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RESEARCH ARTICLE

WILEY

Turning 30 and myopic? Temporal orientation and the firm lifecycle

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Abstract

A vast body of literature shows that large, publicly listed firms suffer from managerial short-termism and inadequate temporal orientation. We study the temporal orientations, measured as the investment horizons, of firms throughout their lifecycles. We build on theoretical arguments from organizational learning theory and agency theory to argue that the relationship between firm age and the investment horizon is quadratic, with an inverted U shape. Using a large sample of publicly listed and privately held European firms, we obtain results consistent with this prediction. Our results support the idea that younger firms gradually learn to use more sophisticated investment decision criteria, thus resulting in longer investment horizons. However, this effect is bounded by changes in governance structure, such as the separation of ownership from control that results from the transition from an owner-managed status to a professionally managed status. Implications for future research and practice are discussed.

KEYWORDS

firm lifecycle, investment decisions, privately held firms, temporal orientation

JEL CLASSIFICATION

G31, L25, L26

1 | INTRODUCTION

Recent research on temporal orientation documents several important factors that explain why some firms have short-term horizons even when long-term orientations would be more beneficial (Sampson & Shi, 2023). For instance, performance aspirations (Souder & Shaver, 2010), managerial pay incentive devices (Souder & Bromiley, 2012; Wu & Mazur, 2018), inadequate use of investment decision¹ criteria (Souder et al., 2016), financial analysts' monitoring, and shareholders' expectations (Desjardine & Bansal, 2019) all serve to explain corporate short-termism. Short-termism is a major problem for firm performance because firms with this orientation miss out on promising long-term business opportunities that can create value. The detrimental effects of short-termism are empirically well documented,

although temporal orientation can also be excessively long² (Souder et al., 2016).

Most of what we know about temporal orientation is based on the observation and characteristics of large, publicly listed firms and focuses on factors internal to firms (e.g., managerial incentive systems and performance aspiration levels) or on close stakeholders (e.g., shareholders and financial analysts). However, firms that are large and publicly listed represent only a small fraction of all firms and are precisely those firms that have managed to survive and grow until they reached well-established positions. The temporal orientations of firms that have not reached the going-public stage thus represent an overlooked topic, both conceptually and empirically. As a first step in filling this gap, we describe in this paper an exploratory study of the evolution of temporal orientations, measured as investment horizons,

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throughout the firm lifecycle among a large sample of both privately held and publicly listed firms. In other words, we aim to examine how firms' temporal orientations change as they grow older.

In doing so, our motivation is twofold. First, privately held firms represent the majority of firms and are key contributors to economic growth and employment, especially in the European Union, which is the context of this study (European Commission, 2020). Understanding the characteristics (i.e., investment horizons) of private younger firms' investment decision-making processes thus appears to be useful for the purpose of shedding light on the differences between mature, publicly listed firms, and younger firms. This would help public policymakers adjust the supporting measures they design to foster business activity. Second, past research on investment horizons overlooks the case of young, privately held firms, likely hampering theoretical progress. While there is little doubt that external market pressures and pay incentive devices play important roles in explaining publicly listed firms' investment horizons, we have little theoretical insight into the investment horizons of firms that have not reached the going-public stage or have decided to remain private. In addition, decision-making processes and management styles vary as firms grow older (Anderson & Eshima, 2013; Hoskisson et al., 2017), meaning that important insights can be gained by dynamically considering the temporal orientations of firms (i.e., as things that evolve as firms grow older).

With this context in mind, we conduct an exploratory study of the evolution of firms' investment horizons throughout the firm lifecycle. We build a conceptual framework that combines arguments from two distinct theoretical frameworks: organizational learning theory (Fiol & Lyles, 1985; Gibb, 1997) and agency theory (Eisenhardt, 1989; Jensen & Meckling, 1976). In this framework, we propose that firms gradually learn to use increasingly sophisticated investment decision criteria, thus increasing their investment horizons. As a consequence of the liability of newness (Aldrich & Auster, 1986), young firms are poor users of investment decision criteria, but they acquire experience in this domain as they grow older (Ekanem, 2005; Ekanem & Smallbone, 2007). However, when a firm transitions from an owner-managed status to a professionally managed status, two factors lead to a decrease in its investment horizon. First, an increase in the manager's risk aversion leads to a shift toward more short-term-oriented decisions. Second, the benefits of organizational learning, which are intrinsically associated with owner-manager, disappear when the owner-manager leaves the firm (Zahra & Filatotchev, 2004). Therefore, the investment horizon will decrease following the separation of ownership from control. By combining arguments from organizational learning theory and agency theory throughout the firm lifecycle, we predict that the relationship between firm age and investment horizon is quadratic, with an inverted U shape. To be clear, we use firm age as a proxy for our key constructs (organizational learning and the separation of ownership from control) in the empirical analysis, meaning that the results we present are consistent with our theoretical framework but do not represent a clear-cut empirical validation of causal channels.

Our main contribution is to conceptually combine two lines of research on temporal orientation—namely, organizational learning theory (Ekanem, 2005; Ekanem & Smallbone, 2007) and agency theory

(Eisenhardt, 1989; Martin et al., 2015)—to study the evolution of firms' investment horizons throughout their lifecycles. By doing so, we adopt a dynamic perspective on temporal orientation and acknowledge that the factors affecting a firm's investment decisions depend on its stage of maturity. Interestingly, our work suggests that the commonly observed phenomenon of managerial short-termism is characteristic of mature firms but less common in younger, privately held firms (Martin et al., 2015; Souder & Bromiley, 2012). In the next sections of this paper, we develop our theoretical framework and hypotheses, describe our methodological design, and then present our results. The last section discusses the results and limitations of the present study and offers suggestions for future research.

2 | THEORETICAL FRAMEWORK AND HYPOTHESES DEVELOPMENT

2.1 | Temporal orientation and investment horizon over the firm lifecycle

We argue that the evolution of firms' temporal orientations and their associated investment horizons are driven by two main theoretical factors: organizational learning and agency problems. The major roles of these two drivers of temporal orientation are well-established in the literature (Ekanem, 2005; Ekanem & Smallbone, 2007; Martin et al., 2015). The first role relates to the financial skills and knowledge of investment decisions developed by firms' owner-managers (Ekanem, 2005; Graham, 2022; Souder et al., 2016; van Burg et al., 2012), while the second role relates to the separation of ownership from control that arises as firms reach maturity (Hoskisson et al., 2017; Jensen & Meckling, 1976). We elaborate on these conceptual frameworks below, but our arguments can be summarized as follows. During the first years of a firm's existence, the investment decisions made by the owner-manager tend to be relatively unsophisticated because owner-managers often lack financial skills. This leads to the selection of investment opportunities with relatively short horizons. The owner-manager will gradually learn to use more sophisticated investment decision techniques, and this learning is associated with an increase in the investment horizon. However, when an owner-manager steps down and a professional manager is hired, the investment horizon will likely decline because professional managers are typically more risk averse than owner-managers (Eisenhardt, 1989; Hoskisson et al., 2017; Jensen & Meckling, 1976).

Our theoretical approach answers a call to investigate more explicitly managerial risk-taking throughout the firm lifecycle (Hoskisson et al., 2017; Lynall et al., 2003). Investment decisions—and in particular, the investment horizon—reflect managerial risk-taking in the sense that longer investment horizons are associated with increased risk, as more resources are invested and locked up in long-term business opportunities than in short-term business opportunities. In the next two sections, we elaborate on our arguments about the organizational learning and investment horizons of young firms and then explain how the transition from an owner-managed status to a professionally managed status affects investment horizons.

2.2 | Investment horizons and organizational learning

The decision-making processes—and especially, the investment decisions—of young firms are different from those observed in more mature firms. Since young firms are typically managed by their founders (owner-managers), the decision-making processes of young firms are more heavily driven by internal considerations than those of more mature firms (Jarvis et al., 1996). Young firms' owner-managers typically do not have boards or highly skilled, specialized executive officers to assist them in decision-making. These owner-managers commonly manage multiple aspects of their firms' business activities and thus lack time and specialized skills for investment decisions (Peel & Wilson, 1996). It is through gradual organizational learning (e.g., trial-and-error learning and experience) that owner-managers develop financial skills and learn to make better investment decisions (Ekanem, 2005; Gibb, 1997). More precisely, we define organizational learning as the development of routines that are associated with past experience and motivated by a willingness to reach performance goals (Levitt & March, 1988; Rerup & Feldman, 2011). The development of these routines is shaped by the frequency at which problems are encountered and these routines prove adequate to overcome problems (Radner, 1975). Firms gradually learn which actions, strategies, and approaches are most appropriate to face certain situations, and firms retain only those actions that produce the expected outcomes (Pal et al., 2014). We propose that young firms' organizational learning regarding investment decisions is reflected in the use of investment decision criteria (e.g., the net present value [NPV]), which gradually become more sophisticated (Graham, 2022; Hayward et al., 2017).

To make investment decisions, managers use capital budgeting criteria (e.g., the NPV or the payback period) because these criteria are taught worldwide in business schools and are relatively easy to implement (Graham, 2022; Graham & Harvey, 2001; McSweeney, 2006). Unfortunately, the practical use of these criteria drags down investment duration. The payback period is a criterion based on the ex ante definition of a maximum period of time for a project's accumulated cash flows to compensate for the initial investment. Any investment project that would require more time to generate sufficient accumulated (discounted) cash flows than the maximum period should be rejected according to the payback criterion. Therefore, it is almost tautological to say that the use of the payback period criterion leads managers to short-termism. With respect to the NPV, it has been observed that managers use overestimated discount rates to calculate the present value of future expected cash flows in an attempt to hedge against future downside surprises and preserve financial flexibility (Graham, 2022). It follows that the value of long-term investment opportunities is often underestimated (Souder et al., 2016). Thus, the inadequate application of investment decision criteria is one factor that serves to explain why firms avoid long-term business opportunities.

Younger (and smaller) firms' managers are notably poor users of investment decision criteria because they lack financial skills (Hayward et al., 2017; Peel & Bridge, 1998; Peel & Wilson, 1996). For

instance, younger and smaller firms rely heavily on the payback period criterion, while more established firms use more sophisticated criteria (Graham & Harvey, 2001; Lazaridis, 2004; Morales-Burgos et al., 2020). Recently, Graham (2022) identifies that approximately two-thirds of small firms, defined as those generating less than \$1 billion, always or almost always use the payback period criterion. Thus, it seems reasonable to assume that younger firms, especially privately held ones, tend to rely on the payback period criterion. At the same time, strong financial skills are essential for firm growth (Brinckmann et al., 2011) and innovation (Hayward et al., 2017). Of course, care must be taken when generalizing the results of past research on financial skills because these works rely on surveys and questionnaires administered to relatively small populations of firms³ or publicly listed firms. To the extent that this generalization is credible, a direct implication is that younger firms' managers should favor short-term investment opportunities because they use investment decision criteria that undervalue or ignore long-term investment opportunities more often than larger firms. Thus, the lack of financial skills in small and young firms should theoretically have a negative influence on temporal orientation.

However, in young firms, investment decisions are made by owner-managers. If an owner-manager lacked financial skills when they founded their firm, it seems reasonable to believe that they will gradually learn to make better use of investment decision criteria. This argument is grounded in organizational learning theory (Fiol & Lyles, 1985; Gibb, 1997). Organizational learning refers to the processes through which organizations and the people within them adjust to their environments. Owner-managers gradually learn to adapt to their environments through trial and error, experience, and social interaction (Levinthal, 1996; Williams, 2001). Ekanem and Smallbone (2007) point out that learning is a powerful form of leverage that improves investment decision-making by owner-managers in small organizations. Ekanem and Smallbone (2007) illustrate their ideas by reporting that owner-managers learn to make better investment decisions through discussions with more experienced colleagues, highlighting the role of the social environment in the learning process. Building on the organizational learning argument, we propose that young firms' investment horizons will gradually increase as owner-managers make better investment decisions through the mobilization of more sophisticated techniques. This means that more business opportunities will be considered, as certain investment decision criteria (e.g., the payback period criterion) will be used less.

We propose that a firm's organizational learning is reflected by its age. Here, we build on the concept of the liability of newness (Aldrich & Auster, 1986). The liability of newness refers to the idea that young firms have many strategic weaknesses associated with their lack of experience, reputation, and resources. Thus, only firms that manage to overcome these weaknesses will survive. As noted by Aldrich and Auster (1986, p.178), "Finally, experiential barriers to entry also exist. Assuming that older organizations have survived mistakes in the process of aging, they acquire an advantage that new organizations lack. The significance of these returns on experience depends on the degree of instability in the environment." In other

words, firms gradually acquire experience and learn how to effectively select investment projects as they grow older. This leads to Hypothesis 1a.

Hypothesis 1a. The investment horizon will increase as a firm grows older.

However, a firm's investment horizon will not increase without limits as the firm grows older. The benefits of organizational learning have limits. At some point, additional experience will not lead to further increases in a firm's investment horizon. Intuitively, this limit is reached when the firm's portfolio of investments is optimal, meaning that a longer investment horizon should have a negative marginal effect on firm performance (Souder et al., 2016). However, reaching this limit does not mean that the investment horizon will remain constant as the firm grows older. Changes in the firm's governance and management, which commonly take place when a firm reaches maturity, will curb the investment horizon. More specifically, many firms face a transition from an owner-managed status to a professionally managed status when owner-managers decide to sell their businesses.

The transition from an owner-managed status to a professionally managed status is a key step in the firm lifecycle that has important consequences for the decision-making process (Mount et al., 1993). Zahra and Filatotchev (2004) argue that firms facing this transition also face critical challenges to organizational learning. Indeed, the owner-manager, who is often the founder, of a firm has the best understanding of the firm's internal resources and capabilities and is thus the driving force behind organizational learning. When an owner-manager is replaced by a professional manager, this driving force disappears, meaning that any capabilities resulting from previous organizational learning may disappear simultaneously. Thus, it is common for the transition toward professional management to be relatively unsuccessful (Gedajlovic et al., 2004; Zahra & Filatotchev, 2004). As noted by Zahra and Filatotchev (2004, p. 895), "When the entrepreneurial firm matures and its management becomes more 'professionalized,' changes in its ownership structure and the growing importance of external stakeholders may shift the balance towards the monitoring and control functions of governance systems, as suggested by agency theory." Thus, the transition toward professional management reflects firm maturity.

Importantly, the separation of ownership from control associated with the transition toward a professionally managed status likely leads to a misalignment of shareholders' and managers' interests (Fama & Jensen, 1983; Jensen & Meckling, 1976). According to classical agency theory arguments, this misalignment is reflected in different attitudes toward risk. Professional managers (seen as agents) are more risk averse than shareholders (seen as principals) because the former cannot easily diversify their employment, whereas the latter can diversify their investment portfolios (Eisenhardt, 1989). In their review of the managerial risk-taking literature, Hoskisson et al. (2017) emphasize that future research could fruitfully build on the idea that agency problems evolve throughout the firm lifecycle. While this idea is explored in the context of the board compositions of large and

publicly listed firms (Lynall et al., 2003), we know of no previous research that specifically explores how the transition from an owner-managed status to a professionally managed status affects firms' investment horizons.

The entrepreneurship literature provides several observations consistent with the idea that entrepreneurs and owner-managers are less risk-averse than professional managers and thus more likely to make risky decisions (Gilmore et al., 2004; Stewart et al., 1999). The reasons for which entrepreneurs and owner-managers are more likely to take risks than professional managers are not yet fully understood, but psychological factors, misjudgment resulting from insufficient skills, and temporal preferences are commonly reported reasons (Falkner & Hiebl, 2015; Jensen, 2005). To the extent that professional managers are more risk averse than entrepreneurs and owner-managers, it appears that the transition from an owner-managed status to a professionally managed status should be associated with a decline in risk-taking attitudes. With respect to investment decisions, it thus seems reasonable to assume that investment horizons will decline when professional managers replace owner-managers. Business opportunities with shorter maturities are generally considered to be less risky because they require lower investments. Firms that have short investment horizons maintain financial flexibility, which gives them room and financial slack to deal with unexpected expenses (Souder et al., 2016). By contrast, long investment horizons lock up money in a firm's assets for a long period of time and reduce financial flexibility, thus weakening the firm's capacity to deal with unexpected events.

Our argument falls in line with recent research on investment horizons that are grounded in agency theory (Martin et al., 2015). The recurrent observation of short investment horizons in large, publicly traded firms—which are commonly managed by professional managers—suggests that managerial short-termism is widespread. The presence of executive compensation tools, such as stock options, that align shareholders' and managers' interests is associated with longer investment horizons (Martin et al., 2015; Souder & Shaver, 2010). In this sense, relatively short investment horizons in nonowner-managed firms reflect principal-agent problems in relation to agency. Thus, we propose that older firms, which are more commonly managed by professionals than by owner-managers, experience declines in their investment horizons. This leads to Hypothesis 1b.

Hypothesis 1b. The investment horizon decreases after a firm exceeds a certain age limit following the separation of ownership from control.

Combining Hypotheses 1a and 1b, firms' investment horizons initially increase after foundation through organizational learning with regard to the use of investment decision criteria and then decrease when owner-managers are replaced by more risk-averse professional managers. This leads to Hypothesis 2.

Hypothesis 2. There is an inverted U-shaped relationship between firm age and the investment horizon.

3 | METHODS

3.1 | Sample

We use multiple sources for data collection. First, we use the Amadeus commercial database provided by Bureau Van Dijk to obtain accounting and financial data at the firm level. Amadeus is commonly used in strategic management research and covers publicly listed and privately held firms across all European countries. We include both publicly listed and privately held firms.⁴ We exclude firms that operate in the finance industry; this is a common practice in the literature on temporal orientation (Souder et al., 2016).

Our sample period covers the years from 2010 to 2019. We are limited to 10 years of data because we have access to only the online version of Amadeus, not the DVD version, which contains data over a longer period of time. In the extraction of our dataset, we also require that firms disclose basic accounting information (total assets, sales, and numbers of employees) for at least four consecutive years. We are limited in our choice of countries by the availability of data on one of our control variables, economic policy uncertainty (EPU), for which we use the index developed by Baker et al. (2016). Concretely, the following European countries are included in our dataset: France, Germany, Greece, Italy, the Netherlands, Spain, and Sweden. These countries are the only ones for which information is available in both Amadeus and the EPU database. One limitation of Amadeus is that its coverage is heterogenous across countries and depends on national reporting requirements (Kalemi-Özcan et al., 2019). In particular, the coverage of microfirms (with less than 10 employees) is poor in countries such as Germany and the Netherlands. We acknowledge this limitation of our work. Overall, the sample used in the main analysis is made up of 513,128 firms, representing 2,903,542 firm-year observations. A breakdown of observations by country is presented in the Appendix A.

Our second source of information is the World Bank database, from which we collect information regarding two country-level control variables: GDP per capita and rule of law. Our third and last source of information is the EPU database developed by Baker et al. (2016) for France, Germany, and Italy and completed by Hardouvelis et al. (2018) for Greece, Kroese et al. (2016) for the Netherlands, Ghirelli et al. (2019) for Spain, and Armelius et al. (2017) for Sweden.

3.2 | Variables

3.2.1 | Dependent variables

We model the temporal orientations of firms as their investment horizons, following the approaches of Souder and Bromiley (2012) and Souder et al. (2016). Past research commonly relies on the characteristics of capital investment decisions to measure temporal orientation (Souder & Shaver, 2010). Importantly, investment decisions often require firms to predict future cash flows over a given horizon of time (Souder & Bromiley, 2012). The investment horizon is measured as

the expected durability of fixed assets drawn from accounting data. Using accounting data on fixed assets ensures that we consider spending with a multiyear impact, unlike other measures (e.g., R & D spendings) that have unclear time horizons. Concretely, we take the ratio of a firm's tangible and intangible assets to its depreciation and amortization expenses, which represents the theoretical average duration of tangible asset use after these assets are acquired. Due to the limitations of our dataset, we are not able to distinguish amortizations from depreciations, so we must pool tangible and intangible assets. Since standard accounting principles limit the depreciation period of assets to 40 years, we exclude observations of investment horizons larger than 40 years from the analysis (Souder et al., 2016). We name this variable the investment horizon:

$$\text{Investment horizon}_{i,t} = \frac{\text{Tangible and intangible assets}_{i,t}}{\text{Depreciation and amortization expense}_{i,t}}$$

It is important to note that the temporal orientations of firms are best captured in comparison to those of industry peers. Following Souder et al. (2016), we also calculate the investment horizon adjusted for median industry and country investment horizons to measure whether firms' temporal orientations are longer or shorter than those of firms operating in the same industry and country. Industry classification is based on four-digit NACE (Nomenclature des Activités Économiques [Nomenclature of Economic Activities]) codes, which are equivalent to US standard industrial classification codes. We name this variable the industry- and country-adjusted investment horizon:

$$\begin{aligned} &\text{Industry – and country – adjusted investment horizon} \\ &= \text{Investment horizon} \\ &\quad - \text{Median(Industry and country investment horizons)}. \end{aligned}$$

We perform all our estimations with these two variables as dependent variables and obtain fully consistent results. It is important to mention that the use of this alternative dependent variable ensures that our results are not distorted by industry-specific considerations regarding the importance of tangible versus intangible assets.

3.2.2 | Independent variables

We use firm age as an independent variable to capture the firm life-cycle. Firm age is calculated as the number of years of a firm's existence. Since our hypothesis predicts a quadratic, inverted U-shaped relationship between the independent variable and the dependent variable, we include the squared term of the independent variable in our estimations.

3.2.3 | Control variables

We must identify factors that are theoretically correlated with the investment horizon and firm age to ensure that the results of our

estimations are not driven by omitted variable bias. First, we control for firm size. Size and age, while often correlated, reflect different dimensions of a firm's evolution. For instance, not all firms have an appetite for growth, and some may deliberately remain small (Cliff, 1999). The growth modes and growth speeds of newly created firms are different from those of more established firms, implying that age and size have different conceptual and empirical relations with firms' temporal orientations (Gilbert et al., 2006). Firm size is calculated as the natural logarithm of sales. We also include the squared term of firm size to capture any curvilinear effects of firm size on temporal orientation. Second, we control for the degree of asset tangibility in a firm's total fixed assets because our focus is on investment in tangible assets (Souder & Bromiley, 2012). Asset tangibility is the ratio of tangible assets to total fixed assets. Third, we control for various forms of organizational slack. Slack, or excess resources, helps firms investigate riskier business opportunities and more easily deal with unexpected shocks (Bourgeois, 1981; Cyert & March, 1963) and thus influences the investment horizon (Martin et al., 2015). We use three measures of slack—namely, available slack (cash and equivalents scaled by total assets), recoverable slack (inventories plus receivables less payables scaled by sales), and potential slack (short-term financial debt plus long-term financial debt divided by total assets). Fourth, we control for the current level of profitability because the investment horizon is driven by expected performance (Souder & Bromiley, 2012). Profitability is calculated as the operating profit scaled by total assets.

Fifth, we control for three country-level variables—namely, EPU, the natural logarithm of GDP per capita, and rule of law. Controlling for EPU is important because there is a consensus that high uncertainty weakens investment (Bloom et al., 2007; Guiso & Parigi, 1999) and employment, especially among younger and smaller firms (Ghoshal & Ye, 2015). We rely on the EPU index developed by Baker et al. (2016). This index is based on the observation of selected keywords that reflect the coverage of uncertainty in economic policy within leading newspaper articles. Concretely, the authors select several leading newspapers in each country, count the number of articles that include the selected set of keywords on a monthly basis, and then scale this number by the total number of articles in each newspaper. The resulting ratios are standardized over a given period of time and normalized to a mean of 100. Since EPU data is available on a monthly basis, we calculate the annual mean of the EPU index. Rule of law and GDP per capita capture important dimensions of a country's wealth and institutions and likely influence how individuals perceive and react to uncertainty. For instance, Ahir et al. (2020) show that uncertainty has an especially strong impact in low-income countries. Last, we include a set of year dummies to account for variations in macroeconomic conditions not associated with EPU.

All of our variables are winsorized at the 1st and 99th percentiles to mitigate the influence of outliers. We introduce a 1-year lag between the dependent variable and the independent and control variables in our regressions. We acknowledge that the use of a 1-year lag between the variables of interest may not be sufficient to capture changes in temporal orientation. For instance, even if uncertainty is high in year t ,

it may not be clear whether the investment horizon measured in year $t + 1$ fully reflects changes (if any) in investment policy because the weight of past investments may remain strong. We present several additional analyses in Section 4.3 to address these concerns.

3.2.4 | Econometric design

We work with panel data and thus must determine whether the appropriate specification is a firm fixed effects model or a firm random effects model. The chi-squared statistic of the Hausman test is 54,636.88 ($p < .001$), so we reject the null hypothesis that the errors are not correlated with the regressors and decide to use a firm fixed effects model. It is worth noting that the results obtained using random effects specification (unreported for brevity) are consistent with those obtained using the fixed effects model. In fact, we obtain larger coefficients with the random effects model, so the economic significance of the results presented in this paper is conservative.

Because we investigate quadratic, inverted U-shaped relationships, we include the squared term of the independent variable (age) in our models. Following the recommendations of Haans et al. (2016) and Lind and Mehlum (2010), we use a three-step procedure to confirm or reject the existence of a quadratic, inverted U-shaped relationship.⁵ First, the squared term of the independent variable must be negative and statistically significant. Second, Sasabuchi test statistics should reject the joint null hypothesis that the dependent variable does not increase faster at lower values of the independent variable and does not decrease faster at higher values of the independent variable. Third, the turning point should fall well within the interval observed for the independent variable, as confirmed by the 95% Fieller confidence interval. In all the results tables, the results of this procedure are included at the bottom.

4 | RESULTS

4.1 | Univariate analysis

We begin the empirical analysis with descriptive statistics for the main variables of interest, as shown in Table 1 below. Of our observations, 42.9% correspond to SMEs. This figure may seem low, but it largely results from the fact that we do not consider firms affiliated with business groups (BGs) to be SMEs. The average firm in our sample is 19-years-old (median = 17 years), generates 2.36 M€ (median = 2.21 M€) in sales, and has 14.4 (median = 13) employees, indicating that the sampled firms are relatively small. The average investment horizon is 7.14 years (median = 4.55 years), and the mean deviation of the investment horizon to median industry and country investment horizons is 2.27 years (median = -0.05 years). These results are comparable to those of Souder et al. (2016), who find a mean of 1.39 years and a median of 0.59.

We present a correlation matrix in Table 2 below. Investment horizon is positively correlated with firm age. We calculate variation

TABLE 1 Descriptive statistics.

| Variables | Mean | S.D. | Minimum | 25th percentile | Median | 75th percentile | Maximum |
|-----------------------------|---------|---------|---------|-----------------|---------|-----------------|----------|
| Investment horizon | 7.143 | 7.229 | 0.000 | 2.400 | 4.552 | 9.224 | 34.333 |
| Adjusted investment horizon | 2.277 | 6.889 | -6.279 | -1.971 | -0.052 | 3.952 | 29.130 |
| Firm age | 19.486 | 14.846 | 1.000 | 9.000 | 17.000 | 26.000 | 75.000 |
| Squared firm age | 600.110 | 979.873 | 1.000 | 81.000 | 289.000 | 676.000 | 5625.000 |
| Firm size (log of sales) | 7.765 | 1.759 | 3.850 | 6.554 | 7.700 | 8.795 | 12.458 |
| EPU (log) | 4.967 | 0.338 | 4.359 | 4.742 | 4.855 | 5.182 | 5.759 |
| GDP per capita (log) | 10.483 | 0.230 | 10.155 | 10.291 | 10.465 | 10.634 | 11.021 |
| Rule of law | 1.095 | 0.507 | 0.269 | 0.490 | 1.044 | 1.438 | 2.026 |
| Tangibility | 0.713 | 0.324 | 0.000 | 0.489 | 0.863 | 0.987 | 1.000 |
| Available slack | 0.143 | 0.167 | 0.000 | 0.020 | 0.079 | 0.208 | 0.734 |
| Recoverable slack | 0.199 | 0.216 | 0.000 | 0.009 | 0.133 | 0.321 | 0.873 |
| Potential slack | 0.231 | 0.400 | -0.297 | 0.041 | 0.148 | 0.294 | 2.358 |
| ROA | 0.060 | 0.125 | -0.358 | 0.014 | 0.046 | 0.104 | 0.457 |

Note: $N = 2,903,542$ firm-year observations, except for the number of employees, for which $N = 2,434,996$. S.D. = standard deviation.

inflation factors (VIF) to detect the presence of multicollinearity, which is especially important because we use three country-level variables that could be correlated. The mean VIF is 1.35, and the highest VIF is 2.10. These values are well below the critical level of 10, above which multicollinearity is an issue.

4.2 | Multivariate analysis and main results

Table 3 below displays the results of the firm- and year-fixed effects regressions. We use the investment horizon (Columns 1 and 2) and the industry- and country-adjusted investment horizon (Columns 3 and 4) as dependent variables. Columns 1 and 3 of Table 3 display only the results obtained without the independent variables. We observe that EPU is negatively associated with the investment horizon, which falls in line with past research on the role of uncertainty in firm investment. Available slack is negatively associated with the investment horizon, but potential and available slack are positively associated with the investment horizon. Firms that have more tangible assets and those that are profitable also have longer investment horizons.

The results depicted by Column 2 in Table 3 show that the squared term of age is negative and statistically significant, as expected. The turning point is 30.2 years, which is well within the interval of the age variable ([1;75]), and the Fieller confidence interval also falls within the interval of the age variable. The Sasabuchi test rejects the joint null hypothesis that the dependent variable does not increase faster at lower levels of the independent variable and does not decrease faster at higher values of the independent variable. Thus, we confirm that the observed relationship between firm age and the investment horizon is quadratic, with an inverted U shape. Of our observations, 82.1% are below the turning point and 17.9% are above the turning point. In summary, we

find support for Hypothesis 2. Figure 1 below visualizes these results.

In terms of economic significance of the results, a one-standard-deviation change in firm age is associated with a 0.42-year variation in the investment horizon. We view the economic significance of the results as relatively modest. However, care must be taken when interpreting economic significance because the highly sticky construction of the dependent variable reflects the accumulation of multiple past investments.

Next, we run separate regressions for owner-managed and nonowner-managed firms to examine Hypotheses 1a and 1b more closely. The identification of owner-managed firms is straightforward in Amadeus because a dummy variable identifies firms in which a manager holds at least 50% of shares. However, this information is time invariant and available for only the latest year. We obtain information regarding owner-managed status for only 20.2% of our observations. These results are displayed in Table 4 and Figure 2 below. For owner-managers, we identify a positive relationship between firm age and the investment horizon because the Sasabuchi test rejects the null hypothesis that the dependent variable decreases faster at higher values of the independent variable. For nonowner-managers, we observe that the relationship between firm age and the investment horizon is negative. Thus, it appears that for owner-managed firms, the investment horizon increases with firm age, while for nonowner-managed firms, the investment horizon decreases with firm age. This observation is consistent with Hypotheses 1a and 1b.

4.3 | Additional results and robustness tests

In this section, we present additional results that lend validity to our main results. First, we run our estimations on two distinct subsamples: standalone firms and BG-affiliated firms. With respect to the latter,

TABLE 2 Correlation matrix.

| Variables | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|-------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 1 Investment horizon | | | | | | | | | | | | |
| 2 Adjusted investment horizon | 0.968 | | | | | | | | | | | |
| 3 Firm age | 0.080 | 0.053 | | | | | | | | | | |
| 4 Squared firm age | 0.051 | 0.025 | 0.922 | | | | | | | | | |
| 5 Firm size (log of sales) | -0.043 | -0.063 | 0.366 | 0.319 | | | | | | | | |
| 6 EPU (log) | -0.168 | -0.149 | 0.057 | 0.038 | -0.013 | | | | | | | |
| 7 GDP per capita (log) | -0.198 | -0.177 | 0.049 | 0.077 | 0.005 | 0.142 | | | | | | |
| 8 Rule of law | -0.075 | -0.063 | -0.006 | 0.020 | -0.216 | 0.270 | 0.658 | | | | | |
| 9 Tangibility | 0.309 | 0.270 | 0.015 | 0.014 | -0.072 | -0.135 | -0.006 | 0.017 | | | | |
| 10 Available slack | -0.168 | -0.137 | -0.066 | -0.055 | -0.191 | 0.156 | 0.104 | 0.150 | 0.015 | | | |
| 11 Recoverable slack | 0.207 | 0.176 | -0.090 | -0.066 | -0.109 | -0.121 | -0.127 | 0.008 | 0.099 | -0.290 | | |
| 12 Potential slack | 0.082 | 0.081 | 0.072 | 0.043 | -0.085 | -0.063 | -0.158 | -0.099 | -0.048 | -0.189 | 0.093 | |
| 13 ROA | -0.050 | -0.040 | -0.038 | -0.026 | 0.067 | 0.013 | 0.077 | 0.046 | 0.051 | 0.247 | -0.179 | -0.095 |

Note: $N = 2,903,542$. Correlation coefficients larger than 0.003 (absolute value) are statistically significant at the 0.05 threshold.

BGs are collections of firms tied together by a centralized control mechanism (Khanna & Yafeh, 2005). In Western Europe, BG affiliation is a common business organization structure in which a mother firm (holding company) centralizes equity control in various subsidiaries that are otherwise legally independent entities (Belenzon et al., 2013). Two key features of a BG are (1) the existence of internal capital and labor markets that allow for the transfer of resources across BG-affiliated firms and (2) the centralization of decisions and management at the head firm level (Belenzon et al., 2019; Mahmood et al., 2017; Masulis et al., 2011). In the case of investment decisions and the associated investment horizon, it is important to acknowledge that the decision-making process of a BG-affiliated firm depends, at least in part, on the oversight of the head firm. We identify BG-affiliated firms in Amadeus because the number of firms in the BG is explicitly available. This number is zero for standalone firms. However, it is important to note that in Amadeus, BG affiliation is time-invariant information that is disclosed for only the most recent year. The results regarding the subsamples of standalone and BG-affiliated firms are displayed in Table 5 below.

We observe that the quadratic, inverted U-shaped relationship between firm age and the investment horizon holds only in the case of standalone firms and not in the case of BG-affiliated firms.^f For BG-affiliated firms, we observe a negative relationship between firm age and the investment horizon. These results fall in line with our theoretical framework. Almost by definition, standalone firms use less formal investment decision criteria than BG-affiliated firms because BG-affiliated firms have access to the support of their BGs. In other words, BG-affiliated firms are born with administrative procedures and financial skills, meaning that they stand to gain limited benefits from organizational learning. Past research provides evidence that financial management in BGs tends to be centralized (Deloof & Jeggers, 1999; Lefebvre & Hamelin, 2022; Locorotondo et al., 2014). By contrast, standalone firms are those that can benefit the most from organizational learning (Ekanem, 2005; Ekanem & Smallbone, 2007).

Second, we perform several robustness tests to assess the validity of our results. To check the stability of the coefficients, confidence intervals, and turning points, we use a structured permutation test, in which we systematically exclude 1 year of data from our sample (Neumayer & Plümpert, 2017). Doing so controls for the fact that uncertainty in a single given year can drive our results. The results of this test are presented in Table 6 below. We consistently observe a quadratic, inverted U-shaped relationship between firm age and the investment horizon. More importantly, all the parameters (coefficients, standard errors, and turning points) are relatively stable across all estimations. Next, we exclude one industry at a time from the sample (using single-digit NACE codes) and obtain comparable results. The results of this industry omission procedure are omitted for brevity.

Our last robustness test addresses a sample selection issue, as survival bias is a potential concern. Although our dataset includes firms that eventually went bankrupt, these firms are not observed after going bankrupt because they are no longer included in the database. Therefore, it is possible that our results are affected by

TABLE 3 Main results.

| Dependent variable | Investment horizon | | | | Industry- and country-adjusted investment horizon | | | |
|---------------------------------|--------------------|-----------|---------------|-----------|---|-----------|---------------|-----------|
| | Coef. | St. error | Coef. | St. error | Coef. | St. error | Coef. | St. error |
| Firm age | | | 0.037*** | 0.008 | | | 0.046*** | 0.008 |
| Squared firm age | | | -0.001*** | 0.000 | | | -0.001*** | 0.000 |
| Firm size | | | -0.390*** | 0.036 | | | -0.371*** | 0.035 |
| Squared firm size | | | -0.009*** | 0.003 | | | -0.009*** | 0.002 |
| EPU (log) | -0.326*** | 0.019 | -0.431*** | 0.019 | -0.316*** | 0.019 | -0.417*** | 0.019 |
| GDP per capita (log) | 1.343*** | 0.148 | 1.138*** | 0.150 | 1.194*** | 0.145 | 0.990*** | 0.147 |
| Rule of law | -1.866*** | 0.059 | -1.937*** | 0.059 | -1.682*** | 0.058 | -1.746*** | 0.057 |
| Asset tangibility | 1.977*** | 0.027 | 2.066*** | 0.027 | 1.933*** | 0.027 | 2.020*** | 0.027 |
| Available slack | -0.090** | 0.036 | -0.252*** | 0.036 | -0.081** | 0.035 | -0.237*** | 0.035 |
| Recoverable slack | 0.794*** | 0.033 | 0.825*** | 0.033 | 0.770*** | 0.032 | 0.804*** | 0.032 |
| Potential slack | 0.130*** | 0.019 | -0.181*** | 0.019 | 0.131*** | 0.018 | -0.173*** | 0.019 |
| Profitability | 0.786*** | 0.029 | 1.269*** | 0.031 | 0.760*** | 0.029 | 1.230*** | 0.030 |
| Constant | -5.152*** | 1.529 | 0.785 | 1.586 | -8.486*** | 1.493 | -2.770* | 1.551 |
| Firm- and year-fixed effects | YES | | YES | | YES | | YES | |
| Number of observations | 2,903,542 | | 2,903,542 | | 2,903,542 | | 2,903,542 | |
| F-statistic | 527.42*** | | 550.33*** | | 567.01*** | | 591.66*** | |
| R-squared | 0.801 | | 0.802 | | | | 0.792 | |
| Turning point | | | 30.204 | | | | 29.725 | |
| 95% Fieller confidence interval | | | 17.889 42.540 | | | | 20.261 39.185 | |
| Sasabuchi test statistic | | | 4.500*** | | | | 5.730*** | |

Note: Standard errors are robust and clustered at the firm level. Independent and control variables are lagged by one year with respect to the dependent variable. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels, respectively.

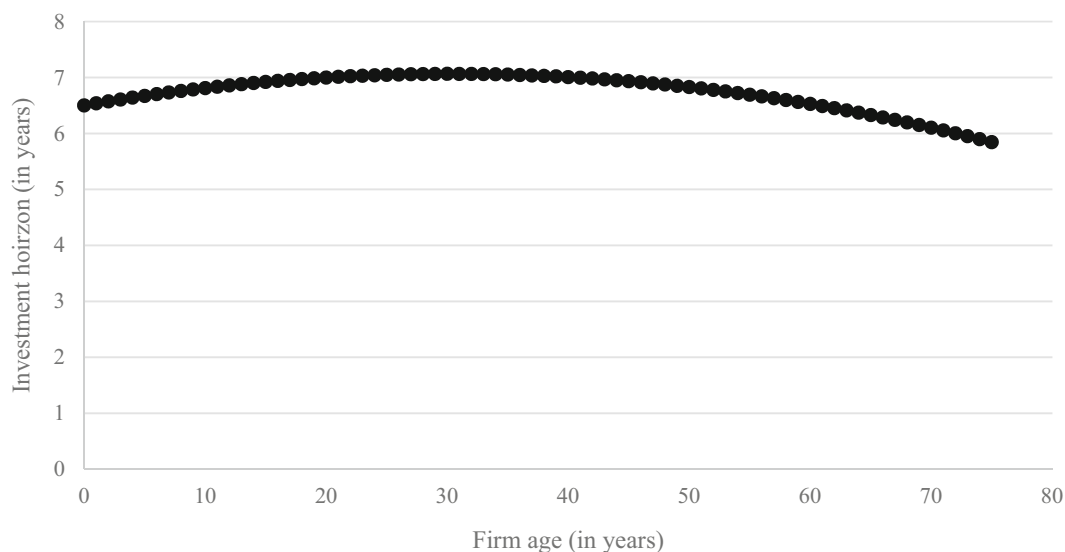


FIGURE 1 Relation between firm age and investment horizon.

endogeneity resulting from the observation of surviving firms. A potential solution to this issue is the use of Heckman's two-step model (Certo et al., 2016; Heckman, 1976). We rely on this model, and as a first step, we use a selection equation in which the

dependent variable is a dummy that equals one if a firm is present in the dataset and equals zero otherwise. As predictors of this first-step equation, we use all the right-side variables of the main estimation plus the interest coverage ratio (earnings before interests, taxes,

TABLE 4 Comparison of owner-managed and nonowner-managed firms.

| Dependent variable | Investment horizon | | | | Industry- and country-adjusted investment horizon | | | |
|---------------------------------|--------------------|-----------|------------------|-----------|---|-----------|------------------|-----------|
| | Owner-managed | | Nonowner-managed | | Owner-managed | | Nonowner-managed | |
| | Coef. | St. error | Coef. | St. error | Coef. | St. error | Coef. | St. error |
| Firm age | 0.070** | 0.034 | 0.079 | 0.066 | 0.081** | 0.034 | 0.077 | 0.066 |
| Squared firm age | -0.001*** | 0.000 | -0.002*** | 0.000 | -0.001*** | 0.000 | -0.002*** | 0.000 |
| Firm size | -0.176 | 0.139 | -0.099 | 0.157 | -0.154 | 0.136 | -0.072 | 0.154 |
| Squared firm size | -0.028*** | 0.010 | -0.054*** | 0.011 | -0.028*** | 0.010 | -0.054*** | 0.011 |
| EPU (log) | -0.372*** | 0.064 | 0.013 | 0.055 | -0.353*** | 0.062 | -0.019 | 0.054 |
| GDP per capita (log) | 0.803 | 0.643 | 4.953*** | 0.707 | 0.639 | 0.629 | 4.414*** | 0.692 |
| Rule of law | -2.288*** | 0.241 | -3.469*** | 0.251 | -2.003*** | 0.236 | -3.078*** | 0.245 |
| Asset tangibility | 2.332 *** | 0.097 | 2.646*** | 0.087 | 2.276*** | 0.095 | 2.603*** | 0.085 |
| Available slack | -0.237* | 0.127 | -0.825*** | 0.123 | -0.228* | 0.124 | -0.780 *** | 0.120 |
| Recoverable slack | 1.071 *** | 0.128 | 1.472*** | 0.117 | 1.040*** | 0.124 | 1.466*** | 0.114 |
| Potential slack | -0.232*** | 0.062 | -0.305*** | 0.067 | -0.221*** | 0.061 | -0.287*** | 0.065 |
| Profitability | 1.484*** | 0.125 | 1.608*** | 0.124 | 1.443*** | 0.122 | 1.553*** | 0.121 |
| Constant | 3.251 | 6.727 | -39.449*** | 7.532 | -0.465 | 6.588 | -38.901*** | 7.384 |
| Firm- and year-fixed effects | YES | | YES | | YES | | YES | |
| Number of observations | 243,037 | | 343,345 | | 243,037 | | 343,345 | |
| F-statistic | 56.42*** | | 107.70*** | | 53.99*** | | 93.14 *** | |
| R-squared | 0.807 | | 0.797 | | 0.797 | | | |
| Turning point | 54.857 | | 19.783 | | 50.780 | | 18.351 | |
| 95% Fieller confidence interval | 4.100 | 137.698 | -12.837 | 51.945 | 11.205 | 103.867 | -13.200 | 49.410 |
| Sasabuchi test statistic | N/A | | N/A | | N/A | | N/A | |

Note: Standard errors are robust and clustered at the firm level. Independent and control variables are lagged by one year with respect to the dependent variable. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels, respectively.

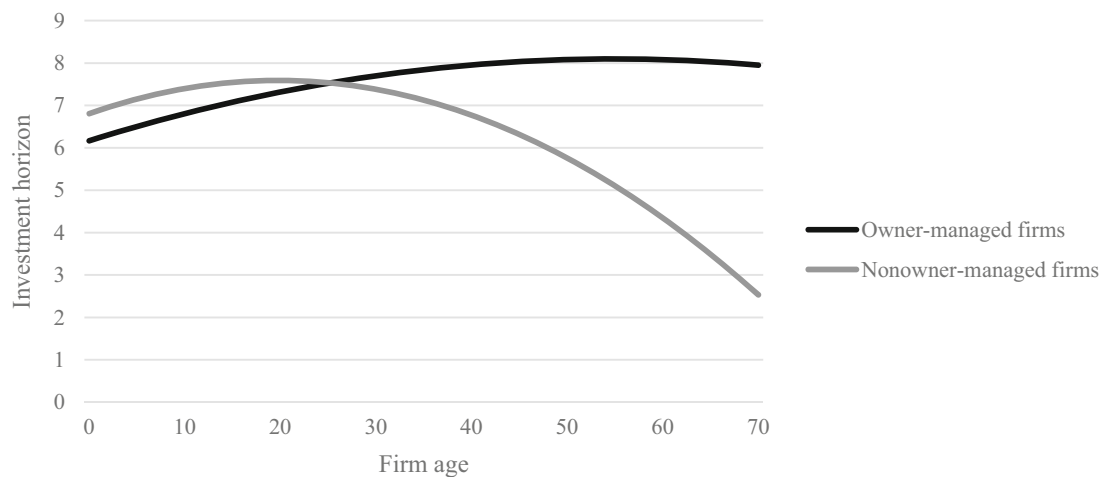
**FIGURE 2** Comparison of owner-managed and nonowner-managed firms.

TABLE 5 Comparison of business group (BG)-affiliated and standalone firms.

| Dependent variable | Investment horizon | | | Industry- and country-adjusted investment horizon | | | | | | | | |
|--------------------------------|--------------------|-----------|-----------|---|-----------|-----------|------------------|-----------|-----------|---------------------|-----------|-----------|
| | Standalone firms | | | BG-affiliated firms | | | Standalone firms | | | BG-affiliated firms | | |
| | Coef. | St. Error | St. Error | Coef. | St. Error | St. Error | Coef. | St. Error | St. Error | Coef. | St. Error | St. Error |
| Firm age | 0.059*** | 0.013 | 0.015 | 0.012 | 0.015 | 0.013 | 0.070*** | 0.013 | 0.013 | 0.021 | 0.014 | 0.014 |
| Squared firm age | -0.001*** | 0.000 | 0.000 | -0.001*** | 0.000 | 0.000 | -0.001*** | 0.000 | 0.000 | -0.001*** | 0.000 | 0.000 |
| Firm size | -0.370*** | 0.065 | 0.046 | -0.293*** | 0.046 | 0.063 | -0.347*** | 0.046 | 0.063 | -0.272*** | 0.045 | 0.045 |
| Squared firm size | -0.018*** | 0.005 | 0.003 | -0.012*** | 0.003 | 0.005 | -0.019*** | 0.003 | 0.005 | -0.012*** | 0.003 | 0.003 |
| EPU (log) | -0.604*** | 0.032 | 0.024 | -0.335*** | 0.024 | 0.024 | -0.583*** | 0.024 | 0.031 | -0.326*** | 0.023 | 0.023 |
| GDP per capita (log) | 1.621*** | 0.246 | 0.204 | 0.750*** | 0.204 | 0.241 | 1.436*** | 0.204 | 0.241 | 0.666*** | 0.199 | 0.199 |
| Rule of law | -2.422*** | 0.098 | 0.074 | -1.517*** | 0.074 | 0.096 | -2.162*** | 0.074 | 0.096 | -1.372*** | 0.072 | 0.072 |
| Asset tangibility | 1.720*** | 0.044 | 0.034 | 2.292*** | 0.034 | 0.043 | 1.683*** | 0.034 | 0.043 | 2.240*** | 0.034 | 0.034 |
| Available slack | -0.191*** | 0.053 | 0.048 | -0.299*** | 0.048 | 0.052 | -0.183*** | 0.048 | 0.052 | -0.276*** | 0.047 | 0.047 |
| Recoverable slack | 0.890*** | 0.052 | 0.043 | 0.786*** | 0.043 | 0.051 | 0.868*** | 0.043 | 0.051 | 0.764*** | 0.042 | 0.042 |
| Potential slack | -0.149*** | 0.032 | 0.025 | -0.206*** | 0.025 | 0.031 | -0.146*** | 0.025 | 0.031 | -0.196*** | 0.024 | 0.024 |
| Profitability | 1.433*** | 0.043 | 0.043 | 1.128*** | 0.043 | 0.042 | 1.397*** | 0.043 | 0.042 | 1.088*** | 0.042 | 0.042 |
| Constant | -2.628 | 2.574 | 2.188 | 3.614* | 2.188 | 2.519 | -5.996** | 2.188 | 2.519 | -0.484 | 2.136 | 2.136 |
| Firm- and year-fixed effects | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES | YES |
| Number of observations | 1,267,295 | | | 1,636,247 | | | 1,267,295 | | | 1,636,247 | | |
| F-statistic | 234.02*** | | | 333.46*** | | | 244.81*** | | | 365.31*** | | |
| R-squared | 0.806 | | | 0.806 | | | 0.799 | | | 0.786 | | |
| Turning point | 39,988 | | | 11,417 | | | 39,377 | | | 14,212 | | |
| 95% Feller confidence interval | 25,253 | 55,370 | 37,786 | -16,377 | 37,786 | 51,526 | 27,552 | 51,526 | 33,184 | -5,300 | 33,184 | |
| Sasabuchi test statistic | 4.610*** | | | 0.840 | | | 5.610*** | | | 1.440* | | |

Note: Standard errors are robust and clustered at the firm level. Independent and control variables are lagged by one year with respect to the dependent variable. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels, respectively.

depreciation, and amortization divided by financial expenses) because it is important to include a variable in the first-stage estimation that is not used in the second-stage estimation. The interest coverage ratio

likely affects a firm's chances of survival because a low-interest coverage ratio means that a firm barely generates sufficient operating cash flows to cover its financial expenses. In the second-step estimation,

TABLE 6 Structured permutation test based on year omission.

| Investment horizon is the dependent variable | 2011 is the omitted year | | 2012 is the omitted year | | 2013 is the omitted year | |
|--|--------------------------|-----------|--------------------------|-----------|--------------------------|-----------|
| | Coef. | St. error | Coef. | St. error | Coef. | St. error |
| Firm age | 0.037*** | 0.009 | 0.039*** | 0.008 | 0.041*** | 0.008 |
| Squared firm age | -0.001*** | 0.000 | -0.001*** | 0.000 | -0.001*** | 0.000 |
| Firm size | -0.383*** | 0.038 | -0.397*** | 0.038 | -0.397*** | 0.039 |
| Squared firm size | -0.008*** | 0.003 | -0.009*** | 0.003 | -0.009*** | 0.003 |
| EPU (log) | -0.447*** | 0.019 | -0.350*** | 0.020 | -0.530*** | 0.021 |
| GDP per capita (log) | 0.564*** | 0.147 | 0.830*** | 0.148 | 1.409*** | 0.164 |
| Rule of law | -1.350*** | 0.059 | -1.857*** | 0.058 | -2.119*** | 0.064 |
| Asset tangibility | 1.994*** | 0.028 | 2.108*** | 0.028 | 2.184*** | 0.029 |
| Available slack | -0.178*** | 0.037 | -0.258*** | 0.037 | -0.339*** | 0.038 |
| Recoverable slack | 0.770*** | 0.034 | 0.824*** | 0.034 | 0.881*** | 0.035 |
| Potential slack | -0.174*** | 0.020 | -0.182*** | 0.021 | -0.185*** | 0.021 |
| Profitability | 1.256*** | 0.032 | 1.279*** | 0.033 | 1.308*** | 0.033 |
| Constant | 6.140*** | 1.566 | 3.545** | 1.573 | -1.408 | 1.725 |
| Firm- and year-fixed effects | YES | | YES | | YES | |
| Number of observations | 2,587,295 | | 2,579,018 | | 2,568,630 | |
| F-statistic | 510.02*** | | 562.21*** | | 574.14*** | |
| R-squared | 0.810 | | 0.805 | | 0.803 | |
| Turning point | 30.765 | | 31.107 | | 31.669 | |
| 95% Fieller confidence interval | 16.846 | 44.807 | 18.863 | 43.414 | 20.000 | 43.436 |
| Sasabuchi test statistic | 4.110*** | | 4.670*** | | 4.960*** | |
| Investment horizon is the dependent variable | 2014 is the omitted year | | 2015 is the omitted year | | 2016 is the omitted year | |
| | Coef. | St. error | Coef. | St. error | Coef. | St. error |
| Firm age | 0.044*** | 0.008 | 0.039*** | 0.008 | 0.037*** | 0.008 |
| Squared firm age | -0.001*** | 0.000 | -0.001*** | 0.000 | -0.001*** | 0.000 |
| Firm size | -0.374*** | 0.038 | -0.381*** | 0.038 | -0.406*** | 0.038 |
| Squared firm size | -0.010*** | 0.003 | -0.010*** | 0.003 | -0.008*** | 0.003 |
| EPU (log) | -0.506*** | 0.020 | -0.473*** | 0.019 | -0.303*** | 0.020 |
| GDP per capita (log) | 1.258*** | 0.153 | 1.010*** | 0.152 | 1.148*** | 0.149 |
| Rule of law | -1.810*** | 0.062 | -1.910*** | 0.065 | -1.983*** | 0.061 |
| Asset tangibility | 2.234*** | 0.029 | 2.232*** | 0.029 | 2.160*** | 0.028 |
| Available slack | -0.384*** | 0.038 | -0.362*** | 0.038 | -0.329*** | 0.037 |
| Recoverable slack | 0.915*** | 0.036 | 0.907*** | 0.035 | 0.886*** | 0.035 |
| Potential slack | -0.201*** | 0.021 | -0.189*** | 0.021 | -0.190*** | 0.020 |
| Profitability | 1.316*** | 0.033 | 1.288*** | 0.033 | 1.287*** | 0.032 |
| Constant | -0.505 | 1.613 | 2.170 | 1.599 | 0.120 | 1.582 |
| Firm- and year-fixed effects | YES | | YES | | YES | |
| Number of observations | 2,558,919 | | 2,557,240 | | 2,553,633 | |
| F-statistic | 569.42*** | | 565.59*** | | 558.68*** | |
| R-squared | 0.802 | | 0.803 | | 0.806 | |
| Turning point | 32.667 | | 29.742 | | 29.520 | |

TABLE 6 (Continued)

| Investment horizon is the dependent variable | 2014 is the omitted year | | 2015 is the omitted year | | 2016 is the omitted year | |
|--|--------------------------|-----------|--------------------------|-----------|--------------------------|-----------|
| | Coef. | St. error | Coef. | St. error | Coef. | St. error |
| 95% Fieller confidence interval | 21.700 | 43.774 | 18.367 | 41.122 | 17.582 | 41.468 |
| Sasabuchi test statistic | 5.410*** | | 4.790*** | | 4.550*** | |
| Investment horizon is the dependent variable | 2017 is the omitted year | | 2018 is the omitted year | | 2019 is the omitted year | |
| | Coef. | St. error | Coef. | St. error | Coef. | St. error |
| Firm age | 0.020** | 0.008 | 0.026*** | 0.008 | 0.034*** | 0.008 |
| Squared firm age | -0.001*** | 0.000 | -0.001*** | 0.000 | -0.001*** | 0.000 |
| Firm size | -0.425*** | 0.037 | -0.378*** | 0.038 | -0.387*** | 0.036 |
| Squared firm size | -0.007*** | 0.003 | -0.011*** | 0.003 | -0.009*** | 0.003 |
| EPU (log) | -0.542*** | 0.024 | -0.409*** | 0.019 | -0.437*** | 0.019 |
| GDP per capita (log) | 0.914*** | 0.153 | 0.552*** | 0.155 | 0.921*** | 0.152 |
| Rule of law | -2.221*** | 0.065 | -1.957*** | 0.063 | -1.904*** | 0.059 |
| Asset tangibility | 2.000*** | 0.028 | 1.881*** | 0.028 | 2.049*** | 0.027 |
| Available slack | -0.248*** | 0.037 | -0.142*** | 0.037 | -0.232*** | 0.036 |
| Recoverable slack | 0.772*** | 0.034 | 0.703*** | 0.034 | 0.794*** | 0.033 |
| Potential slack | -0.169*** | 0.020 | -0.169*** | 0.020 | -0.179*** | 0.020 |
| Profitability | 1.249*** | 0.032 | 1.253*** | 0.032 | 1.261*** | 0.031 |
| Constant | 4.446*** | 1.616 | 7.167*** | 1.635 | 3.061* | 1.614 |
| Firm- and year-fixed effects | YES | | YES | | YES | |
| Number of observations | 2,562,432 | | 2,640,547 | | 2,866,117 | |
| F-statistic | 520.54*** | | 486.53*** | | 561.20*** | |
| R-squared | 0.810 | | 0.810 | | 0.803 | |
| Turning point | 19.353 | | 25.308 | | 28.807 | |
| 95% Fieller confidence interval | 3.721 | 34.045 | 10.161 | 39.963 | 16.116 | 41.416 |
| Sasabuchi test statistic | 2.380*** | | 3.120*** | | 4.180*** | |

Note: Standard errors are robust and clustered at the firm level. Independent and control variables are lagged by one year with respect to the dependent variable. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels, respectively.

we include the inverse Mills ratio obtained from the first step as an additional control variable. The results are displayed in Table 7 below. The inverse Mills ratio is not statistically significant, meaning that sample selection is not a serious concern in this study. The results shown in Table 7 largely echo those included in the main estimations.

5 | CONCLUSION AND DISCUSSION

5.1 | Discussion of the results

In recent years, there has been increased scholarly and practitioner interest in the study of managerial short-termism. Several authors point out that pressure from shareholders and monitoring by financial analysts contribute to managerial short-termism, as the managers of publicly listed firms care excessively about short-term variations in their stock prices (Barton et al., 2017; Flammer & Bansal, 2017; Martin et al., 2015; Sampson & Shi, 2023). Such arguments do not readily apply to privately held firms, which represent the majority of

firms throughout the world. Thus, it appears important to broaden the scope of research on temporal orientation and consider categories of firms outside of publicly listed firms. This is not only a matter of ecological validity but also a matter of theoretical development. By focusing on publicly listed firms, research on temporal orientation neglects to develop theoretical arguments pertaining to firms that have not reached the going-public stage.

Our main goal in this work is to present an exploratory study of temporal orientations and investment horizons throughout the firm lifecycle. Our conceptual framework is built on two sets of theoretical arguments that past research identifies as important factors of temporal orientation—namely, organizational learning theory and agency theory. We propose that the investment horizon initially increases as a firm grows older to reflect organizational learning in terms of the use of more sophisticated investment decision criteria. We also propose that the investment horizon declines when a firm experiences the transition from an owner-managed status to a professionally managed status. Our empirical results are consistent with these ideas, although the economic significance of these results is modest. Firms'

TABLE 7 Results of Heckman's two-step selection model.

| | Selection equation | | Second-stage results | |
|----------------------------------|--------------------|-----------|----------------------|-----------|
| | Coef. | St. error | Coef. | St. error |
| Firm age | 0.003 *** | 0.000 | 0.112 *** | 0.001 |
| Squared firm age | 0.000 *** | 0.000 | −0.001 *** | 0.000 |
| Firm size | 0.368 *** | 0.005 | −0.749 *** | 0.020 |
| Squared firm size | −0.014 *** | 0.000 | 0.030 *** | 0.001 |
| EPU (log) | 0.408 *** | 0.010 | −0.196 *** | 0.035 |
| GDP per capita (log) | 0.667 *** | 0.061 | 0.317 | 0.238 |
| Rule of law | −0.509 *** | 0.024 | −0.969 *** | 0.108 |
| Asset tangibility | 0.034 *** | 0.004 | 6.027 *** | 0.015 |
| Available slack | −0.163 *** | 0.009 | −4.189 *** | 0.034 |
| Recoverable slack | 0.141 *** | 0.005 | 2.969 *** | 0.023 |
| Potential slack | 0.043 *** | 0.003 | 0.144 *** | 0.013 |
| Profitability | 0.153 *** | 0.010 | 0.557 *** | 0.042 |
| Interest coverage ratio | 0.000 *** | 0.000 | | |
| Inverse Mills ratio | | | −0.017 | 0.038 |
| Constant | −9.902 *** | 0.637 | −3.461 | 2.476 |
| Industry- and year-fixed effects | YES | | YES | |
| Number of observations | 2,438,904 | | 1,835,030 | |
| Wald chi-squared | | | 326758.17 *** | |

Note: Standard errors are robust and clustered at the firm level. Independent and control variables are lagged by one year with respect to the dependent variable. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels, respectively.

investment horizons do not change quickly as firms grow older, except in the case of nonowner-managed firms. For nonowner-managed firms, declines in investment horizons are relatively rapid.

Young and small firms differ greatly from their older and larger counterparts due to their strong strategic focus on internal resources and short-term planning (Ates et al., 2013; Ekanem, 2005). At the same time, young and small firms are highly reactive and flexible, with great learning capacities (Dada & Fogg, 2016; Kang et al., 2022). We observe that young firms' temporal orientations gradually become longer as they grow older. This result is consistent with the idea that young firms initially have relatively short-term orientations and then learn to adopt more efficient investment decision criteria. Therefore, an important implication of our results is that future entrepreneurship research on temporal orientation should consider that young and short-term-oriented firms often will not remain short-term oriented. However, there are limits to the benefits of organizational learning with regard to investment decision-making. These limits are observed when firms are older and the separation of ownership from control occurs.

Organizational learning is not a linear process, and organizations experience various shifts in organizational learning throughout their lifecycles (Miller & Shamsie, 2001). Previous research proposes that the transition from owner management to professional management marks a shift in organizational learning (Gedajlovic et al., 2004; Zahra & Filatotchev, 2004). The capabilities developed through organizational learning are intrinsically associated with owner-managers'

experience, and when owner-managers leave, they may take these capabilities with them. Our work contributes to organizational learning research by showing that (1) a firm can learn to use financial decision criteria more efficiently as it grows older and (2) the benefits of this learning depend on the presence of an owner-manager in the firm. One original aspect of our arguments is that they bridge the discussion on the liability of newness (Aldrich & Auster, 1986) with organizational learning theory to acknowledge that the reduction of the liability of newness is facilitated by organizational learning. Previous research on organizational learning emphasizes the benefits of organizational learning in terms of product experimentation and exploitation (Miller & Shamsie, 2001; Nielsen et al., 2018) but less commonly acknowledges that financial skills can be developed through learning. Since financial skills are essential for firm growth (Brinckmann et al., 2011), our work stresses the need to examine how the capabilities developed by owner-managers can be transferred to professional managers in transitioning firms.

Our work also speaks directly to agency theorists. The idea that managerial short-termism, reflected in short investment horizons, is a form of agency conflict is not new (Martin et al., 2015). However, by focusing on publicly listed firms, previous research neglects to consider how firms' investment horizons and temporal orientations change throughout the firm lifecycle. We obtain results consistent with the idea that it is when control and ownership are separated that a shift occurs in temporal orientation. The decline in investment horizons observed among nonowner-managed firms is consistent with the

idea that professional managers are more risk-averse than owner-managers and thus opt for less risky investment opportunities with shorter maturities (Eisenhardt, 1989). Therefore, we adopt a more dynamic view of the roles played by agency problems in investment horizons. Instead of relying on a cross-sectional view of firms' temporal orientations, we show that changes in management and governance structures strongly influence investment decisions (Hoskisson et al., 2017). An important contribution of our work is that it shows the importance of acknowledging that the nature and magnitude of agency conflicts depend on a firm's stage in its lifecycle. A direct implication of this observation for future research is that it highlights the need to examine privately held firms more frequently, instead of only publicly listed companies, and adopt more dynamic conceptual frameworks. In particular, it is important to identify the lifecycle stage of a firm because each stage is associated with a unique strategy-governance nexus (Filatotchev et al., 2006). Our work illustrates the aforementioned idea that each stage of the firm lifecycle is associated with a unique strategy-governance nexus.

5.2 | Practical implications

The idea that firms' investment horizons change as time passes is not only anecdotally supported. Longer investment horizons are associated with increased performance, even though excessively long investment horizons can also be problematic (Souder et al., 2016). We identify that an optimal firm age of 30 years is associated with a maximum investment horizon. One interpretation of our results is that it takes a relatively long period of time for firms to reach this optimal age. To the extent that this optimal age is associated with stronger performance, the process of organizational learning with regard to investment decision-making appears to be slow (Ekanem, 2005). For entrepreneurs and owner-managers, this observation means that actions designed to improve financial skills early in the firm lifecycle are much needed. Young and small firms' organizational learning is based mostly on social interactions and relies on professional network connections (Ekanem, 2005). It seems important to provide young firms' managers with additional financial skills through other channels, for instance through assistance from banks (Brinckmann et al., 2011), to speed up learning. This could be achieved through dedicated executive education programs (Ekanem & Smallbone, 2007).

The fact that the investment horizon declines in older firms is also important for monitoring privately held firms. While large and publicly listed firms have relatively strong governance and monitoring systems (e.g., nonexecutive boards), the governance systems of privately held firms are less developed (Uhlener et al., 2007). Our work stresses the need for active investment decision monitoring in privately held firms, especially after the transition from an owner-managed status to a professionally managed status.

From a managerial perspective, it seems useful to stress that we observe a negative relationship between firm age and investment horizons in BG-affiliated firms. One interpretation of this result is that BG managers create subsidiaries to host new activities

that are initially designed for the long run but launch few new long-term investments as these activities age and the subsidiaries grow. Does this mean that, instead of reinvesting in existing entities, BGs mostly create new subsidiaries when they identify long-term opportunities? An answer to this question would provide interesting insights that would improve our understanding of the role that business organizational structure plays in the investment decision-making process.

5.3 | Limitations

We acknowledge several limitations—in particular, methodological limitations—to our work. First, as mentioned previously, while our empirical results fall in line with our theoretical arguments, we do not provide clear-cut empirical evidence of a causal channel. Therefore, more conceptual and empirical work is needed in the study of temporal orientation throughout the firm lifecycle.

Second, our measure of the investment horizon is based on the expected duration of tangible asset utilization, which is commonly used as a marker of the investment horizon in the literature (Souder et al., 2016; Souder & Bromiley, 2012). This measure captures investments made by a firm across multiple years and is relatively sticky in the sense that past investments largely drive the current investment horizon. To develop new measures of the investment horizon, future research could build on this study by conducting interviews and surveys of managers to study how their investment decision-making processes evolve as their firms grow.

Third, the distribution of firms in our sample is highly heterogeneous across countries and constrained by the availability of data. Italian firms are overrepresented in our sample, an issue that is relatively common in studies that use the Amadeus database (see Kalemli-Özcan et al., 2019 for a detailed discussion). It is important to acknowledge that our results may be partly driven by the distribution of firms across countries and thus may not be generalizable to other contexts. Future research could seek to extend the generalizability of our results to other countries and contexts and examine the roles played by institutional differences in the relationship between the firm lifecycle and temporal orientation.

Fourth, as a limitation of our dataset, while our results suggest that a shift in temporal orientation occurs when firms shift away from owner management, we do not explicitly observe when this shift occurs. In some firms, the separation of ownership from control may be motivated by the inability of their owner-managers to identify new long-term investment opportunities (Boeker & Karichail, 2002). In such cases, a decline in temporal orientation may begin to occur before the hiring of a professional manager. Such an endogeneity problem cannot be efficiently addressed with our dataset, but future research could examine this issue in detail with longitudinal data on ownership and management.

In conclusion, research on temporal orientation is an active and growing field of investigation, and we hope that our work can stimulate future contributions to this topic.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

Research data not shared.

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ENDNOTES

- ¹ Investment decisions are planned actions based on the allocation of capital toward particular business opportunities that meet the financial objectives and risk-taking willingness of stakeholders. Investment decisions are made by CEOs with the approval of nonexecutive boards or made directly by owner-managers (Ekanem, 2005).
- ² In the rest of this paper, we view a longer temporal orientation as good, although we do not test this idea. Souder et al. (2016) document that less than 5% of firms have excessively long temporal orientations.
- ³ For instance, Hayward et al. (2017) study 89 biotechnology firms in Australia, while Peel and Wilson (1996) examine 84 manufacturing and service firms in the United Kingdom. We know of no large-scale studies on small- and medium-sized enterprises (SMEs)' financial management practices.
- ⁴ In robustness tests, we exclude publicly listed firms from the sample and observe similar results.
- ⁵ Specifically, we use the « utest » command developed by Lind and Mehlum (2010) for Stata 16.
- ⁶ For BG-affiliated firms, we observe that the Sasabuchi test does not reject the joint null hypothesis that the dependent variable does not increase faster at lower values of the dependent variable and does not decrease faster at higher values of the independent variable. Furthermore, the 95% Fieller confidence interval does not fall fully within the data range.

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APPENDIX A

A.1 | NUMBER OF OBSERVATIONS BY COUNTRY

| Country | Number of firm-year observations |
|-------------|----------------------------------|
| France | 630,286 |
| Germany | 127,188 |
| Greece | 1183 |
| Italy | 741,490 |
| Netherlands | 1530 |
| Spain | 1,051,528 |
| Sweden | 350,337 |
| Total | 2,903,542 |