as SEW and implicit labor contracts.

5.1. Practical implications

Our findings have both policy-relevant and practical implications. Most empirical studies are concerned with mean effects. However, distributional effects are even more important. Indeed, policy measures may change the distribution of the outcome in ways not revealed by an examination of averages. For instance, the distribution of labor productivity may become more compressed due to the inward shifts of its lower and upper quantiles, leaving the averages unchanged. Therefore, policymakers are increasingly interested in distributional effects. The UQR technique provides more policy-relevant information because it allows policymakers to consider the impact of family ownership on productivity at different quantiles of the entire productivity distribution. This information will enable them to take the proper measures for firms at different segments of the productivity distribution. For example, our results show that family firms produce at a discount at the upper tail of the distribution. This is important information for policymakers as it may signal a misallocation of talent (Calligaris et al., 2016) at specific (upper) parts of the distribution. From that perspective, policy initiatives aiming to increase labor productivity, and thus to remedy the misallocation of talent, could focus on family firms at the upper tail of the labor productivity distribution which would be much more efficient than implementing general measures for all firms.

Similarly, our results suggest that also fine-grained policy measures are warranted at the lower tail. For example, policymakers may be tempted to approve legislation to oblige firms to set up work councils as these councils enhance labor productivity, especially at low productivity levels (Mueller, 2015). However, a potential legal obligation to install work councils (and bring trade unions to the firm) may create a hostile labor environment (Mueller & Philippon, 2011) which may deteriorate the beneficial family firm effects that we find at the lower tail. Therefore, it would be a better choice for policy makers to target this kind of potential labor productivity-increasing measures on the nonfamily firms at the lower tail.

5.2. Limitations and directions for future research

Apart from its contributions to the literature and its practical implications, our research has some limitations that not only mark the boundaries of its insights but also highlights some promising avenues for future research. First, labor productivity is the topic of debate in several distinct academic fields. Our study builds further on the labor productivity controversy in the broader (HR) management field. However, labor productivity is also an important topic of interest in the regional economics field (Calligaris et al., 2016) which is gaining momentum in the family business field (e.g., Gomez-Mejia et al., 2020; Soleimanof et al., 2018). Our sample only contains firms located in Chile. Although we do not have any indications that the theoretical arguments and findings are only relevant for the Chilean context, we must be careful with the generalization of our results. Countries have contextual

differences (Basco, 2015), which may also influence their firms' labor conditions and labor productivity levels. Such a context-contingent perspective could add further insights into how the effect of family ownership on labor productivity varies between countries and may improve our understanding of the impact of the institutional and socio-spatial context (Amato, Basco, & Lattanzi, 2021). A UQR-based distributional analysis may also help explain differences in labor productivity between countries because it could disentangle institutional context effects from distributional explanations that often remain unnoticed in earlier cross-country research. Second, family firms are a very heterogeneous population. We made the distinction between family firms versus nonfamily firms in this paper. Future research could focus on family heterogeneity and utilize for example different measures of family involvement in governance and management to test the impact of these variables on labor productivity gaps across the distribution.

Third, the main purpose of our study was to provide credibility to our theoretical arguments. Although we used a novel (Blinder-Oaxaca) approach to capture family heterogeneity by means of varying tacit family firm features across the productivity distribution, we do not get a direct grip on the micro-mechanisms concerning HR policies and SEW that could play. For example, SEW priorities can differ among key decision makers in family firms (Vandekerkhof et al., 2018). Therefore, it would be interesting to investigate whether SEW priorities further deviate or converge among family members when the firm is under vulnerability conditions. Future research could investigate these dynamics in depth using multiteam surveys or case studies.

Fourth, we use a static perspective in this paper and investigate how firms behave concerning labor productivity depending on where they are on the productivity distribution. Future research could adopt a dynamic (longitudinal) perspective in order to find out how family firms develop over time concerning labor productivity and whether they may potentially move from one extreme tail to the other side of the labor productivity distribution.

6. Conclusions

This research responds to recent calls to try less trodden paths of empirical work in family business research (Miller & Le Breton-Miller, 2021b). As we were primarily interested in exploring the extremes (Miller & Le Breton-Miller, 2021a) rather than the average or central tendencies, our focus was on the labor productivity gaps in the lower and upper tail of the distribution – i.e., on contrasting the differential impact of family ownership in low-productivity versus high-productivity firms. Using advanced and unconventional methods of unconditional quantile regression, we provided robust empirical evidence of varying labor productivity performances of family firms compared to nonfamily firms across the productivity distribution. We hope that our study will inspire other scholars to investigate family firm behavior at the extremes of a wide variety of outcome distributions, as this novel methodological approach may provide new perspectives on controversial family firm debates.

Appendix. A and B Supporting information

Supplementary material associated with this article can be found in the online version at doi:10.1016/j.jfbs.2022.100515.

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