



# Does it matter who owns firms? Evidence on the impact of supermajority control on private firms in Europe<sup>☆</sup>

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## ABSTRACT

We explore how the type of owner affects private enterprise investment decisions in Europe. In contrast to the literature, we analyze firms with concentrated (>95%) ownership stakes to reduce the potential that agency problems contaminate our results. We consider four types of supermajority owners – family, institutional, corporate, and state and use detailed ownership and financial information from a large sample of private firms from 24 European countries from 2001 to 2018. We find that family-owned firms exhibit higher gross investment rates and substantially higher sensitivity to investment opportunities, profitability, cash flow, and value-added growth compared to corporate and institutional owners. At the same time, and more consistent with the literature, family-owned firms invest significantly less in intangible assets than other ownership types. To demonstrate the robustness of our results, we employ matching samples complemented by analysis of owner-type transitions from family owners to corporate and institutional owners.

## 1. Introduction

It is well known that ownership structure and the owners' identity significantly impact corporate performance and governance (Demsetz & Lehn, 1985; Jensen & Meckling, 1976; Thomsen & Pedersen, 2000). Key ownership types are usually defined in terms of majority ownership and include institutional owners, family owners, and the state as an owner (Appel, Gormley, & Keim, 2016; Estrin, Hanousek, Kocenda, & Svejnar, 2009; Villalonga & Amit, 2006). Existing studies generally focus on a single ownership type, typically drawing on information about public firms (Boyd & Solarino, 2016). In particular, institutional investors have received substantial attention, with research driven by the rise of institutional ownership in the US and elsewhere (Appel et al., 2016; Bebchuk, Cohen, & Hirst, 2017; Kang, Luo, & Na, 2018; Lewellen & Lewellen, 2022; McCahery, Sautner, & Starks, 2016), but there is also considerable work on family ownership (Amore & Minichilli, 2018; Anderson, Duru, & Reeb, 2012; Miller, Le Breton-Miller, Lester, &

Cannella Jr, 2007; Villalonga & Amit, 2006; Xia & Walker, 2015). At the same time, Mehran (1995) and Aguilera and Jackson (2003) call for distinguishing between types of controlling shareholders in the analysis of firm performance because different types of owners pursue different strategic objectives (Aguilera & Jackson, 2010).

While much of the literature on how investment decisions vary across ownership types focuses on public firms and in the US, this paper instead looks at private firms and is based on a large sample of European firms (Bennedsen & Nielsen, 2010; Demsetz & Lehn, 1985; Schulze, Lubatkin, Dino, & Buchholtz, 2001). This focus yields several advantages, notably that private firms are less subject to the short-termist pressures that distort the investment decisions of public firms (Asker, Farre-Mensa, & Ljungqvist, 2015). Moreover, owners of private firms typically hold large stakes. In concentrated ownership environments, the focus is often on the diversion of resources by controlling shareholders through self-dealing and other forms of “tunneling” (e.g., Gilson & Gordon, 2003; Simeon, La Porta, Lopez de Silanes, & Shleifer, 2008).

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Such shareholder conflicts are particularly serious in majority-controlled firms. Berzins, Bøhren, and Stacescu (2019) demonstrate that shareholders in firms with high agency conflict potential (55% of majority stake) have a 50% higher average payout than shareholders in firms with low conflict potential (95% of majority stake) to reduce agency conflict and build trust (Gaspar, Massa, Matos, Patgiri, & Rehman, 2013). While this is an effective strategy to tame shareholder conflicts that may reduce investment returns, it also may result in reduced firm investment. This leads us to restrict our attention to firms with a single owner holding a stake of at least 95% of the company stock, which we term super-majority. Our sample selection requirement of at least 95% control by a single owner also minimizes heterogeneity and different views among different family stakeholders. We also consider business group membership and owners' indirect control. Our approach contributes to the literature by greatly reducing the potential contamination of our analysis by agency problems, for example, from different ownership types co-existing, each varying views on investment strategy.

We analyze the impact of ownership type on investment, with a focus on family ownership though we also consider three other categories of ownership type: institutional investors, corporate owners, and firms with state ownership. Family ownership is the most common ownership type in the world, including in Europe (La Porta, Lopez-de-Silanes, & Shleifer, 1999). Family owners are argued to have a long-term orientation (Bertrand & Schoar, 2006) and there is excellent information about the firm (Demsetz & Lehn, 1985) and a good understanding of the firm's wealth-creating processes (Raheja, 2005). Family-owned firms are understood to have strong incentives to engage in investment activities that ensure firm viability and health in the long-term (Aguilera & Crespi-Cladera, 2012; Chen & Hsu, 2009). At the same time, they also tend to be relatively risk-averse because a large proportion of family owners' wealth is tied up in the firm (Miller, Minichilli, & Corbetta, 2013). Hence, they tend to hold undiversified portfolios, which may lead them to follow more conservative strategies in their investment decisions than well-diversified shareholders.

In contrast, institutional investors represent a group of well-diversified investors. Institutional ownership is characterized by advantages in terms of finance, low risk aversion and a relatively long-term horizon (McCahery et al., 2016). Since institutional investors invest on behalf of ultimate investors, transforming risks, they are likely to focus on financial returns and managing the risks of investment projects. While institutional investors often display a limited impact on company performance because their ownership stake is low, in our sample, attention is restricted to owners with extremely high stakes.

Corporate owners are also a relatively well-diversified ownership type. Corporations often invest for strategic reasons that are well-documented in the literature, such as prospective mergers or branding (Hillier, Grinblatt, & Titman, 2011). Successful performance is, therefore, not necessarily indicated only by immediate financial returns for corporate owners. Finally, firms with state ownership are likely to exhibit non-profit-maximizing behavior (Estrin et al., 2009), but such companies may also have a relative advantage in terms of credit, liquidity and cost of capital (Musacchio, Lazzarini, & Aguilera, 2015). However, the state is likely to pay special attention to political goals, including low output prices or maintaining employment (Estrin & Perotin, 1991). This behavior may result in investment in socially essential projects with relatively low returns (Cuervo-Cazurra, Inkpen, Musacchio, & Ramaswamy, 2014).

As noted, we use family firms as our benchmark category. This choice is grounded in both practical and theoretical considerations. Empirically, family firms constitute the largest category within our dataset (about 50% of all firms), providing a robust and representative sample for analysis. From a theoretical perspective, the unique characteristics of family firms, such as a long-term orientation, commitment to preserving family legacy, and distinct governance structures, make them a compelling benchmark. Prior literature suggests that family firms may exhibit a more cautious and conservative approach to investments,

prioritizing sustainability over short-term gains. Consequently, we hypothesize that family firms may demonstrate a different investment behavior compared to firms owned by institutional investors, state entities, or corporations. Firms owned by corporate and institutional investors often tend to invest less in tangible fixed assets but more in intangible assets than family firms. Corporate entities, driven by shareholder value maximization and cost-efficiency, may prioritize financial engineering and operational optimization, leading to a restrained focus on physical assets. Instead, they may channel resources into R&D investment to enhance product innovation, efficiency, and market competitiveness. Institutional investors, managing diverse portfolios, tend to favor liquid and tradable assets for better risk management and liquidity. This inclination directs investments away from long-term, less liquid tangible assets toward R&D initiatives and intellectual property, which can offer the potential for high returns and diversification. Similarly, state-owned enterprises prioritize innovation and technological advancement to fulfill broader economic and strategic goals, emphasizing agility and competitiveness over extensive holdings in physical assets. In contrast, family firms, often motivated by a desire for stability, legacy preservation, and a longer-term outlook, may be more inclined to invest in tangible assets such as real estate and production facilities to secure and expand the family business. The emphasis on R&D by corporate and institutional owners reflects a strategic orientation toward intangible assets, innovation, and adaptability in dynamic markets.

For the analysis, we construct a large sample of European privately-owned firms spanning over the period from 2001 to 2018. Using the owner-type classification adopted by the Amadeus database, we differentiate between family, corporate, state, and institutional supermajority owners. These ownership types represent >99% of supermajority ownership in European private firms. We expect each of these types of owners to be characterized by a distinct set of goals and priorities, including risk preferences and investment horizons (Boyd & Solarino, 2016). We estimate at the firm level both the permanent and transitory effects of ownership types on investment levels (Thomsen & Pedersen, 2000), and control for differences in risk preferences (Faccio, Marchica, & Mura, 2016). We repeat the analysis on a matched sample for robustness. Further, we explore the impact of business group affiliation on investment behavior (Khanna, 2007) and consider the sensitivity by ownership type to growth opportunities, profitability, and cash flows.

Our results strongly support the finding that family-owned firms have substantially higher investment levels, and higher sensitivities to investment opportunities, profitability, cash flow and value-added growth compared to other owner types, including corporate and institutional owners. However, family-owned firms also undertake significantly lower intangible investments. Moreover, state-owned firms consistently show even higher sensitivity to profitability, cash flows and business opportunities than family-owned firms. Further analyzing results obtained in matching samples, we confirm that this investment behavior could be attributed to owner preferences. To further support our results, we also estimate the effect of ownership changes on firm investment behavior. We focus on two types of ownership changes: from family owner to corporate owner, and from family owner to institutional owner. Note that the change in ownership from family owners to corporate owners triggers a change in firm investment behavior, which becomes less family-like and more corporate-like. At the same time, there is a lack of changes in firm investment behavior when transitioning from family to institutional owner, perhaps due to institutional investors being passive in our sample.<sup>1</sup>

<sup>1</sup> The examples of institutional owners in our sample include Aegon UK, an Edinburgh based financial services provider specializing in pensions, investments and insurance, and T. Bailey Asset Management Limited, a leading provider of outcome-based investment solutions for families, individuals and intermediaries focusing on wealth preservation in real terms for the benefit of current and future generations.

While the literature often suggests that differences in investment behavior are driven by the risk preferences of different owners, we demonstrate that family owners invest significantly more, even when differences in risk avoidance are taken into account.

## 2. Data and methodology

### 2.1. Sample construction

We start by collecting the data from the Amadeus database maintained by Bureau van Dijk (BvD), a Moody's Analytics company. While this database is the most comprehensive source of financial and ownership information on public and private companies across Europe, it also has several limitations. Specifically, BvD eliminates firm financial information after ten years, or for firms that are inactive, merge, or change identification. More critically, each version of the Amadeus database contains only the latest available ownership structure. We, therefore, create our dataset using special historical queries and seven bi-annual versions of Amadeus. Using information about the starting date of the ownership and the release date in each update, we trace the ownership structure over time. We retain only those firms for which we have ownership information and exclude firms for which we are unable to identify at least 95% of the reported shareholders<sup>2, 4, 5, 6, 7, 8 and 9</sup> as well as micro firms.<sup>3</sup> We further focus our attention on firms controlled by a single owner. After excluding firms operating in financial services and insurance industries (NACE codes 64–66) due to their extensive oversight by government regulatory authorities and fundamental differences in financial data presentation, we have ownership information for 242,536 unique private firms. Our final sample consists of 672,016 firm-year observations representing firms from 24 European countries over the period 2001–2018.

To estimate a clean effect of ownership type on corporate investment, we require firms in our sample to be controlled by a single owner holding at least 95% of company shares. We refer to this control as supermajority control throughout the paper. We use a 95% cutoff rather than 100% to allow for a small portion of shares to be used as a motivational tool for employees.<sup>4</sup>

### 2.2. Ownership type classification

When assigning owners in different type categories, we use the variable shareholder type (*SH\_TYPE*) in Amadeus as a starting point. We differentiate between the following types:

<sup>2</sup> As a robustness check, we also consider different cut-offs for the ownership control (*i.e.*, 90%). Given the legal protection of shareholders in Europe, only shareholders controlling >90% of the company are free from any potential agency-type problems. We followed that rule when identifying the total control (direct ownership plus indirect control) within a business group.

<sup>3</sup> According to Eurostat, micro firms are firms with <10 employees. Following the literature, we also consider firms with total asset value lower than 4000 USD to be micro firms. This filter comes from the requirement for the minimum capital in registering an Ltd. Company across EU.

<sup>4</sup> 90% cut-off provides very similar results. These results are available from the authors upon request.

<sup>5</sup> The aggregated ownership types use the ownership classification from the Amadeus (variable *SH\_TYPE*): A = Insurance company, B = Bank, C = Trade & Industry organization, D = Nameless private stockholders, aggregated, E = Mutual & Pension fund / Nominee / Trust / Trustee, F = Financial company, I = One or more named individuals or families, J = Foundation / Research Institute, L = Other named shareholders, aggregated, M = Employees/Managers/Directors, P = Private Equity firms, S = Public authority/ State/ Government, V = Venture Capital, Y = Hedge funds, Z = Public (Publicly listed companies)

- *Family*: (Type 1) Individual/ family owners that belong to category I (“Named individuals or families”) in Amadeus. This is our base category.
- *Corporate*: (Type 2) Corporate owners that are denoted by the letter C in Amadeus (“Trade & Industry organization”).
- *Active*: (Type 3) Active investors, which include private equity firms, labeled as P (“Private Equity firms”), and venture capitalists, labeled as V (“Venture Capital”) in Amadeus.
- *State*: (Type 4) Ownership by the state, labeled as S (“Public authority/ State/ Government”) in Amadeus.
- *Institutional*: (Type 5) Institutional owners category includes the following Amadeus shareholder types — B (“Bank”), F (“Financial Companies”), J (“Foundations”), Y (“Hedge funds”) and E (“Mutual/ Pension fund/Nominee /Trust”).
- *Anonymous corporate*: (Type 6) This category pools all corporate shareholders with missing identification, labeled by L (“Other named Shareholders”) in Amadeus.
- *Anonymous individual*: (Type 7) Anonymous private investors that are labeled by D (“Anonymous Private Stockholders”).

In addition to the type of the owner, we also differentiate between firms that are stand-alone and firms that belong to business groups (Khanna & Yafeh, 2007). The literature is ambiguous as to whether business group affiliation will enhance business performance, such as investment, by providing additional resources (Carney, Van Essen, Estrin, & Shapiro, 2018; Khanna & Palepu, 2000) or damage it because of opaque ownership structures and inappropriate cross-group financial transfers (Morck, Wolfenzon, & Yeung, 2005). The detailed sorting mechanism identifying stand-alone and business group firms can be found in the Appendix. Note that for business group firms, we again retain only those subsidiaries which are owned with at least a 95% majority.

### 2.3. Supermajority ownership in private European firms

The largest group of firms in our sample are family-owned (50.0%), 41.8% of firms are owned by corporates, 5.7% by institutional investors and 2.2% by the relevant State. The remaining firms are controlled by active (0.04%), anonymous corporate (0.16%) and anonymous individual (0.09%) owners. Table 1 summarizes the distribution of firms by ownership type across countries. In nearly all countries, family firms and firms controlled by corporates are the most important category. The exceptions are Belgium, Finland, Netherlands, and Sweden, where supermajority family firms represent 1.05%, 0.20%, 0.00%, and 0.06%, respectively; these countries instead display higher percentages of private firms controlled by corporates (85.78% in Belgium, 98.6% in Finland, 87.7% in Netherlands, and 98.4% in Sweden). The highest percentages of family firms are in former socialist economies, namely Serbia (87.9%), Romania (85.7%), Bulgaria (83.0%), and Slovenia (77.1%). Figs. 1 and 2 visualize the country distribution of sample firms with family and corporate ownership, respectively, using the map of Europe.

Our sample construction requires data availability for the (gross) investment variable, that is, fixed assets (tangible and/or intangible) and their depreciation. However, the accounting details provided by firms vary from country to country. For example, the Baltic countries do not provide depreciation for all firms. In addition, the requirement of having supermajority control by a single owner may also affect sample composition – it lowers the percentage of family-owned firms in Italy, as

<sup>6</sup> Note that we do not differentiate between *independent* and *grey* institutional investors (see Ferreira and Matos (2008), Brickley, Lease, and Smith Jr (1988), Almazan, Hartzell, and Starks (2005), and Chen, Harford, and Li (2007)) mainly because the majority of institutional investors, with few exceptions, fall into grey category and because they have a full shareholder control over the firms in our sample.

**Table 1**  
Country distribution of sample firms by owner type.

Country	Number of Firms	Family	Corporate	Active	State	Institutional	Anonymous Individual	Anonymous Corporate
Austria	2039	22.76	65.08	0.00	1.42	10.74	0.00	0.00
Belgium	6879	1.05	85.78	0.22	0.06	12.84	0.03	0.03
Bulgaria	10,429	83.04	13.17	0.01	2.74	1.03	0.00	0.01
Czech Republic	8512	66.00	31.19	0.01	0.02	2.77	0.00	0.00
Germany	14,857	43.56	48.09	0.06	3.33	4.83	0.02	0.11
Spain	50,284	66.61	27.84	0.03	0.58	4.94	0.01	0.00
Finland	506	0.20	98.62	0.00	0.00	1.19	0.00	0.00
France	42,012	28.88	59.00	0.05	0.02	11.59	0.43	0.03
UK	12,210	7.38	88.73	0.04	0.04	3.41	0.00	0.40
Greece	3997	64.45	32.22	0.00	0.70	2.38	0.25	0.00
Croatia	11,505	63.72	33.15	0.02	2.31	0.72	0.03	0.04
Hungary	763	9.57	81.00	0.26	0.26	8.78	0.00	0.13
Ireland	795	23.52	66.29	0.13	0.38	9.56	0.00	0.13
Italy	7859	13.60	75.96	0.09	1.85	8.47	0.00	0.03
Netherlands	797	0.00	87.70	0.00	0.38	11.92	0.00	0.00
Norway	14,744	49.52	35.49	0.01	1.34	12.34	0.00	1.30
Poland	10,280	41.11	45.63	0.21	10.27	2.77	0.00	0.00
Portugal	11,470	73.98	23.09	0.02	0.49	2.35	0.04	0.03
Romania	13,742	85.73	12.78	0.00	0.19	0.44	0.10	0.76
Serbia	4778	87.90	11.16	0.00	0.33	0.61	0.00	0.00
Sweden	1774	0.06	98.42	0.00	0.00	1.52	0.00	0.00
Slovenia	3302	77.07	19.75	0.03	0.64	2.48	0.00	0.03
Slovakia	1536	64.13	32.75	0.00	0.07	2.99	0.07	0.00
Ukraine	7466	34.96	29.17	0.01	33.30	2.56	0.00	0.00
Total	242,536	49.97	41.80	0.04	2.24	5.70	0.09	0.16

The table presents the percentage of firms controlled by different controlling owners at the 95% threshold. Controlling shareholders are classified into seven types following BvD Amadeus classification – Family, Corporate, Active, State, Institutional, Anonymous Individual, and Anonymous Corporate. See section 2.2 of the paper for details.

Italian family firms tend to be controlled by several family members/groups. Nonetheless, we opt for supermajority control by a single owner because of our concern that the different sets of owners within the same ownership category will be a source of potential agency problems.

>10% of private firms are controlled by institutional investors in Belgium, Norway, Netherlands, France, and Austria (see Fig. 3). At the same time, the state maintains a high proportion of supermajority control in some former socialist economies like Ukraine (33.3%) and Poland (10.27%), while there are no firms fully controlled by the state in Sweden and Finland. Active and anonymous ownership categories are unimportant across all countries, representing <1.5% of firms in each country.

Fig. 4 presents the industry distribution of sample firms by ownership type. Family-controlled firms are concentrated in wholesale and retail trade, repair of motor vehicles (25.8%), manufacturing (22.9%), and construction (17.8%). A similar distribution, except for construction, is observed for corporate and institutional owners. State ownership prevails in certain utilities – water supply, sewerage, waste management and remediation activities (14.6%) – as well as industries related to professional, scientific and technical activities (10.2%). Active investors (unreported) are most commonly found in the wholesale and retail trade, repair of motor vehicles, manufacturing, industries related to arts, entertainment and recreation and professional, scientific and technical activities. Going forward, we will not include Active, Anonymous Corporate, and Anonymous Individual ownership types in our regression analysis as they altogether represent <1% of our sample, which means we are not able to draw meaningful conclusions about them.

#### 2.4. Descriptive statistics

Table 2 presents summary statistics for the main variables we use in our analysis: these are selected based on the prior literature. Thus we report about financial constraints (Fazzari, Hubbard, & Petersen, 1988; Hadlock & Pierce, 2010), profitability (Asker et al., 2015; Blanchard, Rhee, & Summers, 1993; Erel, Jang, & Weisbach, 2015) and investment opportunities (Bloom, Bond, & Van Reenen, 2007; Lehn & Poulsen, 1989; Michaely & Roberts, 2012; Shin & Stulz, 1998).

In Table 2, Panel A, we present basic descriptive statistics for all the firms in our sample. After trimming all the firm-level variables at the 1% and 99% levels, an average firm in our sample has USD 3.5 million of total assets, a gross investment of 0.051, an intangible investment of 0.043, a profitability ratio (ROA) of 0.063, a leverage ratio of 0.188 and is about 37 years old.

Table 2, Panel B reports summary statistics by ownership type. Family ownership is associated with smaller firms (in terms of both total assets and the number of employees) with a higher cash flow ratio and higher ROA. Mean risk avoidance of family-owned firms is comparable with that of corporate-owned enterprises. Regarding value-added growth, family-owned firms, on average, display higher values, followed by corporate and state, and institutional owners. Family-owned firms also exhibit the highest gross investment levels, while state owners invest the least in tangible assets but the most in intangible assets.

#### 2.5. Regression analysis

To study the effect of ownership type on firm investment, we build on the work of Erel et al. (2015).<sup>7</sup> Specifically, we augment Erel et al.'s (2015) model with a set of dummy variables that aim to capture the effect of the identity of different types of owners on firm investment as follows:

$$Investment_{it} = \alpha_0 + \beta X_{it} + \sum_{k=2}^K \gamma_k Ownership\ Type_{it} + \delta BGroup_{it} + \lambda_c Macro_{ct} + \tau_c + f_i + \varepsilon_{it}, \quad (1)$$

for all  $i = 1, \dots, N$  (firm index);  $t = 2001, \dots, 2018$  (time index, year);  $k = 2, \dots, K$  (ownership type,  $K = 4$ );  $c = 1, \dots, C$  (country index). *Investment*

<sup>7</sup> Erel et al. (2015) analyze European private firms and their investment behavior around their acquisition. They employ the same database, Amadeus, to examine >5000 acquisitions from 2001 to 2008 in Europe.



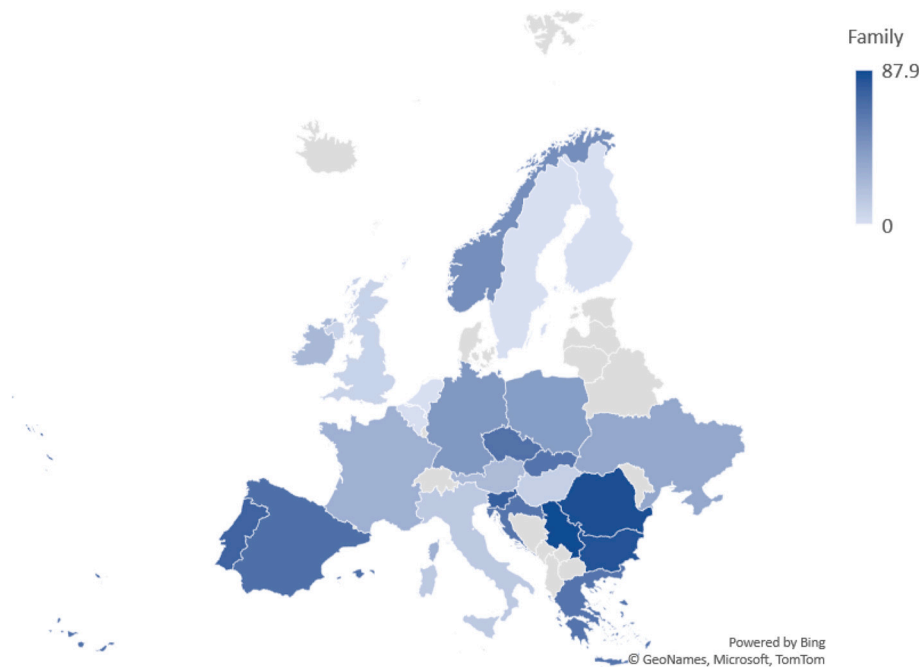


Fig. 1. Country distribution of sample firms with family ownership.

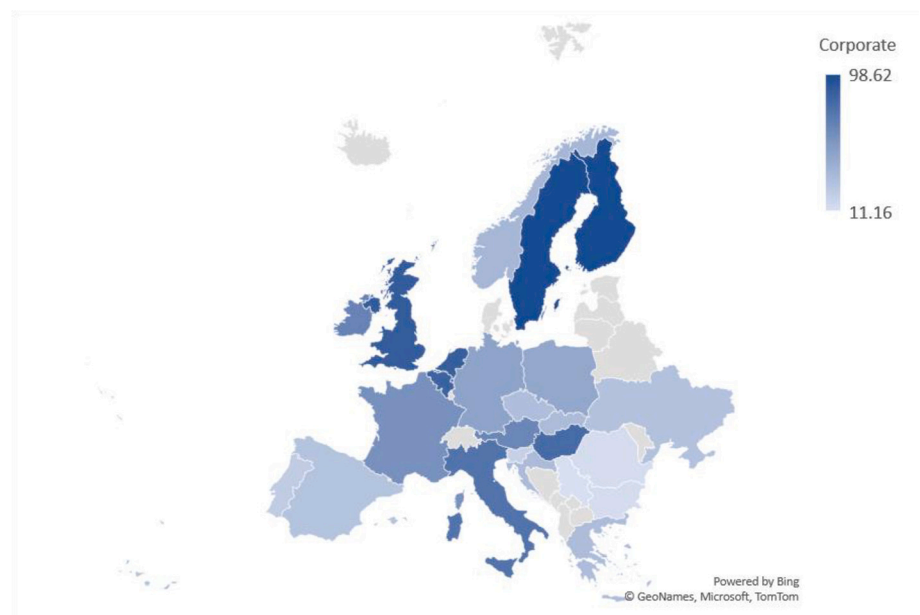


Fig. 2. Country distribution of sample firms with corporate ownership.

is either gross investment or intangible investment, *Ownership type* is a set of dummy variables for the firm's super-majority owner (*Family* (omitted), *Corporate*, *State*, and *Institutional*), *BGroup* is the dummy variable that equals unity if the firm is part of a business group (the omitted category is a stand-alone firm).

Vector  $X_{it}$  contains the firm-specific control variables, specifically firm size, tangibility, cash flow, number of employees, sales growth, leverage, profitability, cash, and firm age for firm  $i$  at time  $t$ .

*Macro* is a set of country-level variables that account for the variation in external finance availability, country level income, and the development of the local markets: namely, total private credit to GDP, stock market capitalization to GDP, nominal GDP growth, GDP in constant 2010 USD, and GDP *per capita*. For the detailed definitions of all variables, see Table A.1 in Appendix.

In some specifications of the model, we further control for *risk-avoidance*, so as to assess whether this is associated with lower investment levels by firms. The risk-avoidance index is constructed by adding 1 when (1) a firm's leverage is in the bottom 20% of the distribution; (2) the volatility of firm-level profitability is in the bottom 20% of the distribution; and (3) if the firm survives at least 5 years. The index ranges from 0 to 3, with higher scores denoting greater risk-avoidance (Faccio et al., 2016).

We also include a set of time ( $\tau_t$ ) and firm ( $f_i$ ) fixed effects to control for changing macroeconomic conditions and (unobserved) time-invariant firm-level heterogeneity. Standard errors ( $\epsilon_{it}$ ) are robust to arbitrary heteroskedasticity.

Note that the estimated coefficients  $\gamma$  in specification (1) capture the "transitory" effect of ownership type on firm investment (the effect in

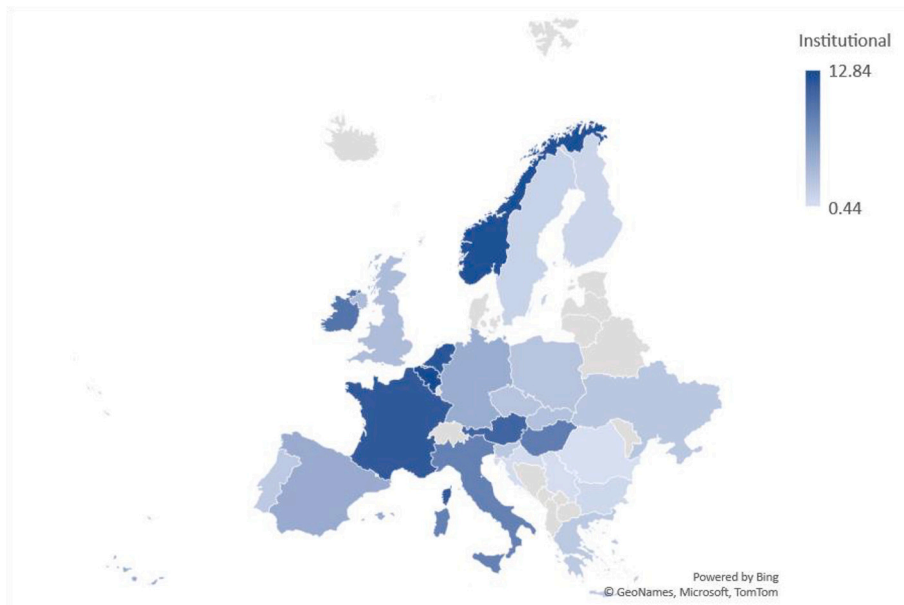


Fig. 3. Country distribution of sample firms with institutional ownership.

firms with changes in type of the owner). As the ownership structure of fully controlled firms is rather stable, we also estimate the “permanent” effect (the effect in firms with no changes in type of the owner) by regressing the estimated fixed effect ( $\hat{f}_i$ ) from (1) on ownership type categories.

$$\hat{f}_i = \sum_{k=1}^K \gamma_k^* \text{Ownership Type}_{it} + \delta^* \text{BGroup}_{it} + \kappa_c + \iota_p + \xi_i \quad (2)$$

for all  $i = 1, \dots, N$  (firm index);  $k = 1, \dots, K$  (ownership type);  $c = 1, \dots, C$  (country index); and  $p = 1, \dots, P$  (industry index). As previously, *BGroup* is the dummy variable that equals to unity if the firm is part of a business group. We also control for a set of industry ( $\iota_p$ ) and country ( $\kappa_c$ ) fixed effects to capture the time-invariant legal and financial environment. Standard errors ( $\xi_{it}$ ) are robust to arbitrary heteroscedasticity. The estimated coefficients  $\gamma^*$  in the specification (2) captures the time-invariant effect or “permanent” effect of owner type on firm investment.

Apart from the main effect of ownership type on firm investment, we also study whether different owners exhibit different investment sensitivity to profitability and cash flow. To estimate this, we define the following model.

$$\begin{aligned} \text{Investment}_{it} = & \alpha_0 + \beta X_{it} + \mu \text{InvOppr}_{it} + \sum_{k=2}^K \gamma_k \text{Ownership Type}_{it} + \\ & + \sum_{k=2}^K \rho_k \text{InvOppr}_{it} \times \text{Ownership Type}_{it} + \sum_{k=2}^K \varphi_k Z_{it} \\ & \times \text{Ownership Type}_{it} + \zeta Z_{it} + \lambda_c \text{Macro}_{ct} + \tau_t + f_i + \varepsilon_{it}, \end{aligned} \quad (3)$$

As in all specifications above, the vector  $X_{it}$  contains firm-specific control variables. In this case proxies for size  $\ln(\text{Employees})$  and  $\ln(\text{Total Assets})$ , profitability (*ROA*), *leverage*, *cash flows* (and *cash*), and *firm age* for firm  $i$  at time  $t$ . As before, we control for firm fixed effects ( $f_i$ ), as well as for standard macroeconomic variables ( $\text{Macro}_{ct}$ ) and year effects ( $\tau_t$ ).

Investment opportunities (*InvOppr*) are measured by the sales growth, which is seen in the literature to be the best proxy of business opportunities for privately held firms (see e.g., Bloom et al., 2007; Lehn & Poulsen, 1989; Michaely & Roberts, 2012; Shin & Stulz, 1998, among others).

$Z_{it}$  stands either for *ROA* or for *cash flow* (to total assets), depending on the specification. As a part of these effects, we also explore the

sensitivity of ownership type to firm profitability, interaction with *ROA* and/or interaction with firm *cash flow*. The interaction term of *ROA* (or *cash flow*) with the ownership type captures the effect of firm profitability on the size of the investment and to what extent different owners use their profits to finance their investments.

## 2.6. Matching samples

We also explore whether our initial results hold when we compare two firms that are identical on dimensions affecting their investment behavior but differ by the type of their majority ownership. Thus, we compare investment levels in sub-samples representing pairs of ownership types (*Corporate*, *State*, *Institutional*) and a control group of *Family*-owned firms. To control for observable differences between firms with different ownership types, we follow the prior literature by using a matching procedure (Asker et al., 2015; Gao, Harford, & Li, 2013; Michaely & Roberts, 2012).

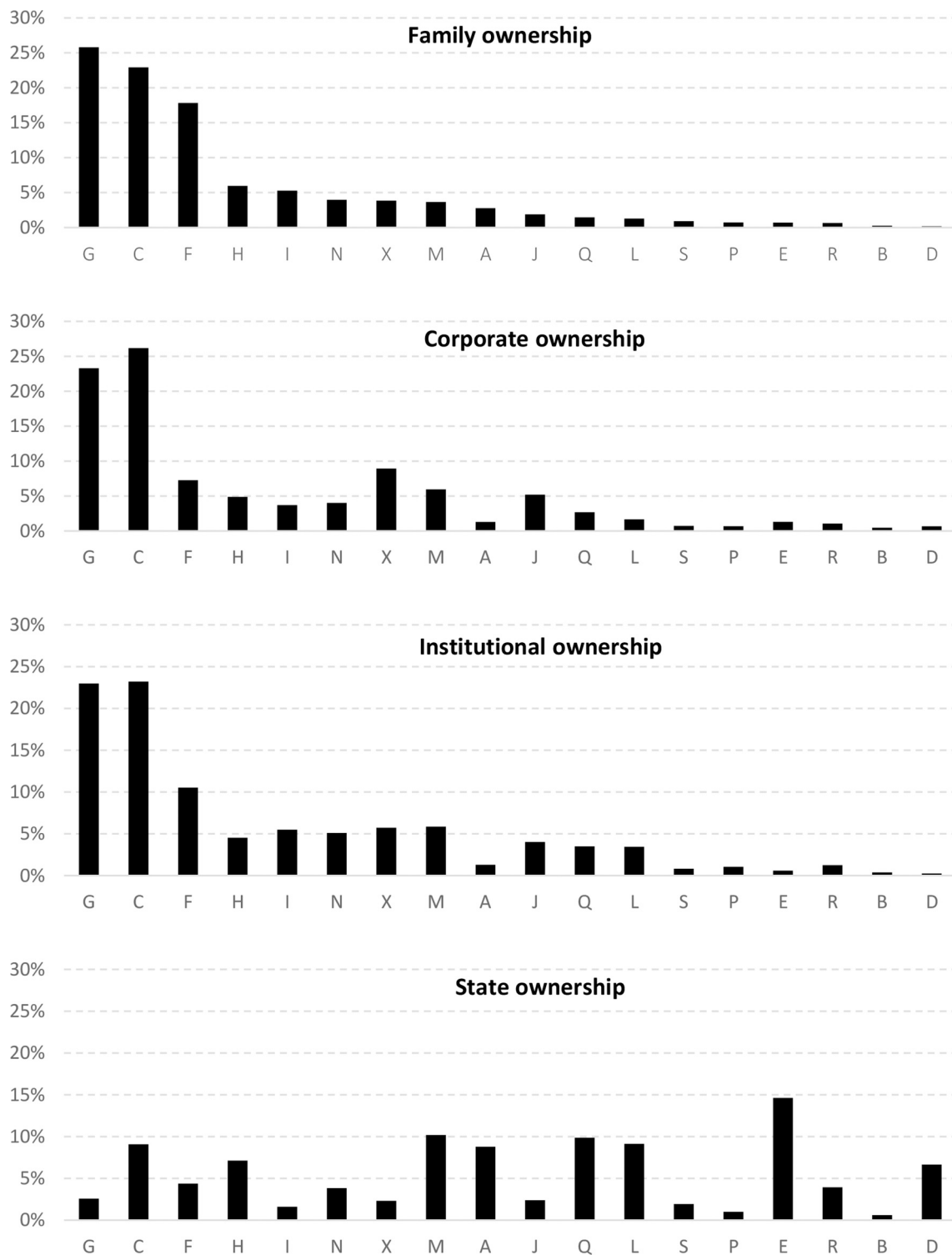
The literature suggests that firm investment behavior depends on firm size, specific industry, and the structure of assets. We, therefore, first use the exact matching on the country, industry (NACE2 alphabet classification), time period (with 2000, 2005, 2008, 2010, 2013, and 2016 being the cut-off point for the similar time period), and firm structure (stand-alone and business groups). We further complement the exact matching with the nearest neighbor matching on  $\ln(\text{total assets})$ , *tangibility* and *leverage*. We keep only firms that satisfy the common support requirement and those for which we have a similar caliper  $< 0.005$ , i.e., probability of being classified as contrafactual. For each firm, we add up to five nearest neighbors; removing the duplicates results roughly in similar size to the control group.<sup>8</sup>

## 3. Empirical results

### 3.1. Owner type and level of investment

We start by exploring the effect of ownership type on the level of gross firm investment by estimating baseline regressions (1) and (2),

<sup>8</sup> In the interest of the space, the technical results for matching samples are not presented here, but are included in the technical part of the On-line Appendix or available on request.



**Fig. 4.** Industry distribution of sample firms by owner type. The graphs show the industry distribution of firms by owner type. We use NACE2 alphabet industry definitions. Specifically, A. Agriculture, Forestry and Fishing; B. Mining and Quarrying; C. Manufacturing; D. Electricity, Gas, Steam and Air Conditioning Supply; E. Water Supply; Sewerage, Waste Management and Remediation Activities; F. Construction; G. Wholesale and Retail Trade; Repair of Motor Vehicles; H. Transportation and Storage; I. Accommodation and Food Service Activities; J. Information and Communication; L. Real Estate Activities; M. Professional, Scientific and Technical Activities; N. Administrative and Support Service Activities; P. Human Health and Social Work Activities; Q. Arts, Entertainment and Recreation; R. Other Service Activities; S. Activities of Households; X. Other.

**Table 2**  
Summary statistics.

Panel A: Descriptive statistics								
	N	Mean	St Dev	Distribution				
				p5	p25	p50	p75	p95
<i>Firm-level variables</i>								
Gross Investment	670,281	0.051	1.011	-0.072	0.001	0.030	0.094	0.288
Intangible Investment	398,254	0.043	0.041	0.003	0.015	0.031	0.058	0.127
Ln (Total Assets)	670,281	15.076	1.557	12.455	13.999	15.090	16.221	17.600
Ln (Employees)	670,281	3.610	0.986	2.398	2.773	3.401	4.290	5.517
Cash Flow	670,281	0.084	0.130	-0.085	0.030	0.073	0.136	0.285
Sales Growth	670,281	0.116	0.468	-0.322	-0.091	0.043	0.218	0.707
Value Added growth	367,573	0.055	0.321	-0.422	-0.099	0.044	0.206	0.567
ROA	670,046	0.063	0.143	-0.131	0.012	0.051	0.116	0.286
Leverage	670,281	0.188	0.222	0.000	0.002	0.109	0.302	0.625
Age	669,703	37.847	17.524	6.000	19.000	50.000	50.000	50.000
Tangibility	670,281	0.259	0.239	0.009	0.062	0.184	0.400	0.757
Risk Avoidance	670,281	1.172	0.637	0.000	1.000	1.000	2.000	2.000
<i>Macro variables</i>								
GDP (in trillions)	670,281	1.365	1.085	0.052	0.247	1.418	2.505	3.191
GDP per Capita	670,281	33,021	18,015	6625	22,444	32,283	41,249	86,820
GDP Growth	670,281	1.729	2.628	-3.439	0.623	1.706	2.917	6.247
Private Credit/GDP	670,281	97.225	40.574	31.203	67.728	96.020	119.835	171.188
Market Cap/GDP	670,281	59.681	30.838	14.624	34.148	58.352	81.858	116.683
Panel B: Selective Descriptive Statistics by Ownership Type								
	N	Mean	St Dev	p5	p25	p50	p75	p95
<i>Family</i>								
Gross Investment	315,696	0.064	1.044	-0.071	0.000	0.035	0.110	0.324
Intangible Investment	186,767	0.046	0.043	0.004	0.016	0.033	0.061	0.135
Ln (Total Assets)	315,696	14.278	1.364	12.018	13.398	14.271	15.160	16.568
Ln (Employees)	315,696	3.214	0.792	2.303	2.639	2.996	3.638	4.875
Cash Flow	315,696	0.094	0.129	-0.055	0.035	0.077	0.143	0.303
Sales growth	315,696	0.127	0.491	-0.350	-0.101	0.042	0.238	0.807
Value Added growth	167,528	0.068	0.329	-0.412	-0.095	0.051	0.223	0.614
ROA	315,635	0.073	0.139	-0.098	0.020	0.056	0.119	0.297
Risk Avoidance	315,696	1.162	0.620	0.000	1.000	1.000	2.000	2.000
<i>Corporate</i>								
Gross Investment	298,490	0.045	0.525	-0.071	0.002	0.027	0.081	0.247
Intangible Investment	176,880	0.041	0.040	0.002	0.013	0.029	0.056	0.119
Ln (Total Assets)	298,490	15.846	1.333	13.514	14.978	15.945	16.835	17.864
Ln (Employees)	298,490	3.970	1.002	2.485	3.178	3.871	4.718	5.743
Cash Flow	298,490	0.076	0.130	-0.109	0.026	0.071	0.131	0.269
Sales growth	298,490	0.108	0.448	-0.297	-0.082	0.045	0.207	0.619
Value Added growth	169,732	0.046	0.317	-0.432	-0.101	0.042	0.198	0.529
ROA	298,343	0.057	0.146	-0.154	0.006	0.049	0.115	0.279
Risk Avoidance	298,490	1.162	0.642	0.000	1.000	1.000	2.000	2.000
<i>State</i>								
Gross Investment	14,726	-0.090	4.176	-0.103	-0.004	0.044	0.131	0.316
Intangible Investment	10,161	0.052	0.042	0.002	0.024	0.045	0.070	0.135
Ln (Total Assets)	14,726	15.144	1.810	12.061	13.860	15.231	16.575	17.890
Ln (Employees)	14,726	4.434	1.046	2.639	3.638	4.511	5.273	6.038
Cash Flow	14,726	0.054	0.124	-0.119	0.016	0.054	0.101	0.217
Sales growth	14,726	0.130	0.492	-0.297	-0.060	0.070	0.226	0.638
Value Added growth	5163	0.046	0.282	-0.367	-0.079	0.045	0.181	0.448
ROA	14,710	0.004	0.134	-0.198	-0.016	0.011	0.047	0.163
Risk Avoidance	14,726	1.672	0.679	1.000	1.000	2.000	2.000	3.000
<i>Institutions</i>								
Gross Investment	41,369	0.038	0.232	-0.080	0.000	0.022	0.069	0.228
Intangible Investment	23,540	0.038	0.038	0.001	0.012	0.027	0.051	0.114
Ln (Total Assets)	41,369	15.586	1.301	13.421	14.671	15.606	16.545	17.703
Ln (Employees)	41,369	3.747	0.962	2.398	2.944	3.611	4.394	5.561
Cash Flow	41,369	0.078	0.131	-0.104	0.027	0.072	0.134	0.273
Sales growth	41,369	0.079	0.417	-0.290	-0.094	0.019	0.169	0.539
Value Added growth	25,150	0.021	0.299	-0.414	-0.114	0.014	0.160	0.474
ROA	41,358	0.061	0.150	-0.153	0.008	0.051	0.120	0.290
Risk Avoidance	41,369	1.144	0.643	0.000	1.000	1.000	2.000	2.000
Panel C: Correlation matrices for selected variables								
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Gross Investment	1.000							

(continued on next page)



Table 2 (continued)

Panel C: Correlation matrices for selected variables								
Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(2) Cash Flow	0.017***	1.000						
(3) Ln (Employees)	0.001	-0.002	1.000					
(4) Ln (Total Assets)	0.004***	-0.082***	0.592***	1.000				
(5) Sales Growth	0.031***	0.137***	0.028***	-0.019***	1.000			
(6) Ln (Age)	0.009***	-0.013***	0.105***	0.114***	0.029***	1.000		
(7) ROA	0.020***	0.798***	-0.016***	-0.034***	0.146***	-0.008***	1.000	
(8) Risk Avoidance	-0.004***	0.043***	0.030***	0.013***	0.000	-0.005***	0.047***	1.000

This table reports summary statistics for our sample. Firm-level data were retrieved from eight biannual updates of the Amadeus (Bureau van Dijk) database. Macroeconomic indicators are collected from the WDI (World Bank) data. Firms operating in financial industries are excluded (NACE codes 64–66). Panel A reports the summary statistics for the variables used in the analysis. All firm-level variables are measured in the USD. GDP is in constant 2010 USD and expressed here in trillions. GDP *per capita* is also in constant 2010 USD. Panel B reports the number of observations by industry and owner type, Panel C by country, and Panel D by year. Finally, Panel E provides selective descriptive statistics by the type of owner. Definitions of variables are available in Table A.1 in the Appendix.

with the standard errors clustered by the firm. Table 3 presents these regression estimation results. Columns 1, 3, 5, 7, and 9 show the effect of the type of the owner for investment in firms with changes in the type of the owner or the “transitory” effects. Notably, we do not observe any significant “transitory” effect that could be attributed to the type of the owner in the full sample (columns 1 and 3). Similarly, no significant “transitory” effect is found in the matched samples (columns 5, 7, and 9). This result is to some extent expected as the changes in the ownership type are rather infrequent and, therefore, would be captured by firm fixed effects.

The ownership effects on gross firm investment are significantly more pronounced in the “permanent” effect specifications reported in Columns 2, 4, 6, 8, and 10. Decomposing firm fixed effects, as outlined in the specification (2), yields a set of significant and negative coefficients for ownership controls. The results suggest that family owners invest significantly *more* than any other owner types in our sample. In addition, lower gross investment levels are observed in firms that belong to business groups compared to stand-alone firms. This is consistent with the “parasites” view of business groups proposed by, for example, Morck et al. (2005) and summarized by Khanna and Palepu (2007).

The differences in gross investment levels observed among firms controlled by different types of owners could also be driven by their risk preferences. We, therefore, control for risk avoidance in columns 3 and 4 and all estimations in the matched samples. While firms with the higher risk avoidance scores invest significantly less compared to firms with the lowest risk avoidance (*score* = 0), the estimated coefficients indicate that the higher investment levels associated with family ownership are almost entirely unaffected.

In addition to the gross firm investment levels, we also investigate whether specific ownership types have a different effect on intangible investment by firms. Table 4 presents the results. As before, Columns 1, 3, 5, 7, and 9 focus on the “transitory” effect and the estimated coefficients are not significant for firms with changes in the type of the owner. The exception is the coefficient for institutional ownership type in the full sample of firms (columns 1 and 3). This coefficient for institutional ownership type, however, is not significant in the matched institutional sample (column 9).

At the same time, the effect estimated in the “permanent” specifications in Columns 2, 4, 6, 8, and 10 indicates that family owners invest in intangible assets significantly *less* than the other ownership types in our sample. Higher intangible asset investment is also observed in firms that belong to business groups, which is consistent with Belenzon and Berkovitz (2010), who show that business groups foster the scale and novelty of corporate innovation. Firms with higher risk avoidance scores invest significantly less compared to firms with the lowest risk avoidance (*score* = 0), consistent with the view that intangible assets investment is more risky than firm gross investment. The exception is firms with risk-avoidance score = 1 that invest more in intangible assets than firms with the lowest risk avoidance. Controlling for risk avoidance does not influence in a significant way our coefficients of interest.

### 3.2. Change in the ownership type as an identification of investment behavior

Despite careful analysis and the use of matched samples in all previous estimations, we cannot be fully confident that we have disentangled the influence of supermajority ownership type and unobserved firm-level characteristics. To alleviate these concerns, we focus on the supermajority ownership transitions from one ownership type to another. The shock introduced by the ownership type change helps us to observe any change in the level of investment while being reasonably confident that this change is not driven by the firm unobservable characteristics.

While changes in ownership type are rather infrequent, we are able to identify a sufficient number of changes to conduct a meaningful analysis. We then compare firms with ownership type changes to matched firms where there were no changes in ownership over the sample period. As before, matched samples are constructed by identifying firms of similar size and asset structure, operating in the same industry (letter NACE2), country, and time period, and with the same firm structure (stand-alone *versus* business group).

As a first step, we visually examine changes in firm investment levels using two-way fixed-effects event-study regressions. Specifically, we plot coefficients and the associated confidence intervals from the investment regressions. Figs. 5 and B show the level of gross investment and the level of intangible investment, respectively, around the event of the ownership type change. Following the change, the level of gross investment decreases, and the level of intangible investment doesn't change significantly as the firm transitions from family to corporate ownership.

We go on to conduct the regression analysis reported in Table 5. A dummy variable *After* captures the change in investment levels associated with the transition from family ownership to corporate and institutional ownership against the subsample of family firms that did not change their ownership status. First, we compare firms transitioning from family to corporate ownership (see Columns 1–2 for gross investment and Columns 5–6 for intangible investment). We observe a significant decrease in the level of firm gross investment but no significant increase in the level of intangible investment. These results suggest that the transfer of ownership from family owners to corporate owners triggers the change in firm investment behavior, which becomes less family-like and more corporate-like.<sup>9</sup>

Columns 3–4 and 7–8 focus on the transitions from family ownership to institutional ownership. We do not observe any significant changes in gross or intangible investment levels for transitioning firms. The lack of

<sup>9</sup> The lack of observable changes in the levels of intangible investments associated with transitions from family to corporate ownership could be explained longer timeframe required for these assets to show up on the balance sheet.

**Table 3**  
Owner type and firm gross investment.

	Dependent Variable = <i>Gross Investment</i>									
	Pooled				Corporate		State		Institutional	
	<i>Transitory</i>	<i>Permanent</i>	<i>Transitory</i>	<i>Permanent</i>	<i>Transitory</i>	<i>Permanent</i>	<i>Transitory</i>	<i>Permanent</i>	<i>Transitory</i>	<i>Permanent</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Ownership Type (vs Family)</i>										
<i>Corporate</i>	0.004 (0.013)	-0.188*** (0.003)	0.004 (0.013)	-0.188*** (0.003)	0.002 (0.005)	-0.053*** (0.001)				
<i>State</i>	-0.034 (0.031)	-0.272*** (0.009)	-0.034 (0.031)	-0.258*** (0.009)			-0.056 (0.132)	-0.230*** (0.013)		
<i>Institutional</i>	0.010 (0.017)	-0.182*** (0.005)	0.010 (0.017)	-0.182*** (0.005)					0.014 (0.008)	-0.049*** (0.001)
<i>Structure Type (vs Stand-alone)</i>										
<i>Business Group</i>	-0.002 (0.004)	-0.084*** (0.002)	-0.002 (0.004)	-0.083*** (0.002)	-0.004** (0.002)	-0.021*** (0.001)	-0.003 (0.009)	-0.159*** (0.005)	-0.002 (0.002)	-0.020*** (0.001)
<i>Risk-avoidance score vs 0 (=lowest risk avoidance)</i>										
Risk-avoidance score = 1			0.005 (0.017)	-0.074*** (0.004)	-0.011 (0.007)	-0.012*** (0.002)	0.033 (0.041)	-0.181*** (0.007)	-0.023* (0.013)	-0.004*** (0.001)
Risk-avoidance score = 2			0.026 (0.018)	-0.103*** (0.004)	0.000 (0.007)	-0.032*** (0.002)	0.059 (0.043)	-0.221*** (0.008)	-0.017 (0.013)	-0.021*** (0.001)
Risk-avoidance score = 3			0.049* (0.025)	-0.260*** (0.010)	0.003 (0.011)	-0.063*** (0.005)	0.106* (0.060)	-0.536*** (0.020)	-0.015 (0.017)	-0.041*** (0.004)
Constant	-12.227*** (0.276)	0.053 (0.034)	-12.264*** (0.277)	0.120*** (0.034)	-1.151*** (0.137)	0.014 (0.016)	-16.040*** (0.560)	-0.128 (0.125)	-0.244 (0.210)	-0.031 (0.024)
Macro Variables	Yes		Yes		Yes		Yes		Yes	
Firm-level controls	Yes		Yes		Yes		Yes		Yes	
Firm & Time FE	Yes		Yes		Yes		Yes		Yes	
Country & Industry FE		Yes		Yes		Yes		Yes		Yes
R-squared	0.019	0.182	0.019	0.181	0.038	0.142	0.023	0.271	0.075	0.608
N	670,281	670,281	670,281	670,281	473,997	473,997	145,132	145,132	162,467	162,467

This table presents the regression results of the augmented investment equation. Firm-specific control variables are  $\ln(\text{Total Assets})$  and its square, cash flow,  $\ln$  (number of employees), sales growth, leverage, and firm age. Macro-variables consist of private credit to GDP, stock market capitalization to GDP, GDP growth, GDP in constant USD, and GDP *per capita* (constant USD). \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Heteroskedasticity consistent standard errors are in brackets.

**Table 4**  
Owner type and firm intangible investment.

	Dependent Variable = <i>Intangible Assets Investment</i>									
	Pooled				Corporate		State		Institutional	
	<i>Transitory</i>	<i>Permanent</i>	<i>Transitory</i>	<i>Permanent</i>	<i>Transitory</i>	<i>Permanent</i>	<i>Transitory</i>	<i>Permanent</i>	<i>Transitory</i>	<i>Permanent</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Ownership Type (vs Family)</i>										
<i>Corporate</i>	0.000 (0.001)	0.006*** (0.000)	0.000 (0.001)	0.006*** (0.000)	0.000 (0.001)	0.004*** (0.000)				
<i>State</i>	0.001 (0.001)	-0.002*** (0.000)	0.001 (0.001)	-0.001* (0.000)			-0.004 (0.004)	0.004*** (0.001)		
<i>Institutional</i>	0.002** (0.001)	0.005*** (0.000)	0.002** (0.001)	0.005*** (0.000)					0.001 (0.001)	0.002*** (0.000)
<i>Structure Type (vs Stand-alone)</i>										
<i>Business Group</i>	-0.000** (0.000)	0.003*** (0.000)	-0.000** (0.000)	0.003*** (0.000)	-0.000* (0.000)	0.002*** (0.000)	0.003 (0.003)	-0.006*** (0.001)	0.000 (0.000)	0.000 (0.000)
<i>Risk-avoidance score vs 0 (=lowest risk avoidance)</i>										
Risk-avoidance score = 1			-0.002 (0.001)	0.003*** (0.000)	-0.002 (0.001)	0.002*** (0.000)	-0.001 (0.004)	0.003*** (0.001)	-0.003 (0.003)	0.006*** (0.000)
Risk-avoidance score = 2			-0.003*** (0.001)	-0.000 (0.000)	-0.004*** (0.001)	-0.000* (0.000)	-0.003 (0.005)	0.001 (0.001)	-0.005* (0.003)	0.003*** (0.000)
Risk-avoidance score = 3			-0.002* (0.001)	-0.004*** (0.000)	-0.003* (0.002)	-0.003*** (0.001)	-0.002 (0.005)	-0.005*** (0.001)	-0.005 (0.004)	0.002 (0.001)
Constant	0.462*** (0.012)	-0.007*** (0.001)	0.466*** (0.012)	-0.008*** (0.001)	0.411*** (0.018)	-0.003*** (0.001)	0.378*** (0.040)	0.014*** (0.005)	0.432*** (0.037)	-0.010*** (0.002)
Macro Variables	Yes		Yes		Yes		Yes		Yes	
Firm-level controls	Yes		Yes		Yes		Yes		Yes	
Firm & Time FE	Yes		Yes		Yes		Yes		Yes	
Country & Industry FE		Yes		Yes		Yes		Yes		Yes
R-squared	0.086	0.324	0.086	0.323	0.084	0.258	0.076	0.404	0.080	0.430
N	397,348	397,348	397,348	397,348	278,822	278,822	39,331	39,331	97,684	97,684

This table presents the regression results of the augmented investment equation using investment into intangible assets. Firm-specific control variables are  $\ln(\text{Total Assets})$  and its square, cash flow,  $\ln$ (number of employees), sales growth, leverage, and firm age. Macro-variables consist of private credit to GDP, stock market capitalization to GDP, GDP growth, GDP in constant USD, and GDP *per capita* (constant USD). \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Heteroskedasticity consistent standard errors are in brackets.

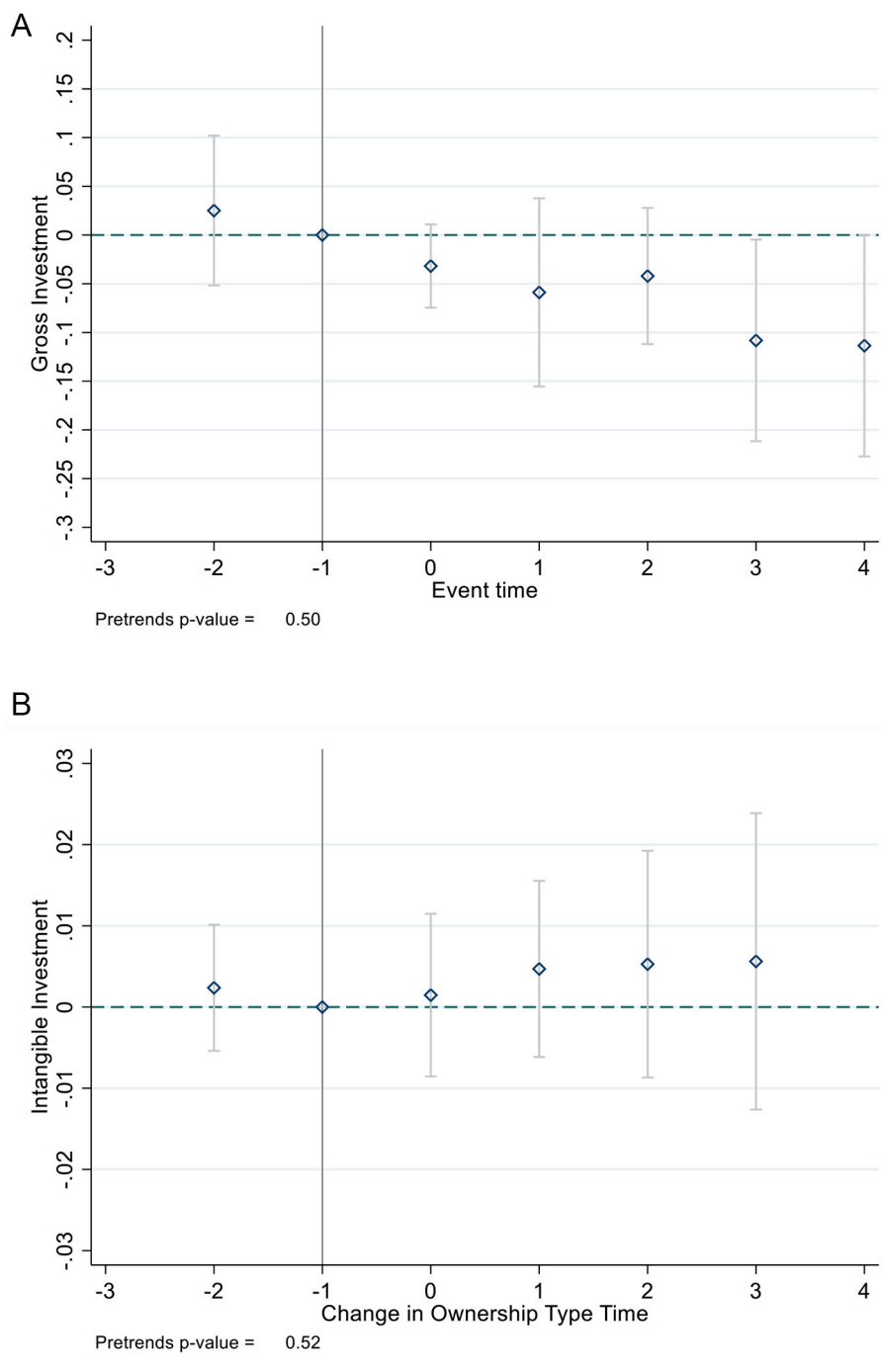


Fig. 5. A. TWFE – Gross Investment Change from Family to Corporate Ownership. 5B TWFE – Intangible Investment Change from Family to Corporate Ownership.

changes in investment levels could be attributed to the majority of institutional investors being passive in our sample.

Overall, the results obtained for firms with changes in ownership type are in line with our main results – firms with family ownership exhibit higher levels of gross investment than firms with corporate owners.

### 3.3. Investment sensitivity to growth opportunities, profitability, and cash flow

We observe clear differences in gross investment levels between ownership types in firms with no changes in the type of the owner. Our analysis shows that family owners invest more than other ownership

types. This is somewhat counterintuitive because corporate and institutional owners could potentially have access to cheaper investment capital. However, these patterns are also consistent with a number of alternative explanations, such as family-owned firms overinvesting to maintain family image and reputation and a desire to protect family assets.

To disentangle these possibilities, we further explore how firms with different ownership types respond to changes in investment opportunities; in particular, in particular, we estimate investment sensitivity to profitability and cash flow.

Table 6 and Table 7 present the results of investment sensitivity regressions to growth opportunities as well as to ROA and cash flow, respectively. Panels A focus on gross investment; Panels B show results

**Table 5**  
Owner type changes and firm investment.

	Dependent variable: <i>Gross Investment</i>				Dependent variable: <i>Intangible Assets Investment</i>			
	Corporate		Institutional		Corporate		Institutional	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>After (=1)</i>	-0.011*** (0.002)	-0.010*** (0.002)	-0.004 (0.003)	-0.003 (0.003)	0.000 (0.001)	0.000 (0.001)	0.002 (0.001)	0.002 (0.001)
<i>Business Group</i>	-0.003** (0.001)	-0.003** (0.001)	-0.001 (0.002)	-0.001 (0.002)	0.001 (0.001)	0.001 (0.001)	0.002 (0.001)	0.002 (0.001)
Risk-avoidance score = 1		-0.005*** (0.002)		-0.006* (0.004)		0.001 (0.001)		0.002 (0.003)
Risk-avoidance score = 2		-0.012*** (0.002)		-0.009** (0.004)		-0.002* (0.001)		0.002 (0.003)
Risk-avoidance score = 3		-0.026*** (0.004)		-0.016* (0.009)		-0.005** (0.002)		-0.004 (0.008)
Constant	-0.042 (0.073)	-0.028 (0.073)	-0.121 (0.205)	-0.114 (0.204)	0.095*** (0.036)	0.102*** (0.036)	0.153* (0.082)	0.150* (0.082)
Macro Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-level controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.154	0.155	0.147	0.147	0.278	0.279	0.283	0.283
N	60,767	60,767	16,034	16,034	15,810	15,810	3351	3351

The table explores whether the owner type change leads to changes in the firm level of investment. A firm's behavior transitioning from one owner type to another is assessed against the family-owned firms, never changing their ownership status. As in Table 3, in all specifications, the firm-specific control variables are ln(Total Assets) and its square, cash flow, ln(number of employees), sales growth, leverage, and firm age. Macro-variables consist of private credit to GDP, stock market capitalization to GDP, GDP growth, GDP in constant USD, and GDP per capita (constant USD). \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Heteroskedasticity consistent standard errors are in brackets.

for the intangible investment.

The results of gross investment sensitivity regressions suggest that higher investment opportunities are associated with higher gross investment by firms – the estimated coefficients are positive and significant in all specifications in both the original and matched samples. The results in columns 1 and 2 of Panel A of Tables 6 and 7 also suggest that firms with corporate owners are less sensitive to changes in growth opportunities than firms owned by families (base category). This result, though, is only significant in the full sample of firms and does not hold in the matched sample. State-owned firms display substantially greater (and more robust) sensitivity to growth opportunities compared to family-owned firms.

At the same time, the relationship between investment opportunities and the level of intangible investment is either insignificant (Panel B, Table 6) or significantly negative (Panel B, Table 7) in all specifications across samples. The results in Panel B of Tables 6 and 7 also show that firms with corporate, institutional and state owners are more sensitive to changes in growth opportunities than firms owned by families (base category). These results hold in all specifications in both original and matched samples.

In terms of investment sensitivity to profitability and cash flow, the results are remarkably similar for gross and intangible investment – firms with corporate and institutional owners are less sensitive to changes in profitability and cash flow, while state-owned firms have much larger sensitivity to profitability and cash flow than firms owned by families. These results are somewhat expected due to easier and likely cheaper access to external financing for the firms controlled by (financial) institutions, as well as the higher dividend payouts to institutional investors (Bena & Hanousek, 2008; Gugler, 2003; Gugler & Yurtoglu, 2003).

#### 4. Robustness

We conducted a number of robustness checks to ensure that our results were not sensitive to unusual features of the dataset.

##### 4.1. Investment efficiency

While differences in investment levels and investment sensitivities

offer insight into investment decisions by different types of owners, it is also important to understand whether invested capital is allocated efficiently. Efficient allocation is achieved by investing in growing industries, while investment in declining industries should be reduced (Wurgler, 2000). The quality of investment opportunities at the firm level could be proxied by value-added growth. To capture the sensitivity of investment to the growth in value-added, we extend Faccio et al. (2016) by estimating an augmented investment efficiency model to account for ownership type.

$$\begin{aligned}
 \text{Gross Investment}_{it} = & \alpha_0 + \beta X_{it} + \sum_{k=2}^K \gamma_k \text{Ownership Type}_{it} + \\
 & + \sum_{k=2}^K \rho_k VA_{it} \times \text{Ownership Type}_{it} + \mu VA_{it} \quad (4) \\
 & + \eta VA_{it} \times BGroup_{it} + \delta BGroup_{it} + \nu RA_{it} \\
 & + \lambda_c \text{Macro}_{ct} + \tau_t + f_i + \varepsilon_{it},
 \end{aligned}$$

for all  $i = 1, \dots, N$  (firm index);  $t = 2001, \dots, 2018$  (time index, year);  $k = 2, \dots, K$  (ownership type,  $K = 7$ , omitted category ( $k = 1$ ) is *Family*);  $c = 1, \dots, C$  (country index). As previously,  $BGroup$  is the dummy variable that equals unity if the firm is part of a business group.

$VA_{it}$  is the growth in value-added defined as  $\ln \frac{\text{Value Added}_{it}}{\text{Value Added}_{it-1}}$ , which reflects the quality of the firm's investment opportunities. Then,  $\mu$  represents the sensitivity of investments to growth opportunities and  $\rho$  indicates the impact of ownership type on investment efficiency. Similarly,  $VA$  is interacted with  $BGroup$  capturing the effect of business group affiliation on investment efficiency ( $\eta = 0$  if irrelevant). We also control for risk-avoidance ( $RA_{it}$ ) as defined earlier.

Vector  $X_{it}$  and vector  $Macro_{ct}$  contain sets of firm-specific and country-level control variables respectively, as discussed above.  $\tau_t$  and  $f_i$  are time and firm fixed effects.  $\varepsilon_{it}$  is the error term robust to arbitrary heteroskedasticity.

The results are presented in Table 8. We find a positive relationship between investment efficiency and firm gross investment (Panel A, Table 8). In terms of ownership type, we show that investments of state-owned firms have higher efficiency than the investment of family-owned firms. For the corporate owners, we observe a lower investment efficiency compared to family owners. Also, in general (in pooled data), the business group firms *ceteris paribus* show a higher contribution to the

**Table 6**  
Investment Sensitivity to Investment Opportunities and Profitability.

Panel A. Gross Investment								
	Dependent Variable = Gross Investment							
	Original sample		Matched samples					
	Pooled		Corporate		State		Institutional	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inv. Opportunities	0.029*** (0.004)	0.029*** (0.004)	0.025*** (0.002)	0.025*** (0.002)	0.019*** (0.006)	0.019*** (0.006)	0.018*** (0.002)	0.018*** (0.002)
<i>Interactions with Ownership Type (vs Family)</i>								
Inv. Opportunities × Corporate	−0.016*** (0.006)	−0.016*** (0.006)	−0.003 (0.002)	−0.003 (0.002)				
Inv. Opportunities × State	0.293*** (0.016)	0.293*** (0.016)			0.291*** (0.023)	0.291*** (0.023)		
Inv. Opportunities × Institutional	−0.016 (0.013)	−0.016 (0.013)					−0.002 (0.003)	−0.002 (0.003)
<i>Structure Type (vs Stand-alone)</i>								
Inv. Opportunities × Business Group	−0.003 (0.004)	−0.003 (0.004)	−0.004** (0.002)	−0.004** (0.002)	−0.004 (0.009)	−0.004 (0.009)	−0.001 (0.002)	−0.001 (0.002)
Profitability (ROA)	−0.090*** (0.024)	−0.090*** (0.024)	−0.095*** (0.011)	−0.095*** (0.011)	−0.039 (0.046)	−0.040 (0.046)	−0.072*** (0.014)	−0.072*** (0.014)
<i>Interactions with Ownership Type (vs Family)</i>								
Profitability × Corporate	0.026 (0.024)	0.025 (0.024)	−0.027** (0.011)	−0.027** (0.011)				
Profitability × State	3.152*** (0.084)	3.152*** (0.084)			3.336*** (0.121)	3.336*** (0.121)		
Profitability × Institutional	−0.008 (0.047)	−0.009 (0.047)					−0.050*** (0.014)	−0.050*** (0.014)
<i>Risk-avoidance score vs 0 (=lowest risk avoidance)</i>								
Risk-avoidance score = 1		0.004 (0.017)		−0.014** (0.007)		0.032 (0.041)		−0.029** (0.013)
Risk-avoidance score = 2		0.018 (0.018)		−0.010 (0.008)		0.051 (0.043)		−0.031** (0.013)
Risk-avoidance score = 3		0.034 (0.025)		−0.013 (0.011)		0.090 (0.060)		−0.039** (0.017)
Constant	−12.186*** (0.277)	−12.212*** (0.277)	−1.310*** (0.138)	−1.303*** (0.138)	−15.96*** (0.557)	−16.03*** (0.560)	−0.566*** (0.212)	−0.534** (0.212)
Macro Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-level controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.019	0.019	0.029	0.029	0.023	0.023	0.055	0.055
N	670,046	670,046	473,824	473,824	145,083	145,083	162,430	162,430

Panel B. Intangible Assets Investment								
	Dependent Variable = Intangible Assets Investment							
	Original sample		Matched samples					
	Pooled		Corporate		State		Institutional	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inv. Opportunities	−0.0001 (0.0002)	−0.0000 (0.0002)	−0.0003 (0.0002)	−0.0003 (0.0002)	−0.0000 (0.0005)	−0.0000 (0.0005)	0.018*** (0.002)	0.018*** (0.002)
<i>Interactions with Ownership Type (vs. Family)</i>								
Inv. Opportunities × Corporate	0.001*** (0.000)	0.001*** (0.000)	0.002*** (0.000)	0.002*** (0.000)				
Inv. Opportunities × State	0.002*** (0.001)	0.002*** (0.001)			0.002** (0.001)	0.002** (0.001)		
Inv. Opportunities × Institutional	0.003*** (0.001)	0.003*** (0.001)					0.002*** (0.001)	0.002*** (0.001)
<i>Structure Type (vs. Stand-alone)</i>								
Business Group	−0.0005** (0.0002)	−0.0005** (0.0002)	−0.001** (0.000)	−0.001** (0.000)	0.001 (0.002)	0.001 (0.002)	−0.001 (0.002)	−0.001 (0.002)
Profitability (ROA)	−0.125*** (0.001)	−0.125*** (0.001)	−0.100*** (0.001)	−0.099*** (0.001)	−0.194*** (0.004)	−0.194*** (0.004)	−0.117*** (0.002)	−0.116*** (0.002)
<i>Interactions with Ownership Type (vs. Family)</i>								
Profitability × Corporate	0.001 (0.001)	0.001 (0.001)	−0.006*** (0.001)	−0.006*** (0.001)				
Profitability × State	−0.002 (0.003)	−0.002 (0.003)			0.010** (0.004)	0.010** (0.004)		
Profitability × Institutional	−0.001 (0.002)	−0.001 (0.002)					−0.003 (0.002)	−0.003 (0.002)
<i>Risk-avoidance score vs. 0 (=lowest risk avoidance)</i>								
Risk-avoidance score = 1		−0.003**		−0.003**		−0.002		−0.004

(continued on next page)



Table 6 (continued)

Panel B. Intangible Assets Investment								
Dependent Variable = Intangible Assets Investment								
	Original sample		Matched samples					
	Pooled		Corporate		State		Institutional	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Risk-avoidance score = 2		(0.001) -0.005***		(0.001) -0.005***		(0.004) -0.005		(0.003) -0.007**
Risk-avoidance score = 3		(0.001) -0.006***		(0.001) -0.006***		(0.004) -0.006		(0.003) -0.009**
Constant	0.394*** (0.012)	0.401*** (0.012)	0.344*** (0.018)	0.352*** (0.018)	0.208*** (0.038)	0.213*** (0.038)	0.339*** (0.036)	0.347*** (0.036)
Macro Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-level controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.131	0.131	0.109	0.110	0.185	0.186	0.122	0.123
N	397,255	397,255	278,752	278,752	39,316	39,316	97,673	97,673

This table presents the results of investment sensitivity regression to investment opportunities and profitability. We control for a standard set of firm-level control variables and macro-variables used in previous tables. Base categories are family-owned firms, stand-alone firms, and firms with the lowest risk-avoidance score. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Heteroskedasticity consistent standard errors are in brackets.

value-added growth. At the same time, we observe a negative relationship between investment efficiency and firm intangible investment (Panel B, Table 8). Similar to gross investment, intangible investment of state-owned firms have marginally higher efficiency than the investment of family-owned firms.

#### 4.2. Redeployability of assets

We also test the robustness of our results by analyzing to what extent asset redeployability affects the investment behavior of different owners.

The secondary markets for corporate assets can vary significantly across industries. A wide variation in trading activity would imply different search costs for potential buyers and sellers. Costly capital reversibility will affect firm investment decisions because disinvestment is more costly than investment. At the same time, asset redeployability costs could also vary for the different ownership types.

We follow Kim and Kung (2017) to test this conjecture and control for industry-specific asset redeployability. The redeployability score is grouped into three categories – High (top 25% of the asset redeployability distribution), Medium, and Low (bottom 25%). We then re-estimate the main regression specifications (1) and (2) in Tables 3 and 4 in subsamples with different asset redeployability.

Table 9 presents the results. Panel A focuses on gross investment, while Panel B shows intangible investment. The estimation results for all three subsets and different investment types closely resemble those in Tables 3 and 4. We conclude that differences in asset redeployability do not drive our findings.

#### 4.3. Firm age

Investment patterns could vary substantially depending on firm age. Firm age has been shown to be related to investment opportunities because mature firms' investment opportunities may differ from those of young firms (Anderson & Reeb, 2003). In addition, family-owned younger firms could potentially be more credit constrained than younger firms owned by corporate or institutional owners. To determine if firms of a certain age are generating our results, we test the robustness

of our findings by re-estimating our main specifications (1) and (2) for the subsamples of young firms (0–5 years), older firms (6–30 years old) and well-established firms (30+ years old). The results in Table IA-1 of the Supplementary Material are consistent with our main results reported in Tables 3 and 4. Family owners invest significantly more in tangible assets and significantly less in intangible assets than other owner types in all three firm age categories. The differences in gross investment behavior are most pronounced for firms that are >30 years old. Regarding intangible investment, firms in the youngest age group (0–5 years) exhibit the largest differences. As firms get older, the level of their intangible investment drops significantly compared to the youngest firms in our sample and remains stable (the estimated coefficients within owner-type groups are not statistically different from each other).

#### 4.4. Firm size

Literature often considers the firm size and financial constraints together. It is argued that larger firms can finance their investment either from internal sources or via issuing debt or even equity and, as a result, liquidity constraints tend to have a greater impact on smaller firms. To ensure that our results are not driven by one size firm category, we differentiate between firms with 10–50 employees, firms with 50 to 100 employees, and firms with at least 100 employees. We then replicated Table 3 and Table 4 for each firm size subsample and reported the results in Table IA-2 of the Supplementary Material. We continue to find that firms owned by families invest significantly more in tangible assets and significantly less in intangible assets than the other ownership types in each firm size category. Within ownership type categories, the estimated coefficients are statistically different from each other across different firm sizes. The effect of ownership type on gross investment is the strongest in the largest firm category. We do not observe any clear pattern for firm intangible investments when analyzing the estimated coefficients across different size categories for the same type of owner.

#### 4.5. Market development

If firms operating in more developed countries tend to have better capital market access, we might expect differences in investment

**Table 7**  
Investment Sensitivity to Investment Opportunities and Cash Flow.

Panel A. Gross Investment								
	Dependent Variable = Gross Investment							
	Original sample		Matched samples					
	Pooled		Corporate		State		Institutional	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inv. Opportunities	0.026*** (0.004)	0.026*** (0.004)	0.022*** (0.002)	0.022*** (0.002)	0.014** (0.006)	0.014** (0.006)	0.017*** (0.002)	0.017*** (0.002)
<i>Interactions with Ownership Type (vs Family)</i>								
Inv. Opportunities × Corporate	-0.014*** (0.006)	-0.014** (0.006)	-0.002 (0.002)	-0.002 (0.002)				
Inv. Opportunities × State	0.390*** (0.016)	0.390*** (0.016)			0.393*** (0.023)	0.393*** (0.023)		
Inv. Opportunities × Institutional	-0.014 (0.012)	-0.015 (0.012)					-0.003 (0.003)	-0.003 (0.003)
<i>Structure Type (vs Stand-alone)</i>								
Inv. Opportunities × Business Group	-0.003 (0.004)	-0.003 (0.004)	-0.004** (0.002)	-0.004** (0.002)	-0.004 (0.009)	-0.004 (0.009)	-0.001 (0.002)	-0.001 (0.002)
Cash flow	-0.069*** (0.018)	-0.070*** (0.018)	0.018* (0.010)	0.018* (0.010)	-0.096*** (0.026)	-0.098*** (0.026)	0.023** (0.011)	0.023** (0.011)
<i>Interactions with Ownership Type (vs Family)</i>								
Cash flow × Corporate	-0.012 (0.025)	-0.011 (0.025)	-0.048*** (0.012)	-0.048*** (0.012)				
Cash flow × State	0.318*** (0.090)	0.318*** (0.090)			0.341*** (0.129)	0.341*** (0.129)		
Cash flow × Institutional	-0.030 (0.051)	-0.030 (0.051)					-0.062*** (0.015)	-0.062*** (0.015)
<i>Risk-avoidance score vs 0 (=lowest risk avoidance)</i>								
Risk-avoidance score = 1		0.002 (0.017)		-0.015** (0.007)		0.030 (0.041)		-0.029** (0.013)
Risk-avoidance score = 2		0.017 (0.018)		-0.011 (0.008)		0.050 (0.043)		-0.032** (0.013)
Risk-avoidance score = 3		0.033 (0.025)		-0.015 (0.011)		0.090 (0.060)		-0.039** (0.017)
Constant	-12.274*** (0.276)	-12.297*** (0.277)	-1.267*** (0.137)	-1.258*** (0.138)	-16.068*** (0.557)	-16.135*** (0.560)	-0.512** (0.212)	-0.479** (0.212)
Macro Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-level controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.016	0.016	0.028	0.028	0.02	0.02	0.054	0.054
N	670,281	670,281	473,997	473,997	145,127	145,127	162,467	162,467

Panel B. Intangible Assets Investment								
	Dependent Variable = Intangible Assets Investment							
	Original sample		Matched samples					
	Pooled		Corporate		State		Institutional	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inv. Opportunities	-0.003*** (0.000)	-0.003*** (0.000)	-0.003*** (0.000)	-0.003*** (0.000)	-0.002*** (0.001)	-0.002*** (0.001)	-0.002*** (0.000)	-0.002*** (0.000)
<i>Interactions with Ownership Type (vs Family)</i>								
Inv. Opportunities × Corporate	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.003*** (0.000)				
Inv. Opportunities × State	0.003*** (0.001)	0.003*** (0.001)			0.003*** (0.001)	0.003*** (0.001)		
Inv. Opportunities × Institutional	0.003*** (0.001)	0.003*** (0.001)					0.002*** (0.001)	0.002*** (0.001)
<i>Structure Type (vs Stand-alone)</i>								
Business Group	-0.0005* (0.0002)	-0.0005** (0.0002)	-0.0004* (0.0002)	-0.0004* (0.0002)	0.0007 (0.0026)	0.0008 (0.0026)	0.0006 (0.0004)	0.0006 (0.0004)
Cash flow	0.040*** (0.001)	0.040*** (0.001)	0.047*** (0.001)	0.048*** (0.001)	0.033*** (0.003)	0.033*** (0.003)	0.041*** (0.002)	0.042*** (0.002)
<i>Interactions with Ownership Type (vs Family)</i>								
Cash flow × Corporate	-0.027*** (0.001)	-0.027*** (0.001)	-0.036*** (0.002)	-0.036*** (0.002)				
Cash flow × State	0.007* (0.004)	0.007* (0.004)			0.009** (0.004)	0.009** (0.004)		
Cash flow × Institutional	-0.027*** (0.002)	-0.027*** (0.002)					-0.027*** (0.003)	-0.027*** (0.003)
<i>Risk-avoidance score vs 0 (=lowest risk avoidance)</i>								
Risk-avoidance score = 1		-0.003***		-0.003**		-0.002		-0.004

(continued on next page)

Table 7 (continued)

Panel B. Intangible Assets Investment								
Dependent Variable = Intangible Assets Investment								
	Original sample		Matched samples					
	Pooled		Corporate		State		Institutional	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Risk-avoidance score = 2		(0.001) −0.006***		(0.001) −0.006***		(0.004) −0.004		(0.003) −0.007**
Risk-avoidance score = 3		(0.001) −0.007***		(0.001) −0.007***		(0.005) −0.005		(0.003) −0.009**
Constant	0.454*** (0.013)	0.462*** (0.013)	0.387*** (0.018)	0.395*** (0.018)	0.359*** (0.040)	0.363*** (0.041)	0.405*** (0.037)	0.414*** (0.037)
Macro Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-level controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.067	0.067	0.062	0.063	0.061	0.061	0.066	0.067
N	397,348	397,348	278,822	278,822	39,331	39,331	97,684	97,684

This table presents the results of investment sensitivity regression to investment opportunities and cash flow. We control for a standard set of firm-level control variables and macro-variables used in previous tables. Base categories are family-owned firms, stand-alone firms, and firms with the lowest risk-avoidance score. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Heteroskedasticity consistent standard errors are in brackets.

behavior. We, therefore, assess whether country development affects our results. We re-estimate eqs. (1) and (2) separately for firms operating in EU 15 (initial member countries), EU10 (new member countries that joined the union in 2004), and non-EU countries. The results in Table IA-3 of the Supplementary Material closely resemble our main results in all three subsamples – family-owned firms have the highest gross investment level and the lowest level of intangible investment among all considered ownership types. Within ownership type categories, the largest differences among gross investment behavior are observed for firms operating in non-EU countries, and the smallest differences are observed in EU15 countries. In terms of intangible investment, ignoring state-owned firms, the estimated differences between ownership types are the smallest in non-EU countries and the largest in EU10 countries. Overall, the estimated ownership type effects differ significantly across different country groups.

## 5. Conclusion

We explore how corporate investment choices are influenced by ownership type, focusing solely on supermajority firms where the share of the largest owner is above 95% so as to address potential agency problems. We investigate how ownership type affects firm investment levels and whether different types of owners have different sensitivities to business opportunities, profitability, cash flows and value-added growth. We also control for firm structure and include identifying stand-alone firms and business groups and direct and indirect firm ownership.

For the analysis, we construct a large sample of European privately owned firms covering the period from 2001 to 2018. We focus on four ownership types: family, corporate, institutional, and state owners. Our methodology is designed to overcome the methodological shortcomings of previous studies. To this end, we capture the effect of the change in the ownership type (“transitory” effect) as well as the effect of ownership type in firms with no change of ownership (“permanent” effect) in the sample. Prior studies (see, e.g., Thomsen & Pedersen, 2000) focus only on the so-called transitory effect. We also address potential endogeneity by using matching samples and examining transitions from one owner type to another.

Interestingly, our methodological approach yields new results, identifying substantially higher investment and sensitivity of the family-owned firms to investment opportunities, profitability, cash flows and value-added growth compared to corporate and institutional owners. The previous literature usually argues that family-owned will be risk-averse because the owner's wealth is often relatively undiversified and tied up in the business. Our findings support the view that family-owned firms actually take a long-term strategic perspective ((Aguilera & Crespi-Cladera, 2012; Bertrand & Schoar, 2006), invest significantly more than, for example, institutional and corporate owners, and are more sensitive to external factors via cash flows. We interpret our findings as likely to have arisen because our focus on supermajority owners allows us in the empirical work to disentangle agency effects from the impact of ownership.

Even so, the positive effects of family ownership on investment are found to apply only to tangible investments; in fact, when we consider investment in intangibles, the traditional findings in the literature are found to hold. This distinction between tangible and intangible investment because it is the latter, which is usually linked to R&D and, therefore, to innovation and productivity growth (Corrado, Haskel, Jona-Lasinio, & Iommi, 2013). This suggests that a more fine-grained analysis of the impact of family ownership might focus on R&D, innovation, and productivity.

Our analysis leads to several important lines of policy analysis. First, the negative view of family ownership in the growth literature may need to be revised or, at a minimum, become more nuanced. Our findings suggest that the problems with family ownership are concentrated on intangible investment and that policymakers may wish to focus their attention on encouraging R&D and innovation through intangible assets in such firms. Our results also bring into question the concerns about investment behavior in state-owned firms often noted in the literature (see Estrin et al., 2009); when the supermajority criterion of ownership is applied, state-owned firms consistently display higher sensitivity to profitability, cash flows, and business opportunities than even family-owned firms. This suggests that issues in state-owned firms tend to appear when the state owns a majority of shares, but other owners also have a large block, perhaps because of difficulties in coordinating the aims of the different owners. The study also opens several promising

**Table 8**  
Investment Efficiency and Owner Type.

Panel A: Gross Investment								
	Dependent Variable = <i>Gross Investment</i>							
	Original sample		Matched samples					
	Pooled		Corporate		State		Institutional	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Investment Efficiency (proxied by Value added)	0.047*** (0.003)	0.034*** (0.007)	0.046*** (0.002)	0.032*** (0.005)	0.044*** (0.004)	0.036*** (0.013)	0.033*** (0.006)	0.016 (0.014)
<i>Interactions with Ownership Type (vs Family)</i>								
Value added × Corporate	−0.019*** (0.003)	−0.019*** (0.003)	−0.024*** (0.002)	−0.024*** (0.002)				
Value added × State	0.179*** (0.015)	0.179*** (0.015)			0.178*** (0.019)	0.177*** (0.019)		
Value added × Institutional	−0.009 (0.007)	−0.009 (0.007)					−0.002 (0.006)	−0.002 (0.006)
<i>Interactions with Structure Type (vs Stand-alone)</i>								
Value added × Business Group	0.007** (0.003)	0.007** (0.003)	0.002 (0.002)	0.002 (0.002)	0.006 (0.006)	0.005 (0.006)	0.004 (0.006)	0.004 (0.006)
<i>Interactions with Risk-avoidance score vs 0 (=lowest risk avoidance)</i>								
Risk-avoidance score = 1		0.013* (0.007)		0.013*** (0.004)		0.009 (0.013)		0.017 (0.013)
Risk-avoidance score = 2		0.013* (0.007)		0.020*** (0.005)		0.009 (0.014)		0.019 (0.014)
Risk-avoidance score = 3		0.007 (0.019)		0.009 (0.012)		0.005 (0.040)		0.094** (0.042)
Constant	−2.587*** (0.149)	−2.578*** (0.150)	−1.936*** (0.112)	−1.927*** (0.112)		−3.004*** (0.269)	−2.976*** (0.271)	−0.445 (0.370)
Macro Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ownership and Structure & Risk avoidance dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-level controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.038	0.038	0.097	0.097	0.039	0.039	0.040	0.040
N	367,573	367,573	261,826	261,826	80,181	80,181	95,959	95,959

Panel B: Intangible Assets Investment								
	Dependent Variable = <i>Intangible Assets Investment</i>							
	Original sample		Matched samples					
	Pooled		Corporate		State		Institutional	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Investment Efficiency (proxied by Value added)	−0.002*** (0.000)	−0.002*** (0.000)	−0.002*** (0.000)	−0.002*** (0.000)	−0.004*** (0.001)	−0.004*** (0.001)	−0.002*** (0.001)	−0.002*** (0.001)
<i>Interactions with Ownership Type (vs. Family)</i>								
Value added × Corporate	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)	−0.000 (0.000)				
Value added × State	0.001 (0.002)	0.001 (0.002)			0.003* (0.002)	0.003* (0.002)		
Value added × Institutional	0.000 (0.001)	0.000 (0.001)					−0.001 (0.001)	−0.001 (0.001)
<i>Interactions with Structure Type (vs. Stand-alone)</i>								
Business Group	−0.0002 (0.0002)	−0.0001 (0.0002)	−0.0004 (0.0003)	−0.0004 (0.0003)	−0.0026 (0.0035)	−0.0022 (0.0035)	0.0008* (0.0005)	0.0008* (0.0005)
<i>Interactions with Risk-avoidance score vs. 0 (=lowest risk avoidance)</i>								
Risk-avoidance score = 1		−0.002* (0.001)		−0.004** (0.002)		−0.010 (0.008)		−0.000 (0.004)
Risk-avoidance score = 2		−0.006*** (0.002)		−0.007*** (0.002)		−0.014* (0.008)		−0.004 (0.004)
Risk-avoidance score = 3		−0.006*** (0.002)		−0.008*** (0.002)		−0.016* (0.009)		−0.005 (0.005)
Constant	0.520*** (0.017)	0.526*** (0.017)	0.475*** (0.024)	0.482*** (0.024)	0.698*** (0.075)	0.720*** (0.076)	0.389*** (0.047)	0.394*** (0.047)
Macro Variables	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ownership, Structure & Risk avoidance dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm-level controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm & Time FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.071	0.071	0.064	0.064	0.091	0.092	0.072	0.073
N	281,819	281,819	201,512	201,512	22,640	22,640	72,928	72,928

This table presents regression results for investment efficiency using value-added growth. We include a standard set of firm-level control variables and macro-variables used in previous tables. Base categories are family-owned firms, stand-alone firms, and firms with the lowest risk-avoidance score. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Heteroskedasticity consistent standard errors are in brackets.

**Table 9**  
Redeployability of Assets.

Panel A: Gross Investment						
Asset Redeployability	Dependent Variable = <i>Gross Assets Investment</i>					
	High		Medium		Low	
	<i>Transitory</i>	<i>Permanent</i>	<i>Transitory</i>	<i>Permanent</i>	<i>Transitory</i>	<i>Permanent</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Corporate</i>	0.014 (0.013)	-0.072 *** (0.014)	0.005 (0.021)	-0.228 *** (0.004)	-0.009 (0.018)	-0.146 *** (0.002)
<i>State</i>	-0.030 (0.032)	-0.105 *** (0.035)	-0.013 (0.065)	-0.601 *** (0.013)	-0.036 (0.035)	-0.085 *** (0.007)
<i>Institutional</i>	0.004 (0.018)	-0.060 *** (0.022)	0.026 (0.029)	-0.245 *** (0.007)	-0.011 (0.024)	-0.127 *** (0.004)
<i>Business Group</i>	-0.006 (0.005)	-0.022 * (0.012)	0.004 (0.007)	-0.122 *** (0.003)	-0.005 (0.006)	-0.050 *** (0.002)
Risk-avoidance score = 1	-0.002 (0.015)	0.020 (0.017)	0.023 (0.028)	-0.137 *** (0.005)	-0.020 (0.028)	-0.024 *** (0.003)
Risk-avoidance score = 2	0.006 (0.016)	0.012 (0.019)	0.044 (0.030)	-0.168 *** (0.005)	0.007 (0.029)	-0.061 *** (0.003)
Risk-avoidance score = 3	0.030 (0.025)	-0.110 ** (0.045)	0.076 * (0.042)	-0.374 *** (0.014)	0.013 (0.038)	-0.106 *** (0.008)
Constant	-0.845 *** (0.247)	-0.047 (0.165)	-22.862 *** (0.484)	0.472 *** (0.044)	-4.370 *** (0.400)	0.097 *** (0.029)
Macro Variables	Yes		Yes		Yes	
Firm-level controls	Yes		Yes		Yes	
Firm & Time FE	Yes		Yes		Yes	
Country & Industry FE		Yes		Yes		Yes
R-squared	0.039	0.012	0.026	0.336	0.014	0.255
N	93,237	93,237	346,510	346,510	230,534	230,534

Panel B: Intangible Assets Investment						
Asset Redeployability	Dependent Variable = <i>Intangible Assets Investment</i>					
	High		Medium		Low	
	<i>Transitory</i>	<i>Permanent</i>	<i>Transitory</i>	<i>Permanent</i>	<i>Transitory</i>	<i>Permanent</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Corporate</i>	-0.001 (0.002)	0.012 *** (0.000)	0.001 (0.001)	0.003 *** (0.000)	-0.000 (0.001)	0.010 *** (0.000)
<i>State</i>	0.000 (0.004)	-0.000 (0.001)	0.006 ** (0.002)	-0.006 *** (0.001)	-0.001 (0.002)	0.000 (0.001)
<i>Institutional</i>	0.006 ** (0.003)	0.006 *** (0.001)	0.002 ** (0.001)	0.002 *** (0.000)	-0.001 (0.001)	0.008 *** (0.000)
<i>Business Group</i>	0.000 (0.001)	0.003 *** (0.000)	0.000 (0.000)	0.002 *** (0.000)	-0.001 *** (0.000)	0.004 *** (0.000)
Risk-avoidance score = 1	-0.002 (0.003)	0.002 *** (0.001)	-0.002 (0.001)	0.003 *** (0.000)	-0.000 (0.002)	0.002 *** (0.000)
Risk-avoidance score = 2	-0.003 (0.003)	-0.002 ** (0.001)	-0.004 ** (0.002)	0.001 ** (0.000)	-0.003 (0.002)	-0.001 *** (0.000)
Risk-avoidance score = 3	-0.004 (0.004)	-0.002 (0.001)	-0.002 (0.002)	-0.005 *** (0.001)	-0.002 (0.002)	-0.004 *** (0.001)
Constant	0.476 *** (0.036)	0.007 * (0.003)	0.479 *** (0.018)	-0.015 *** (0.001)	0.452 *** (0.020)	-0.027 *** (0.002)
Macro Variables	Yes		Yes		Yes	
Firm-level controls	Yes		Yes		Yes	
Firm & Time FE	Yes		Yes		Yes	
Country & Industry FE		Yes		Yes		Yes
R-squared	0.079	0.105	0.084	0.341	0.097	0.444
N	47,596	47,596	198,828	198,828	150,924	150,924

This table presents the regression results of the augmented investment equation using gross investment. Asset redeployability is grouped into three categories: High (top quartile), medium (bottom quartile), and low (bottom quartile). Firm-specific control variables are  $\ln(\text{Total Assets})$  and its square, cash flow,  $\ln(\text{number of employees})$ , sales growth, leverage, and firm age. Macro-variables consist of private credit to GDP, stock market capitalization to GDP, GDP growth, GDP in constant USD, and GDP *per capita* (constant USD). \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively. Heteroskedasticity consistent standard errors are in brackets.



lines of future research, developing the use of the supermajority criterion in the analysis of the impact of different governance mechanisms. It would also be valuable to delve deeper into why family-owned firms invest less in intangible assets. One approach might be to consider the limitations they face in terms of collateral when funding new investments because their assets are already tied up in the operation of the firm.

### Data availability

I can share the code, but the data are proprietary and I have no permission to share them

### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.irfa.2024.103427>.

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