



The Role of Agency Costs and Shareholder Protection on Family Firms' Cash Holding Decision-Making

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The role of agency costs and shareholder protection in family firms' cash-holding decisions

Abstract

Purpose – This study analyzes the effects of country-level shareholder protection and agency costs on the cash-holding policies of family firms.

Design/methodology/approach – Data were collected for 2,159 European firms for the period 2010–2019. The authors estimate the model using the generalized method of moments (GMM).

Findings – Agency costs are found to have a stronger effect than low country-level shareholder protection on decision-making related to cash-holding policies. In line with previous literature, the results show that the absence of agency costs between ownership and control results in holding more cash for the firms. In addition, family firms with a dominant shareholder and young firms hold more cash than family firms without a dominant shareholder and old firms, respectively. The study also finds that firms in countries with a low level of shareholder protection hold more cash than firms in countries with a high level of shareholder protection, in turn. However, the effect of agency costs outweighs the effects of low country-level shareholder protection.

Originality/value – This study advances the literature on family firms by examining the interplay between ownership, governance, and agency costs in shaping cash-holding decisions, particularly in the context of European firms with varying levels of shareholder protection. Additionally, it provides a valuable perspective by analyzing how different types of agency costs influence cash holdings in family firms, demonstrating that these costs have a stronger impact than country-level shareholder protection in determining corporate liquidity policies.

Keywords Cash holdings, Family firms, Agency costs, Country-level shareholder protection

Paper type Research paper

JEL Classification — G32, G34

1. Introduction

Relevant studies have shown that family-controlled firms are prevalent worldwide (Arregle *et al.*, 2021; Berrone *et al.*, 2022). According to the Family Firm Institute, two-thirds of firms globally are family-controlled. Although the predominance of the family firm model around the world has motivated a large body of research, the results are inconsistent and leave many questions unanswered. Perhaps more alarmingly, Litz *et al.* (2012) surveyed family business scholars on ownership and governance, finding that almost half have limited or no understanding of the topic, even though the literature identifies many aspects in which family and nonfamily firms behave differently (Anderson and Reeb, 2003; Almeida and Wolfenzon, 2006; Kotlar *et al.*, 2018; Acuña-Opazo *et al.*, 2021; Lee and Persson, 2016).

Several studies focus on firms' cash-holding decisions. Opler *et al.* (1999), and Bates *et al.* (2009) emphasize two benefits of cash holdings. First, firms with sufficient cash holdings save transaction costs necessary to raise funds and do not have to liquidate assets to raise capital or make debt payments. Second, if other sources are unavailable or too costly, the firm can use its cash to fund investments. The literature indicates that family firms tend to hold more cash than their nonfamily counterparts (Chung *et al.*, 2015; Durán *et al.* 2016), primarily due to agency conflicts, which significantly influence their cash-holding policies.

From the perspective of the corporate governance, previous studies show that country-level shareholder protection clearly affects firms' cash-holding decisions (Dittmar *et al.*, 2003; Harford *et al.*, 2008). Dittmar *et al.* (2003) find that country-level protection is more relevant than firm-level protection in determining cash holdings. However, previous studies clearly demonstrate that the level of ownership concentration is directly related to agency costs which, in turn, have a direct effect on firms' cash-holding decisions (Jensen and Meckling, 1976; Villalonga and Amit,

2006). This relationship becomes even more pronounced when there is a risk of majority shareholders expropriating minority shareholders (Pinkowitz *et al.*, 2004; Johnson *et al.*, 2000).

It is important to acknowledge that the literature does not offer a unified perspective on these topics. Recent studies aligned with this study's approach, such as Cambrea *et al.* (2022), report a positive relationship between family ownership and cash holdings. In contrast, Maqueira *et al.* (2025) and Moolchandani *et al.* (2022) find a negative relationship between these variables. Furthermore, Li *et al.* (2025) present findings that challenge the initial results of this study by identifying a negative relationship between minority shareholder rights and cash holdings.

Considering all these agency relationships, this study examines the cash-holding decisions of family firms in countries with low levels of shareholder protection. While shareholder protection influences cash-holding policies, its impact differs from that of agency costs (Harford *et al.*, 2008). Therefore, this paper investigates the relevance of country-level shareholder protection and agency costs to the cash-holding policies of family firms. As such, this research focuses on the relationship between cash holdings and family firms with a dominant shareholder in countries with low shareholder protection. By doing so, the effect of both Type 1 (between ownership and control) and Type 2 (between majority and minority shareholders) agency costs is tested.

The present study uses a sample of 2,159 companies from 15 European countries (2010-2019), totaling 20,130 observations to examine the impact of Type 1 and Type 2 agency costs on family firms' cash-holding decisions in the context of low country-level shareholder protection. Additionally, this paper explores family ownership, given its unique characteristics, including the absence of Type 1 agency costs and the presence of a dominant shareholder. The distinction between Type 1 and Type 2 agency costs in family firms depends on the control held by the largest shareholder. When no dominant shareholder exists, agency costs stem mainly from the separation

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10 of ownership and control (Type 1). In contrast, in firms with a dominant family owner, concerns
11 shift toward the expropriation of minority shareholders (Type 2). The findings show that family
12 firms hold more cash than nonfamily firms, and that family firms with a dominant shareholder
13 hold more cash than those without. In addition, younger family firms hold more cash than older
14 ones, and firms in countries with low shareholder protection maintain higher cash holdings.
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18 Subsequently, the interrelations between agency costs and shareholder protection effects
19 on firms' cash holdings are analyzed. Thus, this research measures the different levels of cash
20 holdings between family and nonfamily firms in countries with low country-level shareholder
21 protection and finds that family firms hold more cash than nonfamily firms. The study finds that
22 low country-level shareholder protection does not affect the family firms' cash-holding decisions
23 in the presence of Type 1 agency costs. Furthermore, from the perspective of the interrelation
24 between Type 2 agency costs and shareholder protection, family firms are compared based on firm
25 age, which is another factor that has a key influence on firms' cash-holding policies. The results
26 indicate that for family firms in countries with low levels of shareholder protection, Type 2 agency
27 costs lead to greater cash holdings.
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36 This study makes several contributions to the literature. First, it considers family ownership
37 and the influence of the relationship between agency costs and country-level shareholder
38 protection on firms' cash-holding decisions. It adds to existing research on cash holding and
39 agency costs by examining the unique characteristics of family-controlled firms and analyzing the
40 effect of the absence (presence) of Type 1 (Type 2) agency costs on these firms' cash-holding
41 decisions. Second, it sheds light on country-level shareholder protection by examining its effect
42 on firms' cash-holding levels in a European sample. These are significant contributions to the
43 existing body of knowledge, as the effects in question remain inconclusive across both recent
44 research and analyses conducted in diverse regional contexts.
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10 Finally, it adopts a valuable approach to cash holding by exploring the joint effect of agency
11 cost types and low country-level shareholder protection, which has not been directly examined in
12 such detail. Moreover, by focusing on the cash-holding behavior of different types of family firms
13 in countries with a low level of shareholder protection, it adds to the literature on family ownership
14 and cash holding. This research shows that Type 1 agency costs are highly important to firms'
15 cash-holding decisions. However, low country-level shareholder protection does not exacerbate
16 the effect of Type 2 agency costs, measured by firm age and ownership concentration, in family
17 firms in relation to their cash-holding decisions. In both cases, the effects of agency costs overcome
18 the country-level shareholder protection effects when defining the cash-holding policies of family
19 firms.
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27 The remainder of the paper is organized as follows. Section 2 reviews the existing
28 theoretical and empirical literature on cash holdings, family ownership, and country-level
29 shareholder protection, and presents the study's hypotheses. Section 3 describes the data, defines
30 family firms, ownership concentration, and country-level shareholder protection as used in the
31 study, and discusses the choice of estimation method. Section 4 presents the descriptive analyses,
32 the empirical approach, and the regression results. Section 5 provides the discussion, and Section
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2. Literature review

2.1 Family ownership, agency conflicts, and cash holdings

Dittmar *et al.* (2003) argue that agency problems are of primary importance in determining cash holdings. Firms consider the discretion and managerial opportunism associated with cash when deciding how to compose their liquidity reserves (Yun, 2009; Amess *et al.*, 2015). As Jensen and Meckling (1976) argue in their seminal work, the availability of funds at a manager's free disposal

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10 can lead to investment projects with negative net present values, acquisitions in industries familiar
11 to the manager, and spending on perquisites that benefit the manager rather than the firm. These
12 behaviors, known as Type 1 agency problems, are mainly driven by the separation of ownership
13 and control. The severity of Type 1 agency problems depends on the specific characteristics of
14 each firm. In this context, firms that are more likely to have agency problems between owners and
15 managers (i.e., in which information asymmetry is high) can be reasonably assumed to have lower
16 levels of cash holdings (Chung *et al.*, 2015).
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22 In line with this argument, some studies find that family-controlled firms hold more cash
23 than nonfamily firms (Chung *et al.*, 2015; Durán *et al.*, 2016). Type 1 agency problems between
24 shareholders and managers are virtually nonexistent in family firms, as the family is not only the
25 major shareholder but also actively involved in management. Consequently, information
26 asymmetry is reduced because the goals of the family and the firm are aligned (Ali *et al.*, 2007;
27 Dyer, 2006; Villalonga and Amit, 2006). Consistent with this discussion, if family-controlled firms
28 can reduce or even eliminate the Type 1 agency problem, they are likely to have higher levels of
29 cash holdings. Thus, the first hypothesis is stated as follows:
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36 *Hypothesis 1: The absence of the Type 1 agency problem causes family firms to hold more*
37 *cash than nonfamily firms.*
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39 However, the literature finds that Type 2 agency problems also exist in firms and are important to
40 firms' cash-holding decisions. Type 2 agency problems arise from the ability of large shareholders
41 to expropriate minority shareholders (Villalonga and Amit, 2006; Vardaman *et al.*, 2024). This is
42 because, at a certain level of ownership concentration, large shareholders have nearly full control
43 of the firm and may use this control to extract private benefits, to the detriment of minority
44 shareholders (Shleifer and Vishny, 1997; Tayeh *et al.*, 2023).
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10 The theoretical research shows that the size and distribution of ownership matter.
11 According to the agency theory (Jensen and Meckling, 1976), ownership concentration serves to
12 mitigate Type 1 agency problems between shareholders and managers because majority owners
13 can effectively monitor managers. However, although ownership in the hands of a main owner
14 may be beneficial given the owner's monitoring function, high levels of ownership can lead to
15 opportunistic behavior (Burkart *et al.*, 1997; Al Dah, 2018). Therefore, in general, Type 2 agency
16 costs are closely related to the firm's ownership concentration level. A high level of ownership
17 concentration in the hands of a dominant shareholder can easily lead to the expropriation of
18 minority shareholders.
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25 Although high Type 1 agency costs may not exist in family-controlled firms, these firms
26 are not immune to Type 2 agency costs. Given the ownership structure of family firms, family
27 owners can use different mechanisms to increase their control over the firm (Gonenc *et al.*, 2013;
28 Yu and Zheng, 2012) and may be motivated to extract private benefits from minority shareholders.
29 Dittmar *et al.* (2003) argue that family-controlled firms use cash holdings to accumulate wealth
30 and avoid the possible tax costs of withdrawing funds from the firm. Family firms are particularly
31 susceptible to Type 2 agency problems because, compared to large shareholders in other types of
32 firms, families may be inclined to extract private benefits and primarily aim to maintain absolute
33 control over the firm (Bennedsen and Nielsen, 2010; Masulis *et al.*, 2011). Based on the
34 aggravating effect of the presence of a dominant shareholder in family firms, Hypothesis 2.a is
35 stated as follows:
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45 *Hypothesis 2.a: The existence of the Type 2 agency problem causes family firms with a*
46 *dominant shareholder to hold more cash than family firms without a dominant shareholder.*
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10 Apart from those addressed in H2.a, other factors can cause Type 2 agency costs in family firms.
11 Lozano *et al.* (2016) and Fiss and Zajac (2004) find that the generation to which family firms
12 belong, meaning their age, is an important and differentiating factor. Old family firms tend to
13 exhibit certain characteristics more strongly than young family firms. For instance, some of the
14 determinants of family control that impair firm performance are dual-class stocks and pyramidal
15 ownership structures (Calabrò *et al.*, 2017; Villalonga and Amit, 2010). Both appear more
16 commonly in older family-controlled firms, where the incentives and the opportunities to
17 expropriate negatively affect firm value (Lozano *et al.*, 2016; Hoy and Robin, 2010). Moreover,
18 younger firms tend to depend more heavily on their founders' participation as they face important
19 decisions earlier in their existence (James *et al.*, 2012). For example, the succession decision can
20 create conflicts within the company (Citrin and Ogden, 2010; Lozano *et al.*, 2016).
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29 For family firms, being family-controlled positively affects cash holdings when the firm is
30 young; however, the effect of family ownership changes over the next generations as the firm ages
31 (Bertrand *et al.*, 2008). Whereas young firms need to accumulate cash more rapidly because their
32 main purpose is growth and maintaining the firm's viability with enough resources to fund new
33 opportunities, old firms tend not to adopt a growth-oriented mindset and, therefore, require lower
34 levels of cash holdings. In addition, although young firms require greater resources for growth,
35 they also face more severe financial constraints. Consequently, they must hold sufficient cash to
36 be prepared to fund potential investments and avoid liquidity shortages.
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43 Considering these arguments and supporting H2.a, Hypothesis 2.b focuses on the
44 differences in cash holdings between young and old family firms. The study determines whether
45 the higher cash-holding levels of young family firms differ from those of old family firms:
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48 *Hypothesis 2.b: The existence of the Type 2 agency problems causes young family firms to*
49 *hold more cash than old family firms.*
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2.2 Country-level shareholder protection and cash holdings

As a corporate governance mechanism, country-level shareholder protection is an important factor that affects both Type 1 and Type 2 agency costs within firms and, consequently, influences their cash-holding policy decisions. Harford *et al.* (2008) find that shareholder protection and its enforcement at the country level is more significant than firm-level variation as determinants of managerial incentives to control agency costs. Managers of firms in countries with low shareholder protection can hoard cash and pay low dividends with relative impunity (Harford *et al.*, 2008; Dittmar *et al.*, 2003; Kalcheva and Lins, 2007; Anderson and Hamadi, 2016). Dittmar *et al.* (2003) compare average cash holdings across countries with varying levels of shareholder protection and suggest that firms hold more cash in countries where shareholders have lower protection. This result indicates that in firms in countries with low shareholder protection and Type 2 agency problems, in which conflicts arise between majority and minority shareholders, minority shareholders lack sufficient power to protect their financial rights against majority shareholders. In the same vein, Pinkowitz *et al.* (2004) examine the effect that country-level shareholder protection has on firms' levels of cash holdings, and find that cash is worth less to minority shareholders (i.e., cash holdings contribute less to the value of minority shares) in countries with low shareholder protection. This finding is consistent with the hypothesis that in countries with a low level of protection for shareholder rights, managers and controlling shareholders can more easily expropriate corporate resources for their own benefit.

Based on these arguments, the following hypothesis related to country-level shareholder protection is stated as follows:

Hypothesis 3: Firms in countries with a low level of shareholder protection hold more cash.

2.3 Agency costs, country-level shareholder protection, and cash holdings

Next, following the arguments of Harford *et al.* (2008), the study sample is limited to countries with low shareholder protection to test the effect of shareholder protection on firms' cash-holding decisions in a context where the effect of agency costs is clearly present. Based on Hypotheses 3, this research assumes that firms in countries with low shareholder protection tend to hold higher levels of cash. Thus, within this framework of low shareholder protection and, consequently, higher cash holdings, the Type 1 agency problem may lose its dominant effect on firms' cash-holding decisions. If so, the difference in cash holdings between family and nonfamily firms should disappear.

Conversely, if family ownership overcomes the importance of low country-level shareholder protection on cash-holding decisions, family firms should hold more cash than nonfamily firms, in line with Hypothesis 1. It is expected that the family ownership effect will dominate the shareholder protection effect for three reasons. First, firms do not hold more cash simply because access to capital markets is more difficult in countries with low shareholder protection (Dittmar *et al.*, 2003). Second, prior literature shows that the difference in Type 1 agency problems between family and nonfamily firms is significant and highly important (Chung *et al.*, 2015; Ali *et al.*, 2007; Dyer, 2006; Villalonga and Amit, 2006). Third, there are differences in shareholder protection levels across countries. Although some important variation exists within the study sample, shareholder protection in Europe overall is generally weaker than in countries such as the United States (La Porta *et al.*, 1998). Therefore, shareholder protection may not play as strong a role in influencing firms' cash-holding decisions in Europe, as it does in countries with stronger shareholder protection. As a result, using the definition of shareholder protection, the fourth hypothesis is stated as follows:

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10 *Hypothesis 4: In countries with low shareholder protection, family firms hold more cash*
11 *than nonfamily firms.*
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15 However, as Dittmar *et al.* (2003) and Djankov *et al.* (2008) also highlight, in countries
16 with low shareholder protection, Type 2 agency problems between large and minority shareholders
17 may play a more important role in determining cash-holding policies. That is, in the presence of
18 low shareholder protection, the dominant shareholder may more easily maintain absolute power
19 and, thus, more easily expropriate minority shareholders (Bennedsen and Nielsen, 2010; Masulis
20 *et al.*, 2011). Along these lines, the positive effect of Type 2 agency costs on cash-holding
21 decisions should be more powerful in countries with a low level of shareholder protection,
22 compared to the other countries in the study sample.
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29 Nevertheless, a function of cash holding that is particularly important to family firms is
30 serving as a defense mechanism against takeovers (Faleye, 2004; Pinkowitz, 2000). If a bidder
31 wants to control the firm, the dominant owner can use cash holdings to resist the takeover by
32 buying the bidders' stocks on the market or repurchasing floating stocks to maintain control. This
33 defense mechanism is extremely important for families, who consider their firms not only an
34 important part of their asset portfolio but also a primary source of socio-emotional wealth [1].
35 Thus, Type 2 agency costs should be more powerful than country-level shareholder protection in
36 family firms' cash-holding decisions, and the level of this defense mechanism should be more
37 closely related to the firm's level of agency costs. Moreover, as explained above, due to generally
38 weaker shareholder protection in Europe, its influence on firms' cash-holding decisions may be
39 relatively limited in the European context. Therefore, this study posits that, in countries with a low
40 level of shareholder protection, family firms' cash-holding levels will be higher when they have a
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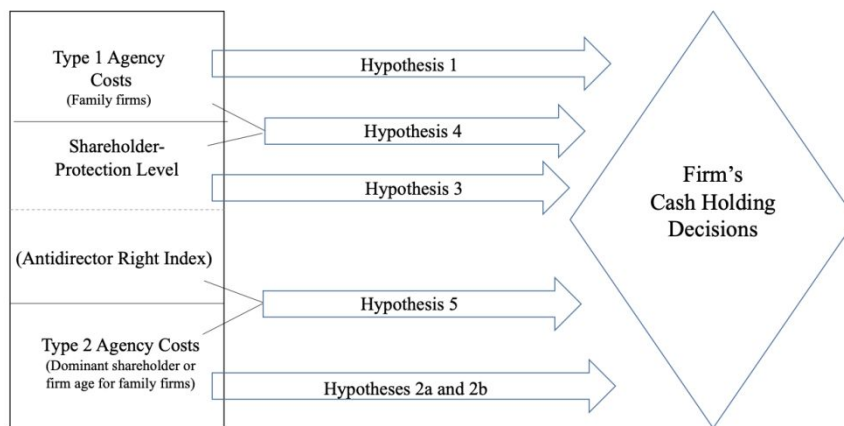
dominant shareholder. To do so, the study uses the previously explained definitions for both variables. Consequently, the final hypothesis is stated as follows [2]:

Hypothesis 5: Being a young family firm does not have an additional effect on family firms' cash-holding decisions in countries with low shareholder protection.

Figure 1 shows the overall relationships among the study's hypotheses, firms' cash-holding decisions, and the factors that affect these decisions. Hypotheses 1, 2, and 3, respectively, test the direct relationship of Type 1 agency costs, Type 2 agency costs, and a low level of shareholder protection on firms' cash-holding decisions. Hypothesis 4 (Hypothesis 5) tests the joint effect of Type 1 (Type 2) agency costs and low levels of shareholder protection on firms' cash holdings.

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Figure 1. Overview of relationships among the hypotheses



Source(s): Authors' own elaboration

3. Method

3.1 Data

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10 This research uses two different data sets for empirical tests: the Worldscope database is used for
11 financial and stock data, and the Amadeus database, for ownership structure information necessary
12 to define family control. Macroeconomic data are obtained from EUROSTAT and from the Main
13 Economic Indicators of the Organization for Economic Cooperation and Development.
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16 The final sample is an unbalanced panel comprising 2,159 listed firms for the period from
17 2010 to 2019 (20,130 firm-year observations) from 15 western European countries: Austria,
18 Belgium, Denmark, Finland, France, Germany, Greece, Italy, the Netherlands, Norway, Portugal,
19 Spain, Sweden, Switzerland, and the United Kingdom. Western Europe offers an ideal setting for
20 this study, as countries in the region share a common cultural and institutional framework shaped
21 by supranational governance, promoting a baseline of economic homogeneity. At the same time,
22 substantial variation in investor protection across these countries provides a valuable source of
23 heterogeneity for this analysis. Moreover, while family control is widespread in Western European
24 firms (Faccio and Lang, 2002), its evolution is influenced by country-specific factors (Franks *et*
25 *al.*, 2011), further enriching the empirical context. This research studies the above-mentioned 10-
26 year period because it aims to mitigate the potential effects of both the 2008 financial crisis (Bliss
27 *et al.*, 2015) and the COVID-19 pandemic (Tawiah and O'Connor, 2024) on firms' cash-holding
28 decisions. During such crisis periods, the strategic importance of rapid cash accumulation for firm
29 survival becomes unusually pronounced, potentially overshadowing the effects of structural
30 factors, such as agency costs and shareholder protection. Therefore, a non-crisis period offers a
31 more stable environment for examining the underlying determinants of corporate cash holdings.
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35 Following the previous literature on cash holdings, financial firms (SIC codes 6000–6999),
36 regulated utilities (SIC codes 4900–4999), and state-controlled firms (SIC codes 9000–9999) were
37 excluded from the study sample. In addition, firm-year observations with missing values for the
38 study's variables of interest and observations that are clearly outliers were removed. Finally,
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10 because this study uses the generalized method of moments (GMM), which requires at least five
11 consecutive years of data to test for the absence of second-order serial correlation in the first-
12 differenced residuals, all firms with less than five consecutive years of data were removed.
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16 *3.2 Moderating variables*

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18 To select family firms, this research uses a family dummy (FAM) variable that equals 1 if the firm
19 is controlled by family ownership, and 0 otherwise. Following Franks *et al.* (2011), a firm is
20 defined as family-controlled if the largest shareholder is an individual and he or she, or a member
21 of his or her family, serves on the board of directors, or if the sum of the family group ownership
22 is greater than or equal to 25%. The Amadeus database is used to calculate this dummy variable.
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27 To distinguish between family firms with and without a dominant shareholder, the study
28 again relies on the Amadeus database to create two dummy variables: DOMFAM (NDOMFAM)
29 equals 1 if the family firm has (does not have) a dominant shareholder, and 0 otherwise. In line
30 with Maury and Pajuste (2005), a family firm is considered to have a dominant shareholder if its
31 main shareholder holds at least 51% of the firm's shares [3].
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36 To measure country-level shareholder protection, the dummy variable LSHP is used, which
37 equals 1 if a firm's headquarters is located in a country with low shareholder protection, and 0
38 otherwise. To define low shareholder protection, the study uses the Antidirector Rights Index
39 developed by La Porta *et al.* (1998); if a country has a value below the median value, it is
40 considered to have a low level of shareholder protection.
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46 *3.3 Research design/model and variables*

To begin, the first three hypotheses, which have been previously discussed in the literature, are tested. The study follows the model of Opler *et al.* (1999) to analyze all the cash-holding models. To test Hypothesis 1—that family ownership has a positive effect on firms' cash-holding decisions—the following model is constructed:

$$CH_{i,t} = \alpha_1 + \alpha_2 CH_{i,t-1} + \beta_1 FAM_{i,t} + \alpha_3 CFVOL_{i,t} + \alpha_4 SIZE_{i,t} + \alpha_5 Q_{i,t} + \alpha_6 NWC_{i,t} + \alpha_7 CF_{i,t} + \alpha_8 I_{i,t} + \alpha_9 STD_{i,t} + \varepsilon_{i,t}, \quad (1)$$

where $CH_{i,t}$ represents cash holdings; $FAM_{i,t}$ denotes a family dummy variable that equals 1 if the firm is family-controlled, and 0 otherwise; $CFVOL_{i,t}$ captures the volatility of cash flow; $SIZE_{i,t}$ measures firm size; $Q_{i,t}$ refers to the firm's Tobin's Q; $NWC_{i,t}$ corresponds to the working capital net of cash; $CF_{i,t}$ reflects the firm's cash flow level; $I_{i,t}$ indicates the firm's investment; and $STD_{i,t}$ stands for the firm's short-term debt in year t . Finally, $\varepsilon_{i,t}$ denotes the error term. All variables, with the exception of $SIZE_{i,t}$, are scaled using the replacement cost of capital. See the Appendix for a complete description of the measurement of all variables. In this model, β_1 measures the effect of family ownership structure on firms' cash-holding decisions. Following Hypothesis 1, $\beta_1 > 0$ is expected.

To test Hypothesis 2—that family firms with (without) a dominant shareholder hold higher (lower) levels of cash—the following model is constructed:

$$CH_{i,t} = \alpha_1 + \alpha_2 CH_{i,t-1} + \omega_1 DOMFAM_{i,t} + \omega_2 NDOMFAM_{i,t} + \alpha_3 CFVOL_{i,t} + \alpha_4 SIZE_{i,t} + \alpha_5 Q_{i,t} + \alpha_6 NWC_{i,t} + \alpha_7 CF_{i,t} + \alpha_8 I_{i,t} + \alpha_9 STD_{i,t} + \varepsilon_{i,t}, \quad (2.a)$$

where $DOMFAM_{i,t}$ ($NDOMFAM_{i,t}$) is a dummy variable for family firms that equals 1 if its main shareholder holds at least (less than) 51% of the firm's shares, and 0 otherwise. In this model, ω_1 measures the effect of having a dominant shareholder on cash level for family firms, and ω_2 measures the effect of not having this type of shareholder in family firms. According to hypothesis

2.a, it is expected that family firms with a dominant shareholder hold more cash than those without a dominant shareholder; that is, $\omega_1 > \omega_2$.

To establish the model for Hypothesis 2.b, the study's primary goal is to show the different effects of Type 2 agency costs on family firms; however, in this case, firm age (young vs. old) is substituted for the presence or absence of a dominant shareholder. Therefore, to test Hypothesis 2.b, based on the full sample of firms, the following model is constructed:

$$CH_{i,t} = \alpha_1 + \alpha_2 CH_{i,t-1} + \gamma_1 YNGFAM_{i,t} + \gamma_2 OLDFAM_{i,t} + \alpha_3 CFVOL_{i,t} + \alpha_4 SIZE_{i,t} + \alpha_5 Q_{i,t} + \alpha_6 NWC_{i,t} + \alpha_7 CF_{i,t} + \alpha_8 I_{i,t} + \alpha_9 STD_{i,t} + \varepsilon_{i,t}, \quad (2.b)$$

where $YNGFAM_{i,t}$ ($OLDFAM_{i,t}$) is a dummy variable that equals 1 if the family firm is young (old), and 0 otherwise. Following the definition of Fiss and Zajac (2004), a firm that is less than 30 years old is categorized as controlled by the founder or the founder's first generation and defined as a young firm. Firms that are equal to or greater than 30 years old are defined as old firms. In this model, γ_1 (γ_2) measures the effect of being a young (old) family firm on cash level. In line with Hypothesis 2.b, it is expected that young family firms hold more cash than old family firms; that is, $\gamma_1 > \gamma_2$.

Next, the third hypothesis, also well-known in the literature, is analyzed: firms in countries with a low level of shareholder protection hold more cash. The following model is constructed:

$$CH_{i,t} = \alpha_1 + \alpha_2 CH_{i,t-1} + \theta_1 LSHP_{i,t} + \alpha_3 CFVOL_{i,t} + \alpha_4 SIZE_{i,t} + \alpha_5 Q_{i,t} + \alpha_6 NWC_{i,t} + \alpha_7 CF_{i,t} + \alpha_8 I_{i,t} + \alpha_9 STD_{i,t} + \varepsilon_{i,t} \quad (3)$$

where $LSHP_{i,t}$ is a shareholder protection dummy variable that equals 1 if the firm is located in a country with a low level of shareholder protection, and 0 otherwise. θ_1 measures the effect of being in a country with a low level of shareholder protection. In line with Hypothesis 3, $\theta_1 > 0$ is expected.

To test the following hypotheses, this study focuses on the subsample of countries with a low level of shareholder protection to determine the relationship between agency costs and shareholder protection. Thus, model 4 is constructed as follows:

$$CH_{i,t} \text{ (for LSHP)} = \alpha_1 + \alpha_2 CH_{i,t-1} + \beta_2 FAM_{i,t} + \alpha_3 CFVOL_{i,t} + \alpha_4 SIZE_{i,t} + \alpha_5 Q_{i,t} + \alpha_6 NWC_{i,t} + \alpha_7 CF_{i,t} + \alpha_8 I_{i,t} + \alpha_9 STD_{i,t} + \varepsilon_{i,t}. \quad (4)$$

This model is very similar to the first model; however, the sample is limited to firms in countries with a low level of shareholder protection. Thus, β_2 measures the effect of family ownership structure on firms' cash-holding decisions, but only for the subsample of firms operating in countries with low country-level shareholder protection. In this framework, the effect of a low level of shareholder protection on firms' cash-holding levels in the absence of Type 1 agency problems is examined. Based on Hypothesis 4, $\beta_2 > 0$ is expected.

To test Hypothesis 5, the same subsample as in Model 4 is used, but the focus is now on the relationship between Type 2 agency costs in family firms and a low level of shareholder protection. The following model is constructed:

$$CH_{i,t} \text{ (for LSHP)} = \alpha_1 + \alpha_2 CH_{i,t-1} + \gamma_3 YNGFAM_{i,t} + \gamma_4 OLDFAM_{i,t} + \alpha_3 CFVOL_{i,t} + \alpha_4 SIZE_{i,t} + \alpha_5 Q_{i,t} + \alpha_6 NWC_{i,t} + \alpha_7 CF_{i,t} + \alpha_8 I_{i,t} + \alpha_9 STD_{i,t} + \varepsilon_{i,t} \quad (5)$$

In this model, γ_3 (γ_4) measures the effect of being a young (old) family firm on cash-holding levels. Based on Hypothesis 5, positive values are expected for both coefficients, with the effect for young family firms being higher than that of the other; that is to say, $\gamma_3 > 0$, $\gamma_4 > 0$, and $\gamma_3 > \gamma_4$ are expected.

3.4 Analytical procedures

The models are estimated using a panel data methodology, which controls for unobserved heterogeneity—such as family culture—by taking first differences to eliminate bias and mitigate endogeneity issues. As in many empirical studies in corporate finance, several explanatory

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9 variables in this model may be subject to reverse causality, raising endogeneity concerns.
10 Identifying valid external instruments that satisfy the necessary relevance and exogeneity
11 conditions is highly complex and often infeasible. To address this issue, the generalized method
12 of moments (GMM) estimator, which leverages a system of internal instruments—specifically,
13 lagged values of the explanatory variables—is adopted, thereby eliminating the need for external
14 instrumental variables (Wintoki *et al.*, 2012). Furthermore, the Hansen J-test is employed for
15 overidentifying restrictions to assess the validity of the instruments, specifically testing for the
16 absence of correlation between the instruments and the error term. The results confirm that the
17 instruments used are valid across all model specifications. Finally, more specification tests are
18 conducted, including the Arellano-Bond (1991) m2 test for second-order serial correlation, and
19 Wald tests to assess the joint significance of coefficients, temporal variables, and country effects.
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30 **4. Results**

31 *4.1 Summary statistics and descriptive analysis*

32 Tables 1, 2, and 3 show sample distribution by countries, depending on the three definitions related
33 to family ownership, ownership concentration, and country-level shareholder protection. Table 1,
34 which provides family ownership distribution in the study sample, reports that 47% of the sample
35 firms are family-controlled. France, Germany, and the United Kingdom have the most family firms
36 with 286, 150, and 174 family-controlled firms, respectively. Table 2 refers to the redistribution
37 of this family subsample by the presence or absence of a dominant shareholder. In the study
38 sample, about 14% of all family firms' observations have a dominant shareholder.
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48 [TABLE 1 ABOUT HERE]

49 [TABLE 2 ABOUT HERE]

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11 Table 3 displays the sample distribution based on country-level shareholder protection and
12 the Antidirector Rights Index (La Porta *et al.*, 1998). Austria, Belgium, Denmark, Germany,
13 Greece, Italy, the Netherlands, and Switzerland have a low level of shareholder rights, because
14 their Antidirector Rights Index value is below the mean. Finland, France, Norway, Portugal, Spain,
15 Sweden, and the United Kingdom are defined as having a high level of shareholder protection,
16 because their Antidirector Rights Index value exceeds the mean value. This panel also provides
17 the sample distribution by countries.
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25 [TABLE 3 ABOUT HERE]
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29 Table 4 provides the summary statistics, the correlation matrix of the variables used to test
30 the hypotheses, and some univariate tests. Panel A presents the correlation matrix. This model
31 does not suffer from multicollinearity problems since its explanatory variables are not highly
32 correlated. Panel B includes the main statistical indicators. On average, companies in the study
33 sample have a cash-holding level of 12% and their Tobin's Q level is slightly over 1, which
34 evidences the existence of good investment opportunities.
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45 Panels C and D in Table 4 show univariate test results. First, Panel C compares family and
46 nonfamily firms within the sample. These two types of companies display a significant difference
47 in cash holdings. Family firms' cash-holding level is almost 21% higher than that of nonfamily
48 firms. Panel D splits the sample of family firms into two groups depending on the presence or
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10 absence of a dominant shareholder: DOMFAM (NDOMFAM) represents family firms with
11 (without) a dominant shareholder. The *t*-statistics indicate that family firms with a dominant
12 shareholder hold more cash than those without (column 4), and that both types of family firms
13 hold more cash than nonfamily firms (columns 5 and 6). In addition, family firms with a dominant
14 shareholder are slightly larger than those without (column 4), and both types of family firms are
15 smaller than nonfamily firms (columns 5 and 6).
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21 22 *4.2 Regression results*

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24 Table 5 presents the regression results used to test the hypotheses. Model 1 estimates firms' cash-
25 holding decisions based on family ownership, which tests Hypothesis 1. Model 2.a examines the
26 effect of the presence or absence of a dominant shareholder on cash-holding policies in family
27 firms, which tests Hypothesis 2.a. Model 2.b analyzes the effect of low country-level shareholder
28 protection on firms' cash-holding levels, which tests Hypothesis 2.b.
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33 [TABLE 5 ABOUT HERE]
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37 The estimated coefficients for Models 1, 2a, and 2b in Table 5 are in line with the results
38 of previous studies (Dittmar *et al.*, 2003; Durán *et al.*, 2016; Villalonga and Amit, 2006). Family
39 firms hold more cash than nonfamily firms ($\beta_1 = 0.0088$; i.e., $\beta_1 > 0$; $p < 0.001$). Furthermore,
40 family firms hold more cash in the presence (absence) of a dominant shareholder
41 ($\omega_1 = 0.0131 > \omega_2 = 0.0075$; i.e., $\omega_1 > \omega_2$; $p < 0.001$). Just as family firms with a dominant
42 shareholder hold more cash than those without, young family firms hold more cash than old family
43 firms ($\gamma_1 = 0.0091 > \gamma_2 = 0.0078$; i.e., $\gamma_1 > \gamma_2$; $p < 0.001$). Thus, consistent with the study's
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findings, evidence is observed that, in the presence of Type 2 agency costs, family firms hold more cash.

In Table 6, the results of model 3 show that firms in countries with a low (high) level of shareholder protection hold more (less) cash ($\theta_1 = 0.0544$; i.e., $\theta_1 > 0$; $p < 0.001$). This evidence on the positive effect of low shareholder protection on cash holdings thus supports Hypothesis 3.b. Consequently, the variables in each of these three models are directly related to firms' cash-holding levels.

Hypothesis 4 discusses the effects of family ownership and Type 1 agency costs on firms' cash-holding decisions in countries with a low level of shareholder protection. Model 4 in Table 6 shows these results. Like the whole sample, family firms in countries with low shareholder protection have higher cash holdings than nonfamily firms ($\beta_2 = 0.0035$; $\beta_2 > 0$; $p < 0.001$). These results support Hypothesis 4. That is, low shareholder protection does not outweigh the effect of the absence of Type 1 agency costs on firms' cash-holding levels. Consistently with the findings of Dittmar *et al.* (2003) and this study's argument about relatively weak shareholder rights in Europe, it has been found that the effect of (the lack of) Type 1 agency costs dominates the effect of low country-level shareholder protection for family firms (Chung *et al.*, 2015; Ali *et al.*, 2007; Dyer, 2006; Villalonga and Amit, 2006).

[TABLE 6 ABOUT HERE]

Finally, Model 5 of Table 6 provides the results for Hypothesis 5, which posits that being a young family firm does not have an additional effect on the family firm's cash-holding decisions over the effect of Type 2 agency costs in countries with a low level of shareholder protection. No

evidence has been found that a low level of shareholder protection has an exacerbating effect on old family firms' cash-holding decisions. The results have a positive effect for young and old family firms and, again, young firms have a higher level of cash holdings (γ_3 (0.0055) $>$ γ_4 (0.0037)) in countries with a low level of shareholder rights. Consistent with this study's argument that shareholder rights in Europe are generally not as strong as in the United States and the emphasis on the importance of agency costs highlighted by Almeida and Wolfenzon (2006) and Dittmar *et al.* (2003), the research findings indicate that Type 2 agency costs play a more significant role in family firms' cash-holding decisions than the level of shareholder protection.

5. Discussion

5.1 Theoretical implications

This study extends the literature on agency costs, shareholder protection, and cash-holding decisions by demonstrating that agency costs play a more significant role in family firms' cash holdings than country-level shareholder protection. The findings confirm that family firms accumulate more cash than nonfamily firms due to the absence of Type 1 agency costs and the presence of Type 2 agency costs in firms with dominant shareholders. Additionally, while firms in countries with low shareholder protection tend to hold more cash, this institutional factor does not override the effect of ownership structure. The study contributes to corporate finance theory by highlighting the primacy of agency costs over shareholder protection in shaping cash policies, reinforcing the notion that family ownership is a key determinant of financial decision-making.

5.2 Implications for policymakers

The empirical evidence provided is especially noteworthy in a context in which the Anglo-Saxon model of ownership structure and the incentives that drive corporate decision-making in widely held firms have been called into question. This study underscores that agency costs—particularly those arising from ownership-control structures—have a greater influence on corporate liquidity decisions than country-level shareholder protection. Given that family businesses account for a large share of the gross domestic product and represent a significant portion of private-sector employment in Europe, policymakers should consider legal reforms that go beyond formal shareholder rights and instead focus on reducing internal agency problems through mechanisms such as enhanced transparency, stronger board independence, and protection of minority shareholders. The study's findings highlight that family firms, due to their specific characteristics, are well positioned to play a stabilizing role throughout economic cycles, especially during downturns exacerbated by short-termism in capital markets. In this light, policymakers could promote the creation and development of family enterprises as a means of fostering sustainable economic growth.

6. Conclusions

This study underscores the dominant role of agency costs over country-level shareholder protection in shaping the cash-holding decisions of family firms. While weak shareholder protection is associated with higher cash reserves, its influence does not outweigh that of ownership structure, particularly the presence of a dominant shareholder. The results reinforce the uniqueness of family firms in financial decision-making, showing that Type 1 agency costs are crucial determinants of cash holdings, whereas Type 2 agency costs drive differences within family firms. These findings contribute to the broader corporate finance literature and offer a foundation for future research on ownership structures, governance mechanisms, and financial policies in varying institutional contexts.

Notes

1. This term, introduced by Gomez-Mejia *et al.* (2007), refers to the nonfinancial aspects of a firm that fulfill the family's emotional needs, such as identity, the ability to exercise family influence, and the perpetuation of the family dynasty.
2. Some robustness analyses are conducted for the study hypotheses. To examine Type 1 agency costs, an alternative, literature-backed definition of family firms is used and all hypotheses are re-tested. For Type 2 agency costs, two proxies—firm age and dominant shareholder—are applied, and consistent results are found across both, although only the firm age specification is reported in the paper. Similarly, while the paper presents findings based on the Antidirector Rights Index to measure shareholder protection, comparable results are obtained using the civil/common law distinction. All robustness tests confirm the consistency of the study's results. The complete set of alternative estimations is available upon request.
3. The 51% threshold is not the only way to determine a dominant shareholder, but it is the most reliable one. At high ownership concentration levels below 50%, when the largest shareholders decide to collude, the expropriation risk can arise for minority shareholders. However, collusion is not the only option; shareholders can also choose to adopt a monitoring role (Maury and Pajuste, 2005).

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Appendix. Description of the variables

Description of the variables of this paper can be found online at ...

Table 1: Distribution of the sample by family ownership

Country	Family-controlled Firms				Nonfamily firms			
	Firms		Observations		Firms		Observations	
	<i>N</i>	%	<i>n</i>	%	<i>N</i>	%	<i>n</i>	%
Austria	6	0.59	53	0.56	22	1.94	214	2.02
Belgium	18	1.76	172	1.81	38	3.35	353	3.33
Denmark	28	2.74	267	2.80	38	3.35	361	3.40
Finland	36	3.52	358	3.76	62	5.46	614	5.79
France	286	27.96	2737	28.74	120	10.56	1,126	10.62
Germany	150	14.66	1,418	14.89	137	12.06	1,275	12.02
Greece	104	10.17	1,002	10.52	38	3.35	364	3.43
Italy	64	6.26	445	4.67	62	5.46	484	4.56
The Netherlands	11	1.08	109	1.14	45	3.96	435	4.10
Norway	13	1.27	109	1.14	43	3.79	372	3.51
Portugal	6	0.59	50	0.52	17	1.50	146	1.38
Spain	28	2.74	266	2.79	38	3.35	361	3.40
Sweden	50	4.89	500	5.25	98	8.63	911	8.59
Switzerland	49	4.79	488	5.12	74	6.51	717	6.76
United Kingdom	174	17.01	1550	16.27	304	26.76	2,873	27.09
Total	1,023	100.00	9,254	100.00	1,136	100.00	10,606	100.00

Note(s): This table shows the number and percentage of firms and observations by country, based on the definition of family-controlled or nonfamily-controlled firms

Source(s): Authors' own elaboration

Table 2: Distribution of the sample by presence of a dominant shareholder

Country	Family firms with a dominant shareholder				Family firms without a dominant shareholder			
	Firms		Observations		Firms		Observations	
	<i>N</i>	%	<i>n</i>	%	<i>N</i>	%	<i>N</i>	%
Austria	3	2.08	23	1.71	3	0.34	30	0.37
Belgium	10	6.94	89	6.60	8	0.91	83	1.02
Denmark	2	1.39	18	1.34	26	2.96	249	3.05
Finland	4	2.78	40	2.97	32	3.64	318	3.89
France	50	34.72	473	35.09	236	26.85	2,264	27.69
Germany	19	13.19	180	13.35	131	14.90	1,238	15.14
Greece	9	6.25	82	6.08	95	10.81	920	11.25
Italy	7	4.86	63	4.67	57	6.48	382	4.67
The Netherlands	7	4.86	69	5.12	4	0.46	40	0.49
Norway	4	2.78	33	2.45	9	1.02	76	0.93
Portugal	1	0.69	7	0.52	5	0.57	43	0.53
Spain	4	2.78	35	2.60	24	2.73	231	2.83
Sweden	10	6.94	100	7.42	40	4.55	400	4.89
Switzerland	9	6.25	89	6.60	40	4.55	399	4.88
United Kingdom	5	3.47	47	3.49	169	19.23	1,503	18.38
Total	144	100.00	956	100.00	879	100.00	8,176	100.00

Note(s): This table shows the number and percentage of firms and observations by country, based on the definition of family firms with a dominant or without a dominant shareholder

Source(s): Authors' own elaboration

Table 3: Distribution of the sample by country-level shareholder protection

Country	Antidirector Rights Index	Low level of shareholder protection				High level of shareholder protection			
		Firms		Observations		Firms		Observations	
		<i>N</i>	%	<i>n</i>	%	<i>N</i>	%	<i>n</i>	%
Austria	2.00	28	3.17	267	3.27				
Belgium	0.00	56	6.33	525	6.44				
Denmark	2.00	66	7.47	628	7.70				
Germany	1.00	287	32.47	2,693	33.01				
Greece	2.00	142	16.06	1,366	16.75				
Italy	1.00	126	14.25	929	11.39				
The Netherlands	2.00	56	6.33	544	6.67				
Switzerland	2.00	123	13.91	1,205	14.77				
Finland	3.00					98	7.69	972	8.12
France	3.00					406	31.84	3863	32.26
Norway	4.00					56	4.39	481	4.02
Portugal	3.00					23	1.80	196	1.64
Spain	4.00					66	5.18	627	5.24
Sweden	3.00					148	11.61	1411	11.78
United Kingdom	5.00					478	37.49	4423	36.94
Total	2.47 (mean)	884	100.00	5,842	100.00	1,275	100.00	11,973	100.00

Note(s): This table shows the number and percentage of firms and observations by country, based on the definition of firms with high or low country-level shareholder protection

Source(s): Authors' own elaboration

Table 4: Summary statistics

Panel A. Correlation matrix								
	CH	SIZE	Q	CFVOL	CF	I	NWC	STD
CH	1							
SIZE	0.147***	1						
Q	0.281***	0.071***	1					
CFVOL	0.076***	0.085***	0.052***	1				
CF	0.033***	0.179***	0.164***	0.216***	1			
I	0.114***	0.062***	0.065***	0.037***	0.134***	1		
NWC	0.097***	-0.228**	-0.004	0.051***	0.100***	0.112***	1	
STD	0.301***	-0.006	0.333***	0.025***	0.151***	0.055***	0.123***	1

Panel B. Main statistical indicators							
Variable	Mean	Std. Dev.	1st Quartile	Median	3rd Quartile	Min.	Max.
CH	0.1215	0.1145	0.0404	0.0799	0.1626	1.21E-06	0.7123
SIZE	5.8619	2.0192	4.374	5.3127	7.2571	-0.7123	13.801
Q	1.1053	0.9055	0.5988	0.861	1.2996	0.001	9.928
CFVOL	-0.0041	0.0332	-0.0151	-0.0062	-0.0040	-0.1303	1.1621
CF	0.058	0.119	0.02312	0.0666	0.1101	-3.6792	2.2456
I	0.0605	0.0653	0.0167	0.0464	0.0749	0	0.6634
NWC	0.0416	0.1865	-0.0599	0.0403	0.1464	-2.7541	0.5014
STD	0.1028	0.1189	0.0167	0.0686	0.1498	0	0.6777

Panel C: Family firms versus nonfamily firms				
Variable	All (1)	Family (2)	Nonfamily (3)	t-stat (2)-(3)
No. Obs.	20,130	9,524	10,606	
CH	0.1215	0.1311	0.1081	-7.21***
SIZE	5.8619	5.1582	6.9013	35.65***
Q	1.1053	1.0974	1.1272	1.87*
CFVOL	-0.0041	-0.0036	-0.0057	-2.64**
CF	0.058	0.0496	0.0603	5.99***
I	0.0605	0.0476	0.0541	5.18***
NWC	0.0416	0.0525	0.0284	-11.76***
STD	0.1028	0.1362	0.0934	-8.74***

Panel D: Accounting for different family firm categories						
Variable	DOMFAM	NDOMFAM	Nonfamily	t-stat (1)-(2)	t-stat (1)-(3)	t-stat (2)-(3)
	(1)	(2)	(3)	(4)	(5)	(6)

1							
2							
3	CH	0.1351	0.1293	0.1081	-2.18***	-7.29***	-6.44***
4	SIZE	5.2105	5.1012	6.9013	-5.87***	34.88***	13.69***
5	Q	1.0992	1.0782	1.1272	-0.03	1.52*	0.84
6	CFVOL	-0.0044	-0.0029	-0.0057	0.29	-2.65**	-0.91
7	CF	0.0491	0.0499	0.0603	0.16	5.61***	2.81***
8	I	0.0484	0.0474	0.0541	-0.54	6.55***	3.18***
9	NWC	0.0487	0.0532	0.0284	1.44	-13.13***	-5.05***
10	STD	0.1335	0.1364	0.0934	-0.63	-8.48***	-3.44***

Note(s): This table presents the correlation matrix, main statistical indicators, and variable structure of the sample by ownership structure. CH represents the cash holding variable, SIZE refers to asset size, Q corresponds to Tobin's Q, CFVOL captures cash-flow volatility, CF measures the firm's cash flow, I indicates capital expenses, NWC denotes working capital net of cash, and STD reflects the short-term debt. For detailed definitions of all variables, see Appendix A.

*, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively

Source(s): Authors' own elaboration

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Table 5. The effect of family firms and family firms with a dominant shareholder on cash holdings

D. Var: CH	(1)	(2.a)	(2.b)
	Coef.	Coef.	Coef.
Constant	0.1620*** (30.79)	0.1478*** (26.00)	0.1404*** (25.30)
L1.CH	0.5424*** (122.86)	0.5443*** (122.93)	0.5460*** (114.08)
FAM	0.0088*** (7.91)		
DOMFAM		0.0131*** (5.33)	
NDOMFAM		0.0075*** (5.86)	
YNGFAM			0.0091*** (6.78)
OLDFAM			0.0078*** (5.73)
SIZE	-0.0012*** (-3.37)	-0.0012*** (-3.07)	-0.0011*** (-2.75)
Q	0.0131*** (27.52)	0.0130*** (27.99)	0.0129*** (25.69)
CFVOL	0.0703*** (10.80)	0.0615*** (9.92)	0.0674*** (9.97)
CF	0.0188*** (10.35)	0.0178*** (9.34)	0.0176*** (9.41)
I	-0.1903*** (-20.13)	-0.1866*** (-18.90)	-0.1888*** (-19.36)
NWC	-0.1061*** (-41.26)	-0.1111*** (-59.45)	-0.1272*** (-40.18)
STD	-0.1208*** (-44.14)	-0.1119*** (-40.22)	-0.1096*** (-40.27)
N	18,588	18,588	18,588
z ₁	3562.93 (9)	3487.91 (10)	2991.25 (10)
z ₂	140.25 (10)	127.33 (11)	91.45 (11)
z ₃	146.21 (15)	55.05 (15)	59.14 (15)
m ₁	-15.23	-15.25	-15.28
m ₂	1.41	1.41	1.41
Hansen	867.40 (692)	867.80 (693)	881.25 (693)

Note(s): FAM is a family-ownership dummy variable that equals 1 for family firms, and 0 otherwise; DOMFAM (NDOMFAM) is a family-firm dummy variable that equals 1 for family firms with (without) a dominant shareholder, and 0 otherwise; and YNGFAM (OLDFAM) is a family-firm dummy variable that equals 1 for young (old) family firms, and 0 otherwise. Other variables are defined as in Table 2. z₁ denotes a Wald test of the joint significance of the reported coefficients, asymptotically distributed as χ^2 under the null of no relationship (degrees of freedom in parentheses). z₂ represents a Wald test of the joint significance of the time dummies, asymptotically distributed as χ^2 under the null of no relationship (degrees of freedom in parentheses). z₃ indicates a Wald test of the joint significance of the country dummies, asymptotically distributed as χ^2 under the null of no relationship (degrees of freedom in parentheses). m_i corresponds to a serial correlation test of order *i* using residuals in first differences, asymptotically distributed as N(0,1) under the null of no serial correlation. And Hansen refers to a test of overidentifying restrictions, asymptotically distributed as X^2 under the null of no correlation between the instruments and the error term (degrees of freedom in parentheses).

***, **, and * indicate significance levels of 0.01, 0.05, and 0.10, respectively

Source(s): Authors' own elaboration

Table 6. The effect of young and old family firms and joint effects of agency costs and shareholder protection on cash holdings

D. Var: CH	(3)	(4)	(5)
	Coef.	Coef.	Coef.
Constant	0.0618*** (13.09)	0.0776*** (50.82)	0.0764*** (46.38)
L1.CH	0.5434*** (117.25)	0.6006*** (436.12)	0.6029*** (396.59)
FAM		0.0035*** (5.19)	
LSHP	0.0544*** (12.25)		
YNGFAM			0.0055*** (5.47)
OLDFAM			0.0037*** (6.65)
SIZE	-0.0007*** (-1.91)	-0.0051*** (-24.36)	-0.0047*** (-21.43)
Q	0.0130*** (24.56)	0.0096*** (42.10)	0.0098*** (43.77)
CFVOL	0.0701*** (11.34)	0.0661*** (26.38)	0.0655*** (26.40)
CF	0.0174*** (9.59)	0.0393*** (41.89)	0.0403*** (40.65)
I	-0.1951*** (-20.58)	-0.2133*** (-49.05)	-0.2131*** (-48.07)
NWC	-0.1079*** (-48.28)	-0.0791*** (-47.51)	-0.0753*** (-45.27)
STD	-0.1104*** (-32.51)	-0.1155*** (-75.29)	-0.1057*** (-72.50)
N	18,588	7,525	7,525
z ₁	2875.81 (9)	34212.02 (9)	27638.02 (10)
z ₂	110.17 (11)	609.25 (11)	780.18 (11)
z ₃	93.83 (14)	187.33 (7)	189.19 (7)
m ₁	-15.24	-10.60	-10.61
m ₂	1.41	1.03	1.03
Hansen	868.61 (692)	527.79 (608)	522.14 (608)

Note(s): LSHP is a dummy variable that equals 1 for firms in countries with low shareholder protection, and 0 otherwise. Other variables and tests are as defined in Tables 2 and 3.

***, **, and * indicate significance levels of 0.01, 0.05, and 0.10, respectively

Source(s): Authors' own elaboration