Better Safe Than Sorry – Labor Market Regulation and Cash Holdings of Founding Family Firms[#]

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We study the impact of labor market regulation on cash holdings of founding family firms (FFF). Based on a novel sample covering listed firms from 17 European countries, we document that FFFs increase their cash holdings in response to tightening labor regulations while other firms decrease cash. This pattern is more pronounced in domestic and labor-intense firms, substantiating that changes in labor market regulations causally drive our results. Examining the channels, we document that FFFs respond to tightening labor regulations by increasing their cash flow from financing by issuing long-term debt and reducing payouts to shareholders. Our results are robust to different regression designs, including matched sample and instrumental variable approaches, alternative definitions of cash holdings and labor regulation, as well as alternative explanations. Overall, our findings support the view that FFFs put more weight on financial flexibility vis-à-vis bargaining power considerations when faced with tightening labor markets.

Keywords: cash, liquidity, family firms, labor market regulation, financial flexibility

JEL Classification: *G32, K31*

"For most companies, cash is like oxygen. You don't think about it when you have enough, but when you start running low, it's all you think about."
Boston Consulting Group (2020), A Cash Management Survival Guide.

1 Introduction

Around the world, family firms represent an important organizational form (e.g., Andersson et al., 2018; Villalonga and Amit, 2006; Anderson and Reeb, 2003; Faccio and Lang, 2002; Claessens et al., 2000; La Porta et al., 1999), and many scholars have documented that behavior of family firms differs from the behavior of the Berle-Means prototype firm with widely dispersed ownership (e.g., Anderson et al., 2012; Bassanini et al., 2013; Bennedsen et al., 2019; Cruz et al., 2010; Stavrou et al., 2007). As such, it is important for regulators to understand how family firms react to regulatory interventions (e.g., Amit et al., 2015; Bennedsen et al., 2019; Ellul et al., 2010; Shin, 2020; Soleimanof et al., 2018). With this paper, we aim to add to this understanding by studying the impact of labor market regulation on cash holdings of founding family firms.

Firms decide on the level of their cash holdings by trading off costs versus benefits (Chowdhury et al., 2021; Bates et al., 2009; Chen and Chuang, 2009; Harford et al., 2008; Pinkowitz and Williamson, 2007; Ozkan and Ozkan, 2004; Opler et al., 1999; Kim et al., 1998). Previous literature has recognized that frictions in labor markets might affect this cost-benefit trade-off, and therefore be an important determinant of firms' cash holdings (Beuselinck et al., 2021; Karpuz et al., 2020; Shin et al., 2018; Klasa et al., 2009). Arguably, labor market regulation may impact firms' cash holdings along two lines. First, tighter labor market regulation affects firms' cost structures as labor costs become more sticky and, as a result, operating leverage increases (Kahl et al., 2019; Mauer and Triantis, 1994; Mandelker and Rhee, 1984). Increasing operating leverage implies that firm earnings become more volatile, and firms are more likely to face financial constraints and ultimately higher bankruptcy risk (Claessens and Ueda, 2020). Thus, subject to tighter labor market restrictions, firms may increase their cash holdings to foster their financial flexibility (Gamba and Triantis, 2008).[1] Second, firms might be reluctant to simply passively accept the increase in labor cost stickiness and react by establishing counter-measures. As such,

[1] As cash holdings represent "unconditional" liquidity that is also available in bad times (Lins et al., 2010), an increasing cash buffer reduces firms' risk of financial distress and improves their financial flexibility (e.g., Beuselinck et al., 2021; Karpuz et al., 2020; Cui et al., 2018).

they may reduce their cash holdings to improve their bargaining position (against employees), aiming to reduce the rent extraction potential of employees (e.g., Klasa et al., 2009; Shin et al., 2018). While the first perspective on firms' response to labor market regulation is known in the literature as the "financial flexibility view", the latter is often referred to as the "bargaining power view" (e.g., Chino, 2016; Simintzi et al., 2015; Matsa, 2010; Klasa et al., 2009).

Arguably, shareholder preferences might play a crucial role in the question of which of the two views will dominate in the firm-specific cost-benefit analysis and thus determine a firm's response to labor market regulation. Indeed, Grossman and Stiglitz (1977) and others argue that shareholder unanimity (on a firm's production and financing decisions) is only obtained under relatively strict assumptions. Yet, the existing literature has largely ignored firms' ownership structures when examining the labor-finance linkage and assessing the explanatory power of both views.[2] We aim to partially close this gap by examining a specific type of shareholder: founding families.

The literature attributes very specific preferences to founding families, which are often referred to as *socioemotional wealth (SEW) motives* (e.g., Berrone et al., 2012; Gomez-Mejia et al., 2011; Gómez-Mejía et al., 2007). This literature assumes that founding families have preferences for financial policies that safeguard the continuity of the firm and allow for an intergenerational transfer of the business (e.g., Schmid, 2013). As such, it suggests that founding family firms (FFF) will increase their cash holdings in response to tightening labor market regulations. Moreover, the literature argues that FFFs establish long-lasting and stable relationships with employees (Bennedsen et al., 2019; Huang et al., 2015; Lansberg, 1983; Lansberg, 1988; Sraer and Thesmar, 2007), as founding families view employees as a relevant asset and not only as a counterpart claiming firms' surplus (see, e.g., Stavrou et al., 2007). This reasoning suggests that FFFs will react less to an increase in the labor force's bargaining advantage and the associated rent extraction potential and thus are less likely to reduce the level of cash holdings in response to tightening labor market regulations. Finally, FFFs have been shown to act rather risk-averse (Anderson et al.,

[2] A notable exception is Kononova et al. (2019), which studies the moderating role of ownership concentration on the effect of labor market regulation on leverage.

2012; Anderson and Reeb, 2004; Chua et al., 2003). As such, they are expected to assign higher costs to financial risk compared to other firms. Consequently, FFFs arguably have a strong interest in reducing financial risk and thus building up additional cash reserves in response to tightening labor market regulations. This argumentation all suggests that "financial flexibility" considerations might be of first-order importance for FFFs when deciding about their response to labor market regulation, while "bargaining power" arguments might only be of limited relevance. As such, we hypothesize that FFFs will *ceteris paribus* increase (decrease) their cash holdings in response to tightening (easing) labor market regulation.

To empirically test our assertion, we study a sample of 4,693 non-financial listed firms from 17 European countries over the 10-year period 2007-2016. We apply a four-step screening process to identify and classify founding family firms in our sample. *First*, we collect annual ultimate-ownership information from Bureau van Dijk's OSIRIS database using a threshold of 25% of the voting rights. *Second*, we identify all firms for which OSIRIS reports (at least once during the sample period) the presence of a family or individual as an ultimate owner. *Third*, for these firms we manually collect information on their founders, their relatives, and their (family) relation to the ultimate owner in the respective firm-year(s). Following Anderson and Reeb (2003) and others, we assign firms with an FFF status if there is a direct familial (consanguineous or marital) connection between the ultimate owner and the founder(s). *Fourth*, we inspect the time-series of each firm and carefully cross-validate potential problems in the initial OSIRIS data, e.g., when firm i has ultimate owner j in year $t-1$ and $t+1$, but not in year t. In sum, this process provides us with a dummy variable indicating a firm's (year-by-year) FFF status.[3] To proxy for frictions in the labor market, we use the data from the Economic Freedom of the World index provided by the Fraser Institute and construct a labor market regulation index (LMR) as an equally weighted average of the following sub-indicators: (i) the impact of minimum wages, (ii) hiring and firing practices, (iii) the share of the labor force whose

[3] It is important to carefully track the annual FFFs status, as some 11.25% of our FFF change their status to non-FFFs during our 10-year sample period.

wages are set by centralized collective bargaining, and (iv) the mandated cost of worker dismissal[4].

We find that FFFs respond to tighter labor market regulation by increasing their cash levels, while non-FFFs reduce their cash holdings. In terms of economic significance, a 1% *increase* in LMR materializes in a 0.083% increase in cash holdings in the average FFF, whereas the average non-FFF reacts with a 0.110% *decrease* in cash holdings. In sum, the average differential elasticity amounts to 0.193%, which results in a difference of 11.6% (7.7%) of the median (average) firm's cash holding assuming a shift from a 25%-LMR-quantile country to a 75%-LMR-quantile country.

We perform several robustness tests to ensure the validity of our main findings. First, we employ a change regression specification to analyze incremental cash holdings decisions. Second, we address the confounding event challenge. While our baseline regression models include firm and industry-year fixed effects, as well as a country-specific year trend and a host of firm-level and country-level characteristics, in additional tests, we also control for potential confounding events and their interaction terms with the FFF variable to address omitted variable bias concerns. Finally, we use alternative definitions of cash holdings and alternative measures of LMR. Our results hold in all specifications.

With respect to cross-sectional heterogeneity, we document that the pattern is more pronounced in labor-intensive and domestic firms. While FFFs (non-FFFs) increase (decrease) cash levels in response to tighter labor market regulation, the average differential elasticity increases to 0.404% in labor-intensive firms and to 0.543% in domestic firms. Further, assuming a shift from a 25%-LMR-quantile country to a 75%-LMR-quantile country, the average differential elasticity corresponds to 22.7% (16.2%) and 36.6% (21.7%) of the median (average) cash holdings in labor intensive and domestic firms respectively. These findings suggest that labor regulation is the causal mechanism underlying the observed correlations since labor intensity and multinational presence primarily impact the extent to which a firm is hit by labor market regulation.

[4] For more details, see Section 2.2.2.

Furthermore, consistent with the argument of founding families being risk-averse, we document that FFFs facing higher operating risk increase cash holdings significantly more than non-FFFs following shifts in LMR. We also show that the precautionary demand for cash holdings after LMR increases is significantly higher in FFFs with a stronger SEW orientation, indicating that the SEW motive is a rationale for the observed behavior of FFFs. While these findings already suggest a causal interpretation of the FFF-differential effect of LMR on cash holdings, we also directly address two important identification challenges that our study shares with most other cross-sectional country studies and may contest the causal interpretation of our results (e.g., Bennedsen et al., 2019). First, we address the concern that the FFF status is an endogenous choice reflecting the level of labor regulation. We address this concern by running an instrumental variable (IV) approach, instrumenting the FFF status. Second, we address the concern that FFFs and non-FFFs may differ systematically, and the observed relationship is just a reflection of this heterogeneity. To mitigate this concern, we proceed in two steps. On the one hand, we confirm our baseline results on propensity score matched samples of FFFs and Non-FFFs. On the other hand, we guard against possible alternative explanations for our findings, running an array of horserace regressions between the FFF status and firm characteristics that arguably correlate with financial flexibility considerations in the cash-labor relation (and simultaneously correlate with the FFF status). Therefore, we study different measures of a high-technology firm status and proxies indicating financially constrained firms. While both types of firms might arguably be willing to respond to increasing operating risk with an increasing demand for cash, they are also likely to correlate with the FFF status, in particular because of FFFs' limited willingness to opt for equity financing (Croci et al., 2011). Moreover, we categorize firms into blockholder-dominated firms and widely held firms, as well as entrepreneurial and non-entrepreneurial firms. Arguably, blockholder-dominated firms and entrepreneurial firms might be willing to respond to increasing operating risk with an increasing demand for cash while simultaneously correlating with the FFF status. In all of these tests, the interaction between LMR and FFF remains significant, suggesting that alternative explanations cannot explain our baseline results. Overall, our main findings remain robust to all these endogeneity concerns.

Finally, we study the channels through which firms adjust their cash holdings in response to tightening labor market regulation. We find that non-FFFs respond to strengthened labor market regulation by increasing dividends while FFFs increase their cash flow from financing activities, in particular, their debt issuance activities, while reducing dividends. In contrast, we do not find any significant response of neither FFF nor non-FFF when it comes to cash flows from investing activities. These results further substantiate our main findings, as they suggest that the observed changes in cash holdings are the result of intended managerial actions and not merely an ex-post consequence of adjustments in other corporate policies.

Our study contributes to various streams of literature. First, we add to the growing strand of research examining the relation between labor market frictions and cash holdings. So far, the literature provides mixed evidence when examining bargaining power and financial flexibility arguments (e.g., Beuselinck et al., 2021; Karpuz et al., 2020; Cui et al., 2018; Shin et al., 2018; Ghaly et al., 2015; Schmalz, 2013; Klasa et al., 2009). In this study, we suggest that the cost-benefit analysis is very much firm-specific, and preferences of shareholders, specifically socioemotional wealth considerations of founding families, might play a critical role in the question of which of the two views will ultimately dominate on a firm level. With empirical evidence supporting this argument, our study can help to reconcile previously ambiguous results. Second, we complement the growing literature on the behavior of family firms (Bennedsen et al., 2019; Chen et al., 2008; Wang, 2006; Danco and Ward, 1990). Our evidence corroborates socioemotional wealth arguments suggesting that family firms are more likely to focus on firm survival and retaining control over their business, rather than on mere wealth maximization, which would require limiting the rent extraction potential of employees (see e.g., Breton-Miller et al., 2015; Berrone et al., 2012; Gomez-Mejia et al., 2011; Gómez-Mejía et al., 2007). Third, we contribute to the ongoing discussion on the independent role of cash holdings in corporate financial policy, providing supportive evidence for theoretical predictions of Acharya et al. (2007) and Gamba and Triantis (2008) that firms facing operating or financial frictions prefer to save their internal funds to increase the cash buffer and reduce the risk of financial distress. Finally, our study complements research documenting that not only organizational form but also the type of blockholder

matters when investigating corporate policy decisions (Glossner et al., 2020; Andres, 2008; Perotti, 1995).

The remainder of the paper is structured as follows: Section 2 introduces the data. Section 3 presents empirical results. Section 4 explores endogeneity concerns and alternative explanations. Section 5 examines the sources for cash increases. Section 6 concludes.

2 Data and Summary Statistics

This section introduces the sample, the variable construction and presents descriptive statistics.

2.1 Sample

Our sample consists of all – active and inactive – publicly listed firms from 17 European countries[5], which are covered in OSIRIS and Datastream/Worldscope simultaneously for the period from 2007 to 2016. Following the standard approach, we drop observations with missing, negative or zero-values of total assets and total shareholders' equity. We also exclude firms from the financial sector (Standard Industrial Classification (SIC) codes 6000-6999). Furthermore, we do not consider firm-years that have experienced reorganization.[6] Finally, we require non-missing contemporary values for the cash holding variables, the measure for labor regulation, as well as non-missing values for one-year lagged control variables.

The final sample is an unbalanced panel that includes (a maximum of) 28,113 firm-year observations from 4,693 unique firms. Founding family firms account for 6,215 (22%) firm-year observations, corresponding to 977 (21%) unique family firms in the sample.

[5] They are: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and United Kingdom.
[6] We discard firm-year data if the increase or decrease in sales growth is more than 60% compared to the previous year (for the similar approach see e.g. Platikanova, 2017; Banker et al., 2013; Frank and Goyal, 2003).

2.2 Variable Construction

2.2.1 Founding Family Firms

To classify companies in our sample as founding family firms and non-founding family firms, we proceed in several steps. First, we conceptually have to opt for a formal definition of FFF status.[7] Based on that, we then apply a three-step screening process to identify FFFs in our sample.

Interested in the socioemotional wealth argument, we opt for a relatively strict family firm definition that aims to ensure simultaneously (i) effective control of the family and (ii) identification of the family with the company. With regard to effective control, we apply a 25% threshold on voting rights as well as the condition of ultimate ownership (Bennedsen et al., 2019; Lins et al., 2013; Franks et al., 2012). To capture identification of the family with the company, we focus on *founding families*, i.e. founders and their relatives. Evidence for a strong relation of the founder to the firm can frequently be observed e.g., by the identity of the family name and the name of the company (Berrone et al., 2012; Gómez-Mejía et al., 2007; Westhead et al., 2001). In sum, we are interested and aim to identify firms, where the founding family is the ultimate owner of the firm at a threshold of 25%.

We apply a three-step screening process to identify such firms in our sample. First, we collect annual ownership information from Bureau van Dijk's OSIRIS database. To ensure that we are able to track complex ownership structures of European firms even throughout a network of multiple intermediate firms (e.g., Faccio & Lang, 2002), we rely on the "Global ultimate owner" (GUO) variable[8] from the OSIRIS database using a threshold of 25%. Second, we identify all firms with a person or family as global ultimate owner in a particular year and manually collect information on their founders and relatives and their (family) relation to the global ultimate owner in a particular firm-year. To identify the founders of a company we use publicly available sources like annual reports, the company's website or news articles. We then complement this by collecting information on the relation between the reported ultimate-owner and

[7] Previous studies on family firms have long recognized that family firms show a lot of heterogeneity that has to be considered by the choice of the appropriate family firm definition (for a comprehensive overview see Prencipe et al., 2014).

[8] Due to perceived problems regarding the coverage and quality of the data before 2007, our sample starts in 2007.

the company's founder(s). Third, we inspect the time-series of each firm and carefully cross-validate *anomalies* in the initial OSIRIS data, i.e. when a firm i has an ultimate owner j in year $t-1$ and $t+1$, but not in t.[9]

Ultimately, we classify a firm as a founding family firm in year t, if (i) the firm has an ultimate-owner possessing at least 25% of a firm's voting rights in year t, and (ii) the ultimate-owner is related by blood or marriage to at least one of the founders of the company. Based on this classification, we construct a dummy variable that is equal to one for founding family firms, and zero otherwise (FFF). In contrast to other studies building upon (partly) time constant family firm definitions (i.e. Schmid, 2013; Pindado et al., 2011, 2012) our approach provides us with a yearly varying FFF variable allowing for panel data analysis.

2.2.2 Labor Market Regulation

To operationalize the strictness of labor market regulation in a particular country in our sample, we use sub-indicators on labor market regulations from the Economic Freedom of the World (EFW) index provided by the Fraser Institute[10] and widely used in labor economics studies (e.g., Edmans et al., 2020; Sturm and De Haan, 2015; Bernal-Verdugo et al., 2012; Feldmann, 2009; Siegel and Larson, 2009; Freeman et al., 2008)[11]. Since the EFW index is available for a long time period over 2000-2017 for most countries all over the world, it allows us to estimate the family-firm related relationship between cash holdings and labor for our entire sample. While labor market regulation is a multidimensional concept, the sub-indicators of the EFW[12] cover various features and manifestations that are responsible for the frictions at the labor market. In our study, we focus on four sub-indicators referring to: (i) the impact of minimum wages, (ii) hiring and firing practices, (iii) the share of labor force, whose

[9] One issue that we observe with the GUO variable is that in some cases OSIRIS does not aggregate the family holdings in year t, but shows the holdings of each person within the family as single shareholder, even if the holdings are aggregated in year $t-1$ or $t+1$. To avoid unjustified jumps in the family firm status over years and to assure consistency, we manually rechecked each identified family firm along its yearly observations.

[10] The Economic Freedom of the World (EFW) index has been developed by James Gwartney, Robert Lawson, and Erik Gartzke and goes back to a series of conferences hosted by Michael Walker of the Fraser Institute and Nobel Laureate Milton Friedman (Gwartney et al., 2005).

[11] See also Hall and Lawson (2014) for a comprehensive overview of academic studies where the EFW index has been cited. Apart from labor economics studies, the EFW index is also used in finance literature (see e.g. Berger and Roman, 2017; Ramos, 2009; Moeller and Schlingemann, 2005).

[12] They are: hiring regulations and minimum wages; hiring and firing regulations; centralized collective bargaining; hour's regulations; mandated cost of worker dismissal; and conscription.

wages are set by centralized collective bargaining, and (iv) the mandated cost of worker dismissal. These four sub-indicators cover the dimensions that have been used by previous studies, examining the relation between firms' financial policy and labor regulation, to proxy for labor market frictions.[13]

Each sub-indicator is continuous and can take any values in the range from 0 to 10, with higher scores representing higher economic freedom and thus, less strict labor regulation. To benefit from higher variation, we aggregate four sub-index to one index on the labor market regulation index (LMR) as an equally weighted average.[14] For ease of interpretation, we subtract the value of the index from 10, such that high values of the index now correspond to more rigid labor market regulations. As each sub-indicator varies within as well as across countries, our LMR index allows for time-series and cross-sectional analysis.

2.2.3 Cash Holdings

We define different measures of cash holdings. First, we follow Karpuz et al. (2020), Ghaly et al. (2017), Bates et al. (2009) and others and define $Cash$ as the sum of cash and short-term investments divided by the book value of total assets. Second, we follow Opler, Pinkowitz, Stulz, and Williamson (1999), subsequently referred to as OPSW, and define $CashToNetAssets$ as the sum of cash and short-term investments divided by the book value of net assets, i.e. total assets net of cash and short-term investments. Since previous literature indicates that the latter measure might be prone to outliers (e.g., Bates et al., 2009; Foley et al., 2007), we use $Cash$ as the primary and $CashToNetAssets$ as an alternative measure. Finally, in unreported additional tests, we also measure cash holdings as the cash-to-sales ratio. Restricting the sample to firms with positive sales exceeding €1mio (e.g., Hovakimian and Li, 2011), we find results that support the results presented here.

[13] Some studies focus on the legislative provisions governing hiring and firing or dismissing of employees relying on e.g. the EPL index by OECD (Karpuz et al., 2020; Simintzi et al., 2015; Banker et al., 2013), a measure constructed by Botero et al. (2004) (e.g., Alesina et al., 2015) or considering a corresponding single legislative change in one country (Serfling, 2016). For example Alesina et al. (2015) also consider stringency of the minimum wages as a relevant labor market friction. A lot of studies investigate the relationship using data on trade unions (e.g., Shin et al., 2018; Chino, 2016; Schmalz, 2016; Klasa et al., 2009). Yet, e.g., Matsa (2010) proxies for the bargaining power of trade unions using the centralized collective bargaining.

[14] Using a simple average to combine the components into a summary index, we follow the methodological approach of Gwartney J., Lawson R., and Gartzke E (2005).

2.2.4 Controls

We add firm-level and country-level controls to our regression models. Firm-level controls are motivated by the studies of OPSW (1999), Song and Lee (2012), and Graham and Leary (2018) and include: firm size ($Size$) defined as the natural logarithm of the book value of total assets; market-to-book-ratio ($Growth$) defined as the book value of total assets minus the book value of equity plus the market value of equity, divided by the book value of total assets; total debt to total assets ($Leverage$); net working capital to total assets (NWC); investments defined as the sum of capital expenditures, acquisitions, and R&D-expenditures to total assets ($Investment$); dividends defined as a dummy variable that equals one if a firm pays cash dividends in a particular year, and zero otherwise ($Dividend\ Dummy$); cash flow to total assets, where cash flow is defined as earnings after interest, dividends, and taxes but before depreciation ($Cash\ Flow$); and industry cash flow volatility defined as the average of the firm's standard deviation of cash flows for each country-industry (classified by 48 Fama-French industries) in a particular year, where the firm–year standard deviation of cash flow to assets is calculated for the previous five years ($Cash\ Flow\ Volatility$). In case that fewer than five years of lagged data are available, the standard deviation is calculated over all available years, but is set to missing if fewer than 3 years are available (see Graham and Leary, 2018). Additionally, we control for firms with blockholders possessing at least 25% of a firm's voting rights but not being a founding family firm ($Other\ Ultimate\ Owner$). The variable is defined as a dummy variable equal to one if a firm has an $Other\ Ultimate\ Owner$ in a particular year and zero otherwise. All continuous variables are winsorized at the 1% and 99% levels to remove the influence of outlier observations.

Finally, to account for macroeconomic conditions that might influence cash holdings and at the same time be responsible for changes in labor regulations, all regressions include the following country-level variables: the inflation rate ($Inflation$) to control for the opportunity costs of holding cash; the growth of the gross domestic product ($GDP\ Growth$) and the natural logarithm of GDP per capita ($ln(GDP\ p.c.)$) to proxy for aggregate investment opportunities (Duong et al., 2020; Graham & Leary, 2018). Table 15 provides detailed descriptions of all variables used in this study.

2.3 Summary Statistics

Panel A of Table 1 reports summary statistics for the full sample. The average cash holdings ($Cash$) in our sample are approximately 15%, and 25% when measured in terms of $CashToNetAssets$. These numbers are fairly close to those of Karpuz et al. (2020).

The average sample firm has 3,215 million EUR in total assets, with NWC accounting for 1.8% of total assets. The average firm trades at a market-to-book ratio of 1.9, has debt that makes up for 20.5% of total capital, invests 8.6% of total assets per year, has a positive cash flow, which amounts to 2.9% of total assets, with a volatility of 9.4% as the average over all industries. More than half of all firms (61.3%) in the sample pay dividends and 31.9% have other ultimate owners. 22.1% of all firm-year observations in the sample refer to founding family firms (FFF).

The LMR index has a mean value of 4.011 and a standard deviation of 1.361, revealing substantial cross-country variation. Figure 1 shows the staggered character of LMR changes and variation within countries. In total there are 74 increases and 96 decreases in LMR that are fairly evenly distributed across countries and through the sample time. The average country has an $Inflation$ rate of 1.5%, a $GDP\ growth$ of 0.9% and a GDP p.c. amounting for 44,606 U.S. Dollar.

[Table 1 goes about here]

3 Empirical Results

This section presents our empirical results and discusses their robustness. It also presents evidence of cross-sectional heterogeneity in the results and discusses their economic significance.

3.1 Baseline Results

To test the moderating role of FFFs in the relationship between cash holdings and labor market regulations, we rely on the regression model adopted by prior literature (see e.g., Cui et al., 2018; Klasa et al., 2009) and extend it by the interaction term between the FFF dummy and LMR as follows:

$$Cash_{it} = a_i + \beta_1 LMR_{ct} + \beta_2 LMR_{ct} \times FFF_{it} + \beta_C Controls_{cit-1} + \theta_{jt} + (c_c \cdot t_t) + \varepsilon_{it}, \qquad (1)$$

where $Cash_{it}$ denotes one of the cash holding definitions of firm *i* at time *t*. Our main variables of interest are LMR_{ct} itself and the interaction term $LMR_{ct} \times FFF_{it}$. Based on our hypothesis, we expect β_1 and β_2 to have opposite signs indicating a different sensitivity of cash holdings response in FFFs, compared to non-FFFs, following changes in LMR. In particular, we expect a negative sign for β_1, implying the rent extraction preference for non-FFFs. For FFFs, we hypothesize the behavior in accordance with the financial flexibility motive and thus, expect a positive sign for β_2.

The term $Controls_{cit-1}$ refers to firm-, and country-level time-variant control variables, as discussed in section 2.2.2, including the basis effect of the FFF dummy. a_i represents firm fixed effects, that account for time-invariant differences among firms. θ_{jt} are industry-year fixed effects (based on 48-Fama-French industry classification) to control for possible unobserved time-varying industry shocks that affect firms' cash holdings (see e.g., Chen et al., 2018; Gao et al., 2013; Harford et al., 2008) . Following prior literature (Angrist and Pischke, 2008; Cui et al., 2018), we also allow for country-specific year trends ($c_c \cdot t_t$), that might coincide with changes in LMR. ε_{it} is the error term. All empirical models are estimated with standard errors that are heteroscedasticity-consistent and, since LMR changes vary at the country level, clustered by country to allow for possible within-country correlation of residuals.

Table 2 reports our baseline findings. In Columns 1 and 2 (3 and 4), $Cash$ ($CashToNetAssets$) is used as a dependent variable. Columns 1 and 3 show the regression results for the reduced form of model (1). For both definitions of cash holdings, the coefficient estimates for the average effect of LMR on firms' cash holdings have negative signs but are statistically insignificant at conventional levels.

Columns 2 and 4 present estimation results of model (1), where we add the interaction between LMR and the FFF dummy. The aim of the inclusion of the interaction term is to analyze whether the slope coefficient for LMR significantly differentiates for FFF compared to non-FFF. Whereby we hypothesize that the relation between firms' cash holdings and increases in LMR depends positively on the FFF status. Consistent with our prediction, the coefficient estimate β_1 on LMR_{ct} is negative and statistically significant at the 5% level for both definitions of cash holdings, while the coefficient estimate β_2 on $LMR_{ct}\chi\, FFF_{it}$ is positive and statistically

significant at the 1% level in Column 2 and at the 5% level in Column 4. These results indicate a different sensitivity of cash holding adjustments for FFFs and non-FFFs following LMR changes.

All firm-level control variables have signs predicted by the literature. $Size$, $Leverage$, NWC, and $Investment$ are negatively related to cash holdings and statistically distinguishable from zero. The coefficients on $Growth$, $Dividend\ Dummy$, $Cash\ Flow$, $Cash\ Flow\ Volatility$, and $Other\ Ultimate\ Owner$ show a positive sign, whereby only the coefficient on $Growth$ is statistically significant through all specifications. The coefficients on the country-level controls are mostly statistically insignificant.

[Table 2 goes about here]

3.2 Robustness of Baseline Results

3.2.1 Change Regression Specifications

As a first robustness test, we exploit incremental cash holdings' decisions in FFFs and non-FFFs as response to LMR changes and test whether our baseline findings might be due to the cumulated historical decisions concentrated in levels of cash (see Graham, 1999; Mackie-Mason, 1990).

In a similar vein to the capital structure literature, we employ a change regression specification[15], using year-by-year changes in cash holdings as dependent variable and lagged first-differences of the right-side variables as explanatory variables, with exception of FFF and $Other\ Ultimate\ Owner$. Following previous literature (e.g., Faccio and Xu, 2015; Graham, 1999), we conduct a simple dynamic analysis including current and one-year-lagged values of LMR changes, as firms adjust their cash holdings rather slowly due to market imperfections (see e.g., Gao et al., 2013; Opler et al., 1999). We also control for lagged levels of cash holdings and changes in cash holdings to allow for partial adjustment of the cash ratio to the equilibrium level (e.g., Bates et al., 2009; Opler et al., 1999). The results on $Cash$ and $CashToNetAssets$ are presented in Columns 1 and 2 of Table 3 respectively. We find a negative impact of LMR changes on cash holdings for non-FFF and a positive one for FFF. While the coefficients of interest for the year of LMR change are not throughout statistically

[15] Other examples of studies that use regression in changes are e.g. (Faccio and Xu, 2015; Bates et al., 2009; Harford et al., 2008; Graham, 1999; Mackie-Mason, 1990).

significant at the conventional level, the coefficient estimates for the year following the change are statistically significant at the 1% level. These results substantiate our main findings, while confirming that incremental cash holding adjustments may need time.

Next, we repeat this analysis focusing on substantial changes in LMR. We define substantial changes as changes greater than the mean of absolute LMR changes in the sample (0.2 units). This definition is, first, more suitable for the dynamic analysis as substantial LMR changes occur much less gradually and allow in many cases for a time window before the next change occurs. Second, this strategy allows us to examine whether larger changes in LMR compared to small changes have a different FFF related effect on incremental cash holding adjustments and, providing reassurance that our results are not attenuated through many small changes in LMR. The results in Columns 3 and 4 of Table 3 remain consistent with our predictions.

[Table 3 goes about here]

3.2.2 Confounding Events

So far, we assume that changes in labor regulations are exogenous to firms' decisions. However, one might argue that our analysis suffers from an endogeneity issue because of country-level confounding factors that may influence our outcome variable. Thus, as a second robustness test, we complement our baseline analysis for further country characteristics indicated by previous literature as relevant for labor regulation as well as cash holding policy.

Following Perotti and Von Thadden (2006), suggesting that higher labor protection comes along with more concentrated financial wealth, we first, control for the wealth distribution adding the Gini coefficient of income inequality ($Gini\ Coefficient$). Further, we tackle the issue that our findings might be driven by variations in taxes ($Corporate\ Taxes$), as tax reforms may affect cash through a growth channel (Faccio and Xu, 2018). We further consider concurrent changes in labor market conditions proxied by the country-level unionization rate ($Unionization$). Next, the LMR index may capture the effects of general economic uncertainty that potentially confounds our findings, therefore, we add two different proxies for economic uncertainty including the Business Confidence Indicator provided by the OECD ($Business\ Confidence$) and

the index on Macro Economic Uncertainty ($Macro - Uncertainty$) developed by Rossi and Sekhposyan (2017). As our sample starts shortly before the outbreak of the financial crisis, we also add a dummy variable indicating the financial crisis of 2008-2009 ($Crisis - Dummy$).

We extend our baseline model gradually including these additional country-level characteristics and their interaction with the FFF dummy. We also control for interactions to further address the concern that to the extent that LMR is correlated with other macro-economic factors, our results reflect a FFF related effect of one of these potential confounders, and not the effect of LMR.

Results are presented in Table 4. As our results are qualitatively the same on $CashToNetAssets$, we report, for brevity, the results on $Cash$ only. The coefficient estimates of interest are consistent with our predictions and remain statistically significant for both, FFF and non-FFF. Thereby none of the coefficients on the main effects of the additional variables shows statistical significance at the conventional level[16]. Considering the interaction terms, only coefficients on the interaction term with the Gini coefficient and with the corporate tax rate show stable statistical significance. Noticeably, comparing the regression results in Table 4 to that in Table 2 reveals, that accounting for other macro-economic factors and their interaction with the FFF dummy does not diminish the magnitude of coefficients of interest. In Column 8, we extend our baseline model by country-year fixed effects. By demeaning all variables by country-and-year, this specification removes potential time-varying events that might impact cash holdings of all firms within the same country. While the LMR effect for non-FFFs cannot be estimated, the coefficient estimates for the interaction term between the FFF dummy and LMR remains statistically significant and comparable in magnitude to Table 2, Column 2. Overall, the results in Table 4 corroborate our main findings.

[Table 4 goes about here]

[16] Since our regression includes firm fixed effects, the coefficients on the Crises Dummy and Macro-Economic Uncertainty itself cannot be estimated.

3.2.3 Alternative Measures of Cash Holdings and LMR

As a third robustness test, we replicate our base regression results using two alternative definitions of cash holdings. First, we address the concern regarding outliers created by $CashToNetAssets$ due to firms holding most of their assets in cash. We follow previous literature (e.g., Bates et al., 2009; Foley et al., 2007; Itzkowitz, 2013) and re-define our $CashToNetAssets$ measure as natural logarithm of one plus the ratio of $CashToNetAssets$. Second, we test whether our results on cash holdings are merely the flipside of response in firms' debt policy, as previous studies find evidence on the significant relationship of leverage and labor regulation (e.g., Ellul and Pagano, 2019; Serfling, 2016; Simintzi et al., 2015). Thereby we focus on long-term debt, as the fraction of debt that is considered by the literature as most likely to react to changes in labor regulation (see e.g., Heider and Ljungqvist, 2015; Simintzi et al., 2015). We define this alternative measure of cash holdings ($Cash^{Net\ of\ Debt}$) as the ratio of the sum of cash and short-term investments net of long-term debt divided by the book value of total assets. Table 5, Columns 1 and 2, show a statistically significant negative relation between cash holdings and LMR for non-FFF and a positive one for FFF, indicating that alternative definitions of cash holdings do not affect our findings.

Next, we ensure that our results are also robust to alternative measures of LMR. First, we follow the approach of Simintzi et al. (2015) and design an alternative LMR measure (LMR^{LC-I}) whose objective is to capture the long-run effect of labor policy stringency. We construct LMR^{LC-I} as a categorical variable that is based on only substantial changes in LMR, as specified in Section 3.2.1, and is defined recursively, starting in 2007 (sample beginning) and distinguishing between changes that increased (+1) and those that decreased (-1) employment protection. We re-run our baseline model (1) using the LMR^{LC-I} measure. The coefficients of interest in Table 5, Column 3, remain statistically significant and show expected signs. Second, we reassure that the aggregation of four sub-indicators by an equally weighted average is a valid approach. In unreported results, we obtain the summary LMR index conducting a factor analysis on four sub-indicators to elicit the sub-indicators' weights according to their contribution to the overall variance in the data in a particular year. We re-run model (1) with the resulting summary index. The results remain quantitatively and qualitatively similar to our main findings.

Overall, we conclude that our findings are robust to alternative definitions of cash holdings and LMR.

[Table 5 goes about here]

3.3 Cross-Sectional Heterogeneity

Having established the baseline result, we now examine cross-sectional heterogeneity to provide more insights into the documented relationship. We proceed in three steps. In subsection 3.3.1, we examine the cross-sectional heterogeneity in the response of FFFs and non-FFFs to LMR changes, to assess whether changes in LMR are a mechanism in play. In subsection 3.3.2, we examine the cross-sectional heterogeneity in the response of FFFs, depending on the risk exposure of their operating environment, to assess whether risk-aversion is responsible for the precautionary demand for cash holdings in FFFs after LMR changes. In subsection 3.3.3, we test the heterogeneous response across FFFs, depending on the strength of the SEW orientation as a rationale for the risk-aversion of FFFs.

3.3.1 Is it about LMR?

As labor regulation alters labor costs, the extent and the unavoidability of the costs should impact the variation in cash holdings' adjustments. Intuitively, if labor represents a relatively minor proportion of production factors, labor regulation should not significantly affect firm operations' resources and therefore be of less relevance. By the same token, since changes in LMR are country-specific, firms with multinational presence can shift their operations and escape tighter labor market regulations in the home country, avoiding thereby increases in labor costs. Hence the manifestation of the LMR impact on cash holdings is supposed to be mitigated in firms that rely less on labor and in firms whose production is not concentrated in the headquartered country, but presumed to be more pronounced in labor-intensive and domestic firms.

To test these predictions, we split our sample into sub sets, first, depending on whether a firm's labor intensity is above median in the affiliate industry in a particular year. We follow Hilary (2006) and calculate firm's labor intensity as the number of employees divided by total assets. Second, we split the sample in multinational and domestic firms, defining a firm as domestic, if it does not report any foreign assets in

the previous three years[17], and as multinational otherwise. We re-estimate the model (1) for all sub-samples and present results in Table 6. Throughout all specifications, coefficients of interest retain their signs further pointing out a negative relation between cash holdings and LMR in non-FFF and a positive one in FFF. Columns 1 and 3 show results on sub samples of labor-intensive firms for $Cash$ and $CashToNetAssets$ respectively. We find that coefficient estimates for labor-intensive FFF and non-FFF are almost twice as high in the magnitude compared to the main results and are statistically significant at the 1% level. In contrast, in the sub set of firms with lower labor intensity, the coefficients of interest for both, $Cash$ and $CashToNetAssets$ (Columns 2 and 4) are statistically insignificant and much lower in magnitude compared to the results for both, labor-intensive- or all firms. As predicted, the impact of LMR on cash holdings in labor-intensive firms is more salient compared to firms in which labor constitutes a less important production factor.

Columns 5 and 7, 6 and 8 show results for domestic and multinational firms respectively. Consistent with our predictions, the cash holding response of both, FFF and non-FFF, to changes in LMR is much more pronounced in the sub sample of domestic firms: The coefficients of interest nearly triple, compared to the main results, and are statistically significant at the 1% level. In the sub set of multinational firms (Columns 6 and 8), the coefficients are much lower in magnitude and only the coefficient on the interaction term in Column 6 is statistically significant at conventional levels. The results indicate that the impact of LMR is stronger for domestic firms, since they cannot escape the increasing labor regulation and avoid corresponding labor costs.

Overall, the findings in Table 6 highlight the cross-firm heterogeneous effect of LMR on cash holdings for both, FFF and non-FFF, and provide supportive evidence for the identification power of LMR in our analysis.

[Table 6 goes about here]

[17] We apply a three-year threshold to maximize the number of observations and to make the sample comparable to the baseline sample. However, results remain unchanged if we use a threshold of five consecutive years.

3.3.2 Is it about Risk?

The rationale of our prediction on FFFs precautionary demand for cash holdings, as reaction to increases in LMR, represents their ambition to minimize risk of financial distress and corresponding costs that are elevated by a tighter labor regulation. If the more averse attitude towards risk represents a crucial decision criterion for FFFs in their response to LMR changes, tighter LMR should become an even bigger concern for FFFs, that are subject to a more uncertain operating environment and thus, that are riskier ex ante.

Building upon this reasoning, we examine whether FFFs with higher sales volatility, as a proxy for inherent operating risk (see e.g., Kim and Zhang, 2014), show a significantly stronger increase in cash holdings after LMR increase, compared to FFFs with a more stable environment. For this purpose, we calculate sales volatility as the standard deviation of sales, deflated by total assets, in the previous five years (Wei et al., 2020), with at least three out of five available firm-year-observations. For comparison purposes and following previous literature (e.g., Karpuz et al., 2020), we proxy for firm risk also using $Cash\,Flow\,Volatility$. Next, we split the sample with respect to the FFF status and estimate the following model:

$$Cash_{it} = a_i + \beta_1 LMR_{ct} + \beta_2 LMR_{ct} \times Risk_{it} + \beta_C Controls_{cit-1} + \theta_{jt} + (c_c \cdot t_t) + \varepsilon_{it}, \qquad (2)$$

where all terms are the same as in model (1) and $Risk_{it}$ denotes the sales or cash flow volatility. Columns 1 and 3 of Table 7 present results for the sub sample of FFF on $Cash$ and $CashToNetAssets$ respectively. In line with the risk argument, the coefficient on the interaction term between LMR and sales volatility is positive and significant at the 1% level, suggesting that FFFs that are exposed to higher risk in their top line and hence are more vulnerable to increasing operating leverage, respond with a higher demand for cash holdings to rising LMR. In contrast, cash holdings of FFFs with lower sales volatility seem to be little affected by changes in LMR, since the coefficient on the stand-alone LMR variable is not statistically significant.

For non-FFFs, the prediction on the role of sales volatility is equivocal. While non-FFFs are supposed to rather support the rent extraction motive than the financial flexibility

argument, higher inherent operating risk may have the potential to flip this setting and positively affect the relation between cash holdings and LMR.

However, since the claim of employees on the firm's surplus is higher in the period of positive shocks, the bargaining advantage associated with decreased cash might become even greater in firms with high sales volatility (see Matsa, 2010). The results in Columns 2 and 4 of Table 7 show a negative and statistically significant coefficient on the interaction term for both definitions of cash holdings, implying that non-FFFs being exposed to higher volatility, reduce cash holdings even stronger for rising LMR. This is in line with the prediction of Matsa (2010), that the combination of increasing labor power and operating uncertainty provide firms the incentive to use their financial policy as strategic devise. As shown in Columns 5-8 of Table 7, we obtain similar results, when we use $Cash\ Flow\ Volatility$ as a measure of firms' uncertainty.

In summary, the conducted analysis further supports our theoretical line of arguments, that risk aversion represents a crucial factor in the differentiating response of FFFs in the cash-labor relation.

[Table 7 goes about here]

3.3.3 Is it about SEW Orientation of FFFs

Our hypothesis implies that the SEW orientation is a rationale underlying the differential link between LMR and cash holdings in FFFs and non-FFFs. In particular, if the SEW preference is responsible for the risk-averse behavior of FFFs, then more SEW-oriented FFFs should pursue lower-risk strategies and therefore, react to changes in LMR with an even stronger increase in cash holdings, compared to FFFs with a comparable weaker SEW motive. To explore the empirical relevance of the SEW rationale in our data, we examine whether non-entrepreneurial FFFs and FFFs in countries with higher inheritance law permissiveness raise their cash holdings significantly more, since we expect a higher degree of SEW in these FFFs' subgroups.

Berrone et al. (2012) point out, that family firms adjust their behavior in a way that preserves SEW, which in turn grows over the family firm history. As the SEW orientation is hence supposed to intensify over time, third-and-higher generation FFFs should therefore show a higher SEW orientation compared to lower generations (see Mariotti et al., 2021). At the same time, the second generation marks the first point,

in which the identification with the firm switches from the founder to the whole family. To exploit this prediction, we generate a dummy variable ($Non-Entrepreneurial\ Firms$) equal to one if a FFF is in a second or higher generation (non-entrepreneurial firms) and zero for first-generation-founder firms (entrepreneurial firms). Our second proxy for the SEW orientation is inheritance law permissiveness from Ellul et al. (2010), which is evident to impact family decisions on the intergenerational transfer (see Ellul et al., 2010). We construct the $Inheritance\ Law\ Permissiveness\ Dummy$ as a dummy variable that is equal to one if the inheritance law permissiveness is in the top 75%-quartile in a particular country, and zero otherwise. Thereby $Inheritance\ Law\ Permissiveness$ variable is an average of five indicators of the permissiveness of inherence law that differ depending on the surviving of spouse and the total number of children[18]. Higher values represent a larger share of the estate that a testator can bequeath, encouraging intergenerational transfer and thus, strengthening the SEW motive of FFFs.

Table 8 presents the results based on a subsample of FFFs. Columns 1 and 2, 3 and 4 show positive and statistically significant coefficients of the interaction term between LMR and $Non-Entrepreneurial\ Firms$ and LMR and $Inheritance\ Law\ Permissiveness\ Dummy$ respectively. The result holds for both, $Cash$ (Columns 1 and 3) and $CashToNetAssets$ (Columns 2 and 4). The findings in Table 8 imply that FFFs being exposed to stronger a SEW motive increase cash holdings more after rising LMR, compared to less SEW-oriented FFFs, and therefore, are consistent with the SEW rationale of our findings.

[Table 8 goes about here]

3.4 Economic Significance

To assess the economic significance of our findings, we use the point estimates of the regression parameters from our baseline findings (Table 2) as well as from the results on labor-intensive and domestic firms (Table 6) and calculate the elasticity measure as dx/dy*(Ø[x]/ Ø[y]) for both definitions of cash and with respect to all explanatory variables. Table 9, Columns 1 and 2 show the economic significance using the full

[18] For detailed description on indicators construction see Ellul et al. (2010).

sample, Columns 3 and 4 for labor-intensive firms, and Columns 5 and 6 for domestic firms[19] on $Cash$ and $CashToNetAssets$ respectively.

Based on the universe of all firms in our sample, Column 1 (2) shows, that while a 1% increase in LMR produces a 0.110% (0.257%) *decrease* in $Cash$ ($CashToNetAssets$) for *non-* FFF, an average FFF reacts with 0.083% (0.129%) *increase* in its $Cash$ ($CashToNetAssets$) position. Thereby the average *heterogeneous effect* between the two groups amounts for 0.193% (0.386%). As expected, the economic effect is more pronounced in firms that largely rely on labor or cannot shift their production in other, currently less regulated, countries. As shown in Column 3 (4), a 1% increase in LMR results in 0.202% (0.560%) *decline* in $Cash$ ($CashToNetAssets$) for *labor-intensive non-* FFF, but leads to 0.202% (0.243%) *raise* in $Cash$ ($CashToNetAssets$) for *labor-intensive* FFF. This corresponds to an average *heterogeneous effect* of 0.404% (0.802%). With regards to *domestic firms*, Column 5 (6) shows that on average $Cash$ ($CashToNetAssets$) *diminishes* by 0.388% (0.743%) for each 1% increase in LMR for *non-* FFF, but *rises* by 0.155% (0.405%) for FFF. This corresponds to a 0.543% (1.148%) difference in the cash holdings' response of FFF compared to *non-* FFF.

In comparison, other cash holding determinants have a much lower economic effect in our sample. Only firms' $Size$ and $ln(GDP\ p.c.)$ show stronger elasticity to cash holdings, albeit $ln(GDP\ p.c.)$ is not statistically significant in most of the specifications. The economic effect of $Leverage$ on cash holdings is comparable to those of LMR in the full sample, but is considerably lower for labor-intensive or domestic firms.

The results in Table 9 indicate that, first the FFF status has an economically significant impact on the sensitivity of cash holdings' response to changes in LMR and second LMR appears to be an economically important determinant of cash holdings policy in both FFF and non-FFF.

[Table 9 goes about here]

[19] Panel B and C of Table 1 show summary statistics for labor-intensive and domestic firms respectively. The distribution of variables in sub samples is comparable to those in the full sample.

4 Endogeneity of FFF Status and Alternative Explanations

This section addresses two important identification challenges. First, there is the concern that FFF status is an endogenous choice reflecting the level of labor regulation. We address this concern by using two-stage IV methods, where we instrument the FFF status. Second, it could be argued that FFF and non-FFF may differ systematically and the observed relationship is just a reflection of this heterogeneity. To mitigate this concern, we carefully identify potentially influential differences and first, confirm our results by constructing and examining propensity score matched samples of FFFs and Non-FFFs. Second, we examine potential alternative explanations running an array of horserace regressions.

4.1 Instrumental Variable Approach

Families' decision to maintain or to dilute their ownership and thus the FFF status might be a function of LMR, firms' financial policy, financial constraints and other characteristics of firm's contracting environment, so that the observed relationship may simply reflect reverse causality issues. While we cannot completely rule out the possibility that the choice of the FFF status[20] is prompted by the level of LMR or cash holdings, we apply a two-stage least square instrumental variable approach to mitigate the endogeneity concern of self-selection or reverse causality. To instrument the FFF status, we consider the cultural and legal context that is expected to be responsible for substantial cross-country heterogeneity in family ownership, but is not related to firm's decisions on cash holdings.

First, we follow Bennedsen et al. (2019) and use respondents' assessments of the strength of family values in a particular country from the World Value Survey, based on the argument that high family values are associated with a higher probability to maintain family ownership. We define the measure of family value as the mean response on the country-year level using data from the year that is closest to the beginning of our sample (2007).[21] We construct a dummy variable ($High\ Family\ Value$) equal to one if the mean response in a particular country is above-median value in

[20] Since firms in our sample can switch from FFF to non-FFF and all test specifications include firm fixed effects, in untabulated results we ensure that our results are not solely driven by this variation in the FFF dummy, by re-estimating our main specification excluding FFFs switching their status. The results remain qualitatively and quantitatively similar.

[21] Family Values is based on question a001 of the World Value Survey.

the sample. Second, we consider the country score on the individualism dimension of Hofstede's model of national culture ($Individualism$). We expect that family firms are more common in countries with low individualism scores, indicating that individuals prefer to be part of strongly tied groups that shape their preferences and interests (Hofstede, 2001). Finally, we use the country-level data on inheritance law from Ellul et al., (2010) as a measure of legal context that is evident to impact family decisions on intergenerational transfer (see Ellul et al., 2010). We construct the $Inheritance\ Law\ Permissiveness$ variable as specified in Section 3.3.3.

Table 10 reports results of the first-stage estimation of the FFF dummy in Column 1 and the estimation of the interaction of FFF dummy and LMR index in Column 2. As instruments, we use country-level variables, as described above, and interaction terms of each of these variables with LMR. The first and second stages also include all other control variables that enter model (1), except country-specific year trend and firm fixed effects since our instruments are on the country level and time-invariant. As predicted, the FFF status is positively correlated with $High\ Family\ Value$ and $Inheritance\ Law\ Permissiveness$ and negatively correlated with $Individualism$. Columns 3 and 4 of Table 10 show results on the second-stage estimation for $Cash$ and $CashToNetAssets$ respectively. For both definitions of cash holdings, our results continue to provide strong evidence of the negative relationship between changes in LMR and cash holdings in non-FFFs and a positive one in FFFs. As expected, the magnitude of the coefficients of interests in the 2nd stage is higher than that reported in Table 2, while the significance remains largely unchanged. Further, the first-stage Kleibergen-Paap Wald F-tests and second-stage Hansen's J test suggest that the relevance and exogeneity conditions are verified for our instruments.

Overall, we conclude that our baseline results are robust to concerns related to the endogeneity of the FFF status.

[Table 10 goes about here]

4.2 Matching

The literature documents that family firms differ from non-family firms, for example regarding size (e.g., Anderson and Reeb, 2003), leverage (e.g., Ampenberger et al., 2013), investments (Anderson et al., 2012) or age (e.g., Franks et al., 2012). Hence,

one could argue that the presented results are simply driven by heterogeneous firm characteristics and not, as assumed, by a differing set of incentives of FFFs. Examining this concern, we form a matched sample by assigning non-FFFs with similar firm characteristics as control group to the FFF observations, using a propensity score matching (PSM) approach minimizing heterogeneity between the groups.

Within the matching procedure, for each FFF observation non-FFF observations in the same country[22] were matched by industry[23] and a set of firm level variables using nearest neighbor matching without replacement. Regarding the selection of matching variables we follow Bennedsen et al. (2019) minimizing differences with regards to firm size, investments, leverage and extend this selection by firm age, as one further important factor of heterogeneity according to literature (e.g., Franks et al., 2012). The matching variables are defined as in Table 15. Given that the nearest neighbor might still be far away, we further control for the distance of propensity scores between matched pairs and conduct PSM with a fairly conservative caliper restriction of δ=0.0001 reducing the resulting matched sample to 6.996 observations.[24]

Table 11 presents the results of the PSM approach without (Columns 1 and 3) and with a caliper restriction of δ=0.0001 (Columns 2 and 4) for $Cash$ and $CashToNetAssets$ as dependent variables. Showing quantitatively and qualitatively similar results in all specifications, our main findings appear to be robust against the concern of firm specific heterogeneity between FFFs and non-FFFs.

[Table 11 goes about here]

4.3 Alternative Explanations

In this section we present selected analyses addressing the concern that unobserved heterogeneity might explain the observed relationship. Thereby, we proceed in two steps. First, we argue that high-tech firms and financially constrained firms have a higher need for financial flexibility and simultaneously might correlate with the FFF-status. As such, we employ different measures for the high-technology status and

[22] Given that the quality of matches depends on the number of potential matching partners, Luxembourg with only 27 observations is excluded from the analysis.
[23] Using the Fama & French 30 industry definition enables us to trade-off the number of matched pairs.
[24] The results remain qualitatively and quantitatively similar when using a less conservative caliper of 0.001 or 0.01 (see e.g. Simintzi et al., 2015).

financial constraints. Second, we argue that the FFF status correlates with ownership concentration and (lone) founder engagement, which might also explain our baseline pattern. To this purpose, we differentiate between FFFs, other blockholder-dominated firms and widely held firms, on the one hand side, and between entrepreneurial and non-entrepreneurial FFFs on the other hand side.

Given that FFFs might be more financially constrained due to their limited willingness of equity financing, diluting control (Croci et al., 2011), FFFs could simply proxy for financial constrained firms. Thereby financial constraints may arise from higher needs for funding or/and tighter financial conditions. Since LMR decreases operating flexibility increasing operating leverage, financially constrained firms, marked by reduced flexibility, might react with a higher demand for cash to LMR increases (Karpuz et al., 2020; Schmalz, 2016). To proxy for financial constraints, we first consider high-technology firms in our sample, since they may have a higher spectrum of growth opportunities and thus, higher funding needs and additionally, often rely much more on intangible inputs, inclusive skilled labor, as essential input factor. The latter also leads to higher functional risk (see e.g., Brown and Petersen, 2011; Ghaly et al., 2017) that increases with tighter LMR and might be hampered by increasing cash. To address this concern, we augment the model (1) by an interaction term between LMR and a particular proxy for high-tech firms and run a horserace regression. To identify high-tech firms, we first explore the R&D channel, since firms in industries with higher R&D expenses are expected to be heavily reliant on intangible assets (e.g., Lev and Radhakrishnan, 2005). For this purpose, we calculate industry-year median values for R&D expenses related to sales from the previous year for each country and generate a dummy variable ($R\&D - Intensity$) equal to one for industries from the upper quartile and zero otherwise (for a similar approach see Klasa et al., 2009). Second, we calculate a firm-level ratio of externally created intangible capital to sales from the previous year ($Intangibility$). As intangible capital may vary strongly across industries (Sun and Xiaolan, 2019), we adjust our intangibility measure for median industry values in a particular country-year. Additionally, we consult proxies for high-tech firms based on the taxonomy of Kile and Phillips (2009) as well as Galindo-Rueda and Verger (2016). Analogously we generate dummy variables, equal to one for high-tech industries, and zero otherwise. Showing qualitatively similar

results, for brevity, we just report the results for $R\&D - Intensity$ and $Intangibility$. The results in Panel A of Table 12 remain consistent with our predictions for both, FFFs and non-FFFs, and suggest that our findings are not driven by the inclusion of high-tech firms.

Second, to proxy for tighter financial conditions, we employ a set of financial constraints measures, traditionally used in the literature: (i) a size dummy ($Size$) and (ii) a firm age dummy (Age) following the findings of Hadlock and Pierce (2010) that size and age serve as fairly reliable proxies for financial constraints; (iii) a dividend dummy ($Dividend - Payer$) (Schmalz, 2016); (iv) the Whited and Wu Index ($WW - Index$) (Whited and Wu, 2006); and the (v) Kaplan and Zingales Index ($KZ - Index$) (Kaplan and Zingales, 1997; Lamont et al., 2001). We again run a horse race regression controlling for the interaction term between LMR and a particular measure of financial constraints. The results in Panel B of Table 12 [25] show that both, the coefficient of LMR itself and the coefficient of the interaction term between FFF and LMR, maintain the predicted signs and statistical significance throughout all specifications. Taken together, financial constraints seem not to provide an alternative explanation to our findings.

[Table 12 goes about here]

To address the concern of unobserved heterogeneity regarding FFF and non-FFF definitions, we disaggregate the ownership structure of non-FFFs. Since family owners and other blockholders expose some common characteristics (Anderson et al., 2012), it might be argued that the positive cash holdings' response to increasing LMR might be observed not only in FFFs but generally in firms with concentrated ownership. Controlling for the $Other\ Ultimate\ Owner$ variable in our analysis, we already deal with this concern (see also Andres, 2008). To further assure that our results indeed capture the moderating effect of FFF, we conduct two tests: first, we augment our baseline specification by the interaction of LMR and $Other\ Ultimate\ Owner$. The benchmark group in this setting are widely held firms, which are firms without shareholders with more than 25% of ultimate voting rights (see e.g., Isakov and Weisskopf, 2015). This allows

[25] For space reasons, for all tests going forward we only report the results using $Cash$ as dependent variables. Our results remain qualitatively similar using the $CashToNetAssets$ measure.

us to calibrate the difference in response of FFF and firms with other types of blockholders, compared to widely held firms. Column 1 of Table 13 shows that while the coefficient on the interaction between LMR and the FFF dummy continues to be positive and significant, the coefficient on the interaction between LMR and $Other\ Ultimate\ Owner$ shows a significant but negative sign. These results run contrary to the abovementioned concern on the general blockholder effect and substantiate that only FFFs exhibit a positive significant relation between cash holdings and LMR. To confirm the robustness of results, we conduct a Wald-test for equality of coefficients on the effect of widely held firms, founding family firms and firms with other blockholders. The p-values associated with the tests show significant differences at the conventional level. Second, in Columns 2 and 3 we exclude widely held firms. In this setting, we can directly compare the difference in cash holdings' sensitivity of FFFs and firms with other blockholders to changes in LMR. Column 2 shows a positive and significant coefficient of the interaction between the FFF dummy and LMR, lending further evidence on the specific impact of FFFs on the cash-labor relation. To deal with the concern on a distorting effect of control variables, in Column 3, we interact all controls with the FFF dummy. Our results remain robust to this specification.

Further focusing on heterogeneity across the FFF definition, our findings could also represent a moderating effect of solely entrepreneurial firms (Adams et al., 2009; Fahlenbrach, 2009; Miller et al., 2007; Pindado et al., 2014) and not all FFFs. However, the results in chapter 3.3.3 (Table 8., Columns 1 and 2) showing a significant higher positive response of non-entrepreneurial FFFs, compared to entrepreneurial FFFs on LMR changes imply, that our findings are not driven by entrepreneurial firms only and hence, mitigate this concern.

Although we cannot completely rule out the possibility that alternative explanations based on unobserved heterogeneity may drive our findings, the robustness of our results in Table 12 and Table 13 alleviate this endogeneity concern.

[Table 13 goes about here]

5 Sources of Cash Holdings Increases

In this section, we conduct the analysis to ensure that raises in FFF demand for cash holdings, following tighter LMR, are indeed actively steered by firms and are not

merely ex post reflection of adjustments in other corporate policies. From the accounting perspective, changes in cash holdings are a result of changes in cash flows from operating, financing and investing activities (Karpuz et al., 2020; Brisker et al., 2013), with the latter two are rather expected to be the channels through which cash holdings may be adjusted intentionally[26]. To investigate the empirical relevance of cash flow from financing (CFF) and investing (CFI) activities as sources of cash savings for FFF, we examine whether an increase in LMR is associated with an increase in CFF or a decrease in CFI. To this purpose, we scale CFF (CFF) and CFI (CFI) by lagged total sales (Srinivasan and Thampy, 2017; Bartram, 2008) and regress each on the LMR index and its interaction with the FFF dummy. Along with $Other\ Ultimate\ Owner$, country-level controls and fixed effects, as used in the model (1), the regressions include one-year lagged $Size$, $Growth$, $Tangibility$, NWC, and $Cash$, to control for levels of accounting items in the balance sheet. Columns 1 and 2 of Table 14 report the results for CFF and CFI respectively. While Column 1 shows a positive and statistically significant coefficient on the interaction term between FFF and LMR, the coefficient on the interaction term in Column 2 is statistically insignificant. The results suggest that FFFs actively build up their cash balance through increased financing and rather not through reduced investment activities, which in turn supports our risk argument.

To examine how cash savings are sourced from financing activities, we consider debt proceeds and pay-outs[27] as essential driving forces for changes in external funds. We conduct the same regression specification as for CFF. We define debt issuance focusing on long-term debt to lagged total assets ($Debt\ Issuance$), following Karpuz et al. (2020). We measure pay-out as total cash dividends to operating profit of the previous period ($Dividends$) (Jensen et al., 1992; Aivazian et al. 2006). To eliminate the effect of outliers, we replace the dividend ratio higher than one by one and exclude firms with negative operating profit that pay dividends[28] (see Chay and Suh, 2009).

[26] We do not expect any intentionally changes in cash flows from operations and indeed in untabulated results, we do not find any empirical evidence for this channel in our sample.
[27] We do not consider equity issuance, as it dilutes controlling power of family ownership (Croci et al., 2011).
[28] Replacing negative values with zeroes, we receive quantitatively and qualitatively similar results.

The results are presented in Columns 3 and 4 of Table 14 for debt and dividends respectively.

In Column 3, the coefficient of the interaction term between FFF and LMR shows a positive sign and is statistically significant, which implies that to hoard cash, FFFs use a portion of net proceeds from debt issuance. This evidence is also in line with theoretical arguments of Acharya et al. (2007) and Gamba and Triantis (2008), that, if firms face financial frictions, cash becomes a relevant and independent component of firms' financial policy, so that a borrowing and lending liquidity strategy coexist. In Column 4 we observe a negative significant coefficient of the interaction term for FFF and a significant positive coefficient of the LMR effect itself. We conclude that following LMR increases, FFFs, in line with the risk argument, reduce dividend pay-out to secure their precautionary cash buffer. Non-FFFs, in contrast and in line with the bargaining view, increase their dividend pay-out, providing shareholders with a larger division of surplus, minimizing rent extraction on the part of labor.

Overall, the results point out that cash holdings play an independent role in designing financial policy in FFFs as a response to changes in LMR.

[Table 14 goes about here]

6 Conclusion

The existing literature provides ambiguous evidence on the relationship between labor market frictions and firms' cash holdings policy. In this paper, we posit that the impact of labor regulation on cash holdings' choice is moderated by FFFs as a business type with a unique incentive structure. Building upon the notion from the socioemotional wealth motive, that family firms frame their strategic and financial policies assessing whether taken actions endanger the survival of the firm and/or their control over the firm (see e.g., Gómez-Mejía et al., 2007; Wiseman and Gomez-Mejia, 1998), we predict that the relationship between LMR and cash holdings is more positive in FFFs and negative in non-FFFs. As FFFs are rather concerned of intergenerational transfer of the firm as well as their long-term relation with employees, they are more likely to pursue financial flexibility and a low risk motive as reaction to pro-labor regulation. Also, we argue that non-FFFs, whose decisions are not guided by the idea of

generational transfer and rather focus on instant wealth maximization, rely on rent extraction considerations in reaction to increasing labor regulations.

Using a unique, partially hand collected, dataset of listed FFFs and non-FFFs in 17 European countries in the period between 2007 and 2016, we find strong support for our hypothesis. Specifically, we find that while non-FFFs manage their cash holdings downwards following increases in labor regulation, FFFs create cash buffers when being faced with pro-labor regulations. The difference in the reaction is substantial and economically significant. Our results are robust to a set of additional tests.

Overall, our results imply that first, labor market friction represents an important determinant of firms' cash holdings policy. Second, FFFs and their counterpart, non-FFFs, trade off costs and benefits of holding cash differently based on their diverging incentive structure which leads to a significantly differentiated assessment of optimal response in terms of cash holding levels following labor regulation.

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Tables and Figures

Table 1.
Summary statistics
Panel A reports the summary statistics for key dependent and independent variables for the whole sample of 4,693 firms and 28,113 firm-year observations from 17 European countries (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom), over the period 2007-2016. Panel B reports the summary statistics for key dependent and independent variables for the subsample of labor-intensive firms, consisting of 2,708 firms and 12,098 firm-year observations. Panel C reports the summary statistics for key dependent and independent variables for the subsample of domestic firms, consisting of 1,245 firms and 7,027 firm-year observations. All variables are defined in Table 15.

Panel A: Full sample

Variable	N	Mean	STD	Q1	Median	Q3
Firm level						
Cash	28,113	0.146	0.151	0.044	0.097	0.191
CashToNetAssets	28,113	0.249	0.520	0.046	0.107	0.236
FFF	28,113	0.221	0.415	0.000	0.000	0.000
$Size_{(t-1)}$	28,113	12.547	2.210	10.961	12.336	14.025
$Growth_{(t-1)}$	28,113	1.888	1.705	0.947	1.358	2.140
$Leverage_{(t-1)}$	28,113	0.205	0.170	0.053	0.183	0.318
$NWC_{(t-1)}$	28,113	0.018	0.168	-0.084	0.011	0.122
$Investments_{(t-1)}$	28,113	0.086	0.111	0.022	0.053	0.105
$Dividends_{(t-1)}$	28,113	0.613	0.487	0.000	1.000	1.000
$Cash\ Flow_{(t-1)}$	28,113	0.029	0.141	0.015	0.054	0.089
$Cash\ Flow\ Volatility_{(t-1)}$	28,113	0.094	0.120	0.041	0.066	0.116
Other Ultimate Owner	28,113	0.319	0.466	0.000	0.000	1.000
Country level						
LMR	170	4.011	1.361	3.341	4.326	4.946
LMR^{LC-I}	170	-0.247	0.798	-1.000	0.000	0.000
$Inflation_{(t-1)}$	170	0.015	0.014	0.004	0.015	0.025
$GDP\ Growth_{(t-1)}$	170	0.009	0.033	-0.003	0.013	0.024
$ln(GDP\ p.c.)_{(t-1)}$	170	10.759	0.400	10.582	10.740	10.937

Panel B: Labor-intensive firms

Variable	N	Mean	STD	Q1	Median	Q3
Firm level						
Cash	12,098	0.139	0.134	0.047	0.099	0.183
CashToNetAssets	12,098	0.215	0.394	0.050	0.109	0.225
FFF	12,098	0.245	0.430	0.000	0.000	0.000
$Size_{(t-1)}$	12,098	12.308	2.064	10.888	12.198	13.611
$Growth_{(t-1)}$	12,098	1.946	1.730	0.982	1.409	2.225
$Leverage_{(t-1)}$	12,098	0.193	0.156	0.055	0.173	0.300
$NWC_{(t-1)}$	12,098	0.020	0.164	-0.083	0.023	0.131
$Investments_{(t-1)}$	12,098	0.087	0.110	0.025	0.054	0.104
$Dividends_{(t-1)}$	12,098	0.639	0.480	0.000	1.000	1.000
$Cash\ Flow_{(t-1)}$	12,098	0.032	0.146	0.022	0.058	0.092
$Cash\ Flow\ Volatility_{(t-1)}$	12,098	0.097	0.123	0.043	0.069	0.120
Other Ultimate Owner	12,098	0.310	0.463	0.000	0.000	1.000

Table 1 (continued)

Panel C: Domestic firms						
Variable	N	Mean	STD	Q1	Median	Q3
Firm level						
Cash	7,027	0.155	0.174	0.032	0.092	0.208
CashToNetAssets	7,027	0.297	0.633	0.034	0.102	0.263
FFF	7,027	0.290	0.454	0.000	0.000	1.000
$Size_{(t-1)}$	7,027	11.622	1.932	10.285	11.420	12.693
$Growth_{(t-1)}$	7,027	1.860	1.809	0.902	1.278	2.037
$Leverage_{(t-1)}$	7,027	0.192	0.180	0.024	0.148	0.313
$NWC_{(t-1)}$	7,027	0.016	0.182	-0.099	0.002	0.130
$Investments_{(t-1)}$	7,027	0.073	0.104	0.014	0.038	0.087
$Dividends_{(t-1)}$	7,027	0.537	0.499	0.000	1.000	1.000
Cash $Flow_{(t-1)}$	7,027	0.014	0.165	0.005	0.048	0.084
Cash Flow $Volatility_{(t-1)}$	7,027	0.095	0.105	0.040	0.065	0.118
Other Ultimate Owner	7,027	0.292	0.455	0.000	0.000	1.000

Figure 1.
LMR by country
This figure plots the evolution of LMR index by country for each of the 17 countries in the sample over the period 2007-2016.

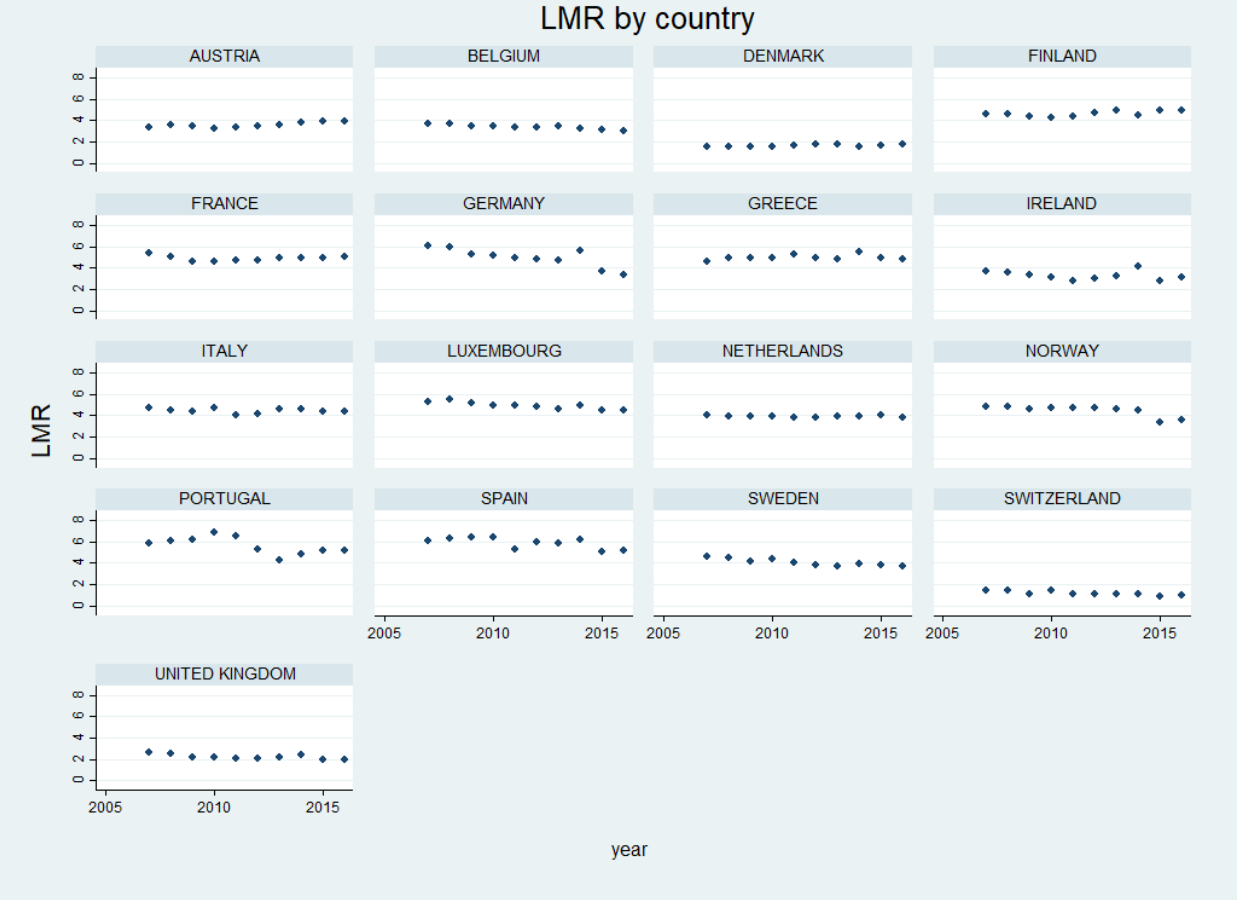

Table 2.

Family-firm related effect of LMR on cash holdings

This table presents the OLS regression results of average (Columns 1 and 3) and FFF-related differential (Columns 2 and 4) effect of LMR on cash holdings. Column 1 and 2 (3 and 4) show the results for Cash (CashToNetAssets) as dependent variable. All variables are defined in Table 15. All independent variables except LMR, FFF, and Other Ultimate Owner are lagged by one period. All regression specifications include firm fixed effects, industry-year fixed effects, and country specific year trends. The t-Statistics in parentheses are based on robust standard errors, clustered at the country level. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variable	Cash		CashToNetAssets	
	(1)	(2)	(3)	(4)
LMR	-0.002	-0.004**	-0.009*	-0.016**
	(-1.07)	(-2.56)	(-1.83)	(-2.66)
LMR#FFF		0.007***		0.024**
		(3.36)		(2.28)
FFF		-0.027***		-0.088***
		(-5.25)		(-3.92)
$Size_{(t-1)}$	-0.025***	-0.025***	-0.044*	-0.044
	(-3.68)	(-3.66)	(-1.76)	(-1.74)
$Growth_{(t-1)}$	0.004***	0.004***	0.016***	0.016***
	(3.43)	(3.47)	(3.47)	(3.48)
$Leverage_{(t-1)}$	-0.089***	-0.089***	-0.219***	-0.219***
	(-11.41)	(-11.39)	(-6.25)	(-6.19)
$NWC_{(t-1)}$	-0.048**	-0.048**	-0.157**	-0.157**
	(-2.29)	(-2.29)	(-2.61)	(-2.61)
$Investments_{(t-1)}$	-0.053***	-0.053***	-0.139**	-0.139**
	(-3.09)	(-3.08)	(-2.58)	(-2.56)
$Dividends_{(t-1)}$	0.005***	0.005***	0.009	0.009
	(3.20)	(3.21)	(1.71)	(1.69)
$Cash\ Flow_{(t-1)}$	0.014	0.014	0.015	0.014
	(1.10)	(1.10)	(0.30)	(0.30)
$Cash\ Flow\ Volatility_{(t-1)}$	0.009	0.009	0.036*	0.036*
	(1.39)	(1.39)	(1.79)	(1.79)
Other Ultimate Owner	0.001	0.001	0.005	0.006
	(0.22)	(0.32)	(0.37)	(0.48)
$Inflation_{(t-1)}$	-0.080	-0.081	0.096	0.094
	(-1.08)	(-1.08)	(0.34)	(0.33)
$GDP\ Growth_{(t-1)}$	-0.047	-0.043	-0.044	-0.033
	(-1.36)	(-1.23)	(-0.29)	(-0.21)
$ln(GDP\ p.c.)_{(t-1)}$	0.085***	0.085***	0.070	0.069
	(3.04)	(3.01)	(0.67)	(0.66)
Firm Fixed Effects	YES	YES	YES	YES
Industry-Year Fixed Effects	YES	YES	YES	YES
Country Specific Year Trend	YES	YES	YES	YES
Clustered Standard Errors	YES	YES	YES	YES
Observations	28,113	28,113	28,113	28,113
R^2_{adj}	0.057	0.058	0.036	0.037

Table 3.

Change regression specification

This table presents the results of change regressions of an incremental FFF-related differential effect of LMR on cash holdings. Column 1 and 3 (2 and 4) show the results for ΔCash (ΔCashToNetAssets) as dependent variable, that is the annual change in Cash (CashToNetAssets) levels. ΔLMR is the annual change in LMR. ΔLMR^{LC} is a substantial annual change in LMR, defined as changes greater than the mean of absolute LMR changes in the sample (0.2 units). ΔLMR and ΔLMR^{LC} enter regressions as both, contemporary and one-year-lagged values. All other variables are defined in Table 15. All independent variables are annual changes of the corresponding levels of the variables and are lagged by one period except FFF and Other Ultimate Owner. All regression specifications include industry-year fixed effects and country specific year trends. The t-Statistics in parentheses are based on robust standard errors, clustered at the country level. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Variable of Interest	ΔLMR		ΔLMR^{LC}	
Dependent variable	ΔCash	ΔCashTo NetAssets	ΔCash	ΔCashTo NetAssets
	(1)	(2)	(3)	(4)
ΔLMRt=0	-0.004**	-0.008*	-0.003**	-0.008**
	(-2.15)	(-2.07)	(-2.24)	(-2.45)
ΔLMR t=0#FFF	0.004***	0.011*	0.004***	0.006*
	(3.11)	(1.78)	(3.11)	(1.85)
ΔLMRt=+1	-0.006***	-0.014***	-0.005***	-0.014***
	(-4.21)	(-3.21)	(-4.35)	(-3.17)
ΔLMR t=+1#FFF	0.006***	0.017***	0.005***	0.014***
	(3.72)	(5.78)	(3.23)	(5.24)
FFF	0.001	0.006	0.001	0.005
	(0.79)	(0.94)	(0.70)	(0.82)
ΔCash(t-1)	-0.108***	-0.273***	-0.108***	-0.273***
	(-12.22)	(-15.07)	(-12.24)	(-15.07)
Cash(t-1)	-0.139***	-0.505***	-0.139***	-0.505***
	(-17.28)	(-8.89)	(-17.31)	(-8.89)
ΔSize(t-1)	-0.017***	-0.058***	-0.017***	-0.058***
	(-5.66)	(-6.14)	(-5.67)	(-6.15)
ΔGrowth(t-1)	0.002***	0.016***	0.002***	0.016***
	(5.58)	(7.09)	(5.57)	(7.07)
ΔLeverage(t-1)	0.004	0.015	0.004	0.014
	(0.80)	(0.42)	(0.81)	(0.42)
ΔNWC(t-1)	0.036***	0.080***	0.036***	0.080***
	(4.01)	(3.52)	(4.01)	(3.53)
ΔInvestments(t-1)	-0.007	0.025	-0.007	0.025
	(-1.08)	(1.10)	(-1.08)	(1.10)
ΔDividends(t-1)	0.002	0.005	0.002	0.005
	(1.26)	(0.96)	(1.26)	(0.96)
ΔCash Flow(t-1)	-0.004	-0.046	-0.004	-0.046
	(-0.54)	(-1.37)	(-0.54)	(-1.37)
ΔCash Flow Volatility(t-1)	0.003	0.005	0.003	0.005
	(0.56)	(0.42)	(0.55)	(0.39)
Other Ultimate Owner	-0.000	0.003	-0.000	0.003
	(-0.06)	(0.39)	(-0.05)	(0.40)
ΔInflation(t-1)	0.031	-0.085	0.025	-0.095
	(0.59)	(-0.40)	(0.51)	(-0.45)
ΔGDP Growth(t-1)	0.036	-0.053	0.040	-0.047
	(1.14)	(-0.42)	(1.19)	(-0.36)
Δln(GDP p.c.) (t-1)	0.040	0.153*	0.035	0.146
	(1.38)	(2.02)	(1.13)	(1.74)
Firm Fixed Effects	NO	NO	NO	NO
Industry-Year Fixed Effects	YES	YES	YES	YES
Country Specific Year Trend	YES	YES	YES	YES
Clustered Standard Errors	YES	YES	YES	YES
Observations	25,386	25,386	25,386	25,386
R^2_{adj}	0.139	0.122	0.139	0.122

Table 4.
Confounding events

This table presents the results of OLS regression of a FFF-related differential effect of LMR on cash holdings after controlling for potential confounding events. For comparability purpose Column 1 presents the baseline results from Table 2, Column 2. Starting in Column 2, the regression model is gradually expanded by Gini Coefficient, Corporate Tax rate, Unionization rate, Business Confidence indicator, Crisis Dummy, Macro-Economic Uncertainty index and their interactions with FFF (main effects of Crisis Dummy and Macro-Economic Uncertainty are included, but omitted because of collinearity). In all regression specifications, Cash is used as dependent variable. All variables are defined in Table 15. All independent variables except LMR, FFF, Other Ultimate Owner, and additional variables mentioned above, are lagged by one period. All regression specifications include firm fixed effects, industry-year fixed effects, and country specific year trends. The t-Statistics in parentheses are based on robust standard errors, clustered at the country level. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent variable	Cash							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LMR	-0.004**	-0.004**	-0.005**	-0.005**	-0.005**	-0.005**	-0.005**	-
	(-2.56)	(-2.78)	(-2.90)	(-2.84)	(-2.81)	(-2.88)	(-2.90)	
LMR#FFF	0.007***	0.008***	0.010***	0.009***	0.009***	0.009***	0.010***	0.008***
	(3.36)	(3.72)	(4.21)	(3.74)	(3.59)	(3.91)	(4.14)	(3.41)
FFF	-0.027***	-0.065***	-0.046**	-0.025	-0.026	-0.026	-0.022	-0.028***
	(-5.25)	(-3.52)	(-2.40)	(-0.76)	(-0.80)	(-0.79)	(-0.68)	(-5.12)
Gini Coefficient		-0.060	-0.069*	-0.073*	-0.078*	-0.078*	-0.078*	
		(-1.45)	(-1.83)	(-1.93)	(-2.09)	(-2.07)	(-2.10)	
Gini Coefficient#FFF		0.101*	0.120**	0.132**	0.140**	0.141**	0.143**	
		(1.96)	(2.25)	(2.20)	(2.26)	(2.34)	(2.40)	
Corporate Tax			-0.010	-0.015	-0.014	-0.013	-0.014	
			(-0.38)	(-0.55)	(-0.50)	(-0.50)	(-0.50)	
Corporate Tax#FFF			-0.118**	-0.124**	-0.126**	-0.126**	-0.123**	
			(-2.50)	(-2.77)	(-2.70)	(-2.75)	(-2.68)	
Unionization				0.027	0.024	0.024	0.024	
				(1.01)	(0.96)	(0.98)	(0.97)	
Unionization#FFF				-0.008	-0.008	-0.008	-0.007	
				(-1.03)	(-1.07)	(-1.10)	(-1.00)	
Business Confidence					-0.078	-0.080	-0.088	
					(-1.20)	(-1.29)	(-1.45)	
Business Confidence#FFF					0.094***	0.102	0.122	
					(2.97)	(1.36)	(1.58)	
Crisis Dummy#FFF						-0.000	-0.002	
						(-0.10)	(-0.53)	
Macro-Uncertainty#FFF							-0.013	
							(-1.22)	
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES
Firm Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Industry-Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Country Specific Year Trend	YES	YES	YES	YES	YES	YES	YES	NO
Country-Year Fixed Effects	NO	NO	NO	NO	NO	NO	NO	YES
Clustered Standard Errors	YES	YES	YES	YES	YES	YES	YES	YES
Observations	28,113	28,113	28,113	28,113	28,113	28,113	28,113	28,113
R^2_{adj}	0.058	0.058	0.058	0.058	0.058	0.058	0.058	0.062

Table 5.

Alternative measures of cash holdings and LMR

This table presents the results of OLS regression of a FFF-related differential effect of LMR on cash holdings using alternative definitions of cash holdings (Columns 1 and 2) and LMR (Column 3). Ln(CashToNetAssets) is the natural logarithm of one plus the ratio of CashToNetAssets. $Cash^{Net\ of\ Debt}$ is a ratio of the sum of cash and short-term investments net of long-term debt divided by the book value of total assets. $LMR^{LC\text{-}I}$ is a categorical variable that is based on only substantial changes in LMR (greater than 0.2 units) and is defined recursively, starting in 2007 and distinguishing between changes that increased (+1) and those that decreased (-1) employment protection. All variables are defined in Table 15. All independent variables except LMR, FFF, and Other Ultimate Owner are lagged by one period. All regression specifications include firm fixed effects, industry-year fixed effects, and country specific year trends. The t-Statistics in parentheses are based on robust standard errors, clustered at the country level. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variable	Ln(CashTo NetAssets)	$Cash^{Net\ of\ Debt}$	Cash
Variable of Interest	LMR		$LMR^{LC\text{-}I}$
	(1)	(2)	(3)
LMR	-0.007**	-0.008***	-0.003**
	(-2.73)	(-3.14)	(-2.86)
LMR#FFF	0.012**	0.007***	0.004***
	(2.82)	(3.38)	(3.58)
FFF	-0.044***	-0.032***	0.004
	(-5.46)	(-3.67)	(0.46)
$Size_{(t-1)}$	-0.034**	-0.040***	-0.025***
	(-2.81)	(-6.01)	(-3.67)
$Growth_{(t-1)}$	0.007***	0.003**	0.004***
	(3.89)	(2.16)	(3.44)
$Leverage_{(t-1)}$	-0.129***	-0.491***	-0.089***
	(-9.04)	(-40.80)	(-11.63)
$NWC_{(t-1)}$	-0.080**	-0.127***	-0.048**
	(-2.43)	(-6.04)	(-2.29)
$Investments_{(t-1)}$	-0.081***	-0.097***	-0.053***
	(-2.96)	(-3.68)	(-3.07)
$Dividends_{(t-1)}$	0.007***	0.003	0.006***
	(2.94)	(1.21)	(3.23)
$Cash\ Flow_{(t-1)}$	0.017	0.028**	0.015
	(0.73)	(2.71)	(1.11)
$Cash\ Flow\ Volatility_{(t-1)}$	0.016	0.005	0.009
	(1.64)	(0.61)	(1.40)
Other Ultimate Owner	0.003	0.003	0.001
	(0.40)	(0.62)	(0.28)
$Inflation_{(t-1)}$	-0.053	0.012	-0.062
	(-0.44)	(0.09)	(-0.82)
$GDP\ Growth_{(t-1)}$	-0.047	-0.173**	-0.041
	(-0.75)	(-2.23)	(-1.18)
$ln(GDP\ p.c.)_{(t-1)}$	0.093**	0.124**	0.083***
	(2.27)	(2.47)	(3.41)
Firm Fixed Effects	YES	YES	YES
Industry-Year Fixed Effects	YES	YES	YES
Country Specific Year Trend	YES	YES	YES
Clustered Standard Errors	YES	YES	YES
Observations	28,113	27,896	28,113
R^2_{adj}	0.049	0.173	0.058

Table 6.

Cross-firm heterogeneity in cash holdings response

This table presents the results of OLS regression of a FFF-related differential effect of LMR on cash holdings for subsamples based on labor-intensity (Columns 1-4) and multinational presence (Columns 5-8). We measure labor-intensity of firms using the ratio of number of employees to total assets. Each year, we define firms with above (below)-median employees to total assets as high (low)-labor-intensive. We define a firm as domestic, if it does not report any foreign assets in the previous three years, and as multinational otherwise. Column 1 and 2, 5 und 6 (3 and 4, 7 and 8) show the results for Cash (CashToNetAssets) as dependent variable. All variables are defined in Table 15. All independent variables except LMR, FFF, and Other Ultimate Owner are lagged by one period. All regression specifications include firm fixed effects, industry-year fixed effects, and country specific year trends. The t-Statistics in parentheses are based on robust standard errors, clustered at the country level. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variable	Cash		CashToNetAssets		Cash		CashToNetAssets	
Sample	LI	Non-LI	LI	Non-LI	Domestic	Multinational	Domestic	Multinational
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LMR	-0.007***	-0.002	-0.030***	-0.008	-0.015***	-0.001	-0.055***	-0.008
	(-3.25)	(-0.92)	(-3.63)	(-0.75)	(-3.87)	(-0.98)	(-3.80)	(-1.29)
LMR#FFF	0.014***	0.003	0.043***	0.006	0.021***	0.005***	0.085***	0.013*
	(2.97)	(0.54)	(3.16)	(0.37)	(4.13)	(3.07)	(4.36)	(1.81)
FFF	-0.051***	-0.004	-0.167***	0.001	-0.075**	-0.024***	-0.349***	-0.044*
	(-3.61)	(-0.15)	(-3.42)	(0.01)	(-2.90)	(-3.80)	(-4.37)	(-2.04)
$Size_{(t-1)}$	-0.024***	-0.032***	-0.053***	-0.055	-0.030***	-0.025***	-0.042	-0.051*
	(-4.94)	(-4.01)	(-3.81)	(-1.45)	(-3.42)	(-3.63)	(-0.99)	(-2.06)
$Growth_{(t-1)}$	0.003**	0.005**	0.007*	0.024**	0.005***	0.003**	0.033***	0.010**
	(2.29)	(2.90)	(2.01)	(2.13)	(3.29)	(2.78)	(3.26)	(2.35)
$Leverage_{(t-1)}$	-0.090***	-0.086***	-0.152***	-0.289***	-0.113***	-0.079***	-0.305**	-0.180***
	(-9.08)	(-8.98)	(-4.52)	(-5.74)	(-4.18)	(-7.27)	(-2.59)	(-3.51)
$NWC_{(t-1)}$	-0.031	-0.037**	-0.078	-0.142**	-0.029	-0.053*	-0.129*	-0.153**
	(-1.28)	(-2.24)	(-0.92)	(-2.23)	(-1.51)	(-2.01)	(-1.91)	(-2.33)
$Investments_{(t-1)}$	-0.051*	-0.050***	-0.126*	-0.107	-0.071***	-0.051**	-0.096	-0.151*
	(-1.90)	(-3.46)	(-1.76)	(-1.55)	(-4.25)	(-2.33)	(-0.77)	(-1.99)
$Dividends_{(t-1)}$	0.003	0.005	0.005	0.004	0.005	0.005**	-0.001	0.012*
	(1.33)	(1.74)	(0.60)	(0.53)	(1.06)	(2.80)	(-0.04)	(1.92)
$Cash\ Flow_{(t-1)}$	0.003	0.013	0.029	-0.016	0.032**	0.008	0.073	-0.000
	(0.13)	(1.13)	(0.42)	(-0.31)	(2.13)	(0.69)	(1.61)	(-0.01)
$Cash\ Flow\ Volatility_{(t-1)}$	-0.001	0.009	0.012	0.018	0.012	0.010	0.050	0.034
	(-0.24)	(1.52)	(0.86)	(1.24)	(0.90)	(1.38)	(0.76)	(1.45)
Other Ultimate Owner	0.005	0.001	0.010	0.009	-0.003	0.002	-0.013	0.008
	(1.27)	(0.27)	(1.08)	(0.60)	(-0.50)	(0.43)	(-0.53)	(0.68)
$Inflation_{(t-1)}$	-0.089	-0.089	-0.129	0.224	0.129	-0.078	0.835	0.084
	(-0.86)	(-0.75)	(-0.57)	(0.44)	(0.67)	(-0.92)	(0.80)	(0.33)
$GDP\ Growth_{(t-1)}$	-0.008	-0.041	-0.057	0.033	-0.015	-0.045	-0.096	0.039
	(-0.29)	(-0.73)	(-0.60)	(0.13)	(-0.19)	(-1.04)	(-0.31)	(0.20)
$ln(GDP\ p.c.)_{(t-1)}$	0.070	0.065	0.263	-0.057	0.010	0.103***	0.021	0.030
	(0.99)	(1.47)	(1.73)	(-0.29)	(0.23)	(3.25)	(0.11)	(0.20)
Firm Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Industry-Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Country Specific Year Trend	YES	YES	YES	YES	YES	YES	YES	YES
Clustered Standard Errors	YES	YES	YES	YES	YES	YES	YES	YES
Observations	12,098	13,927	12,098	13,927	7,027	21,086	7,027	21,086
R^2_{adj}	0.085	0.090	0.062	0.074	0.123	0.064	0.104	0.041

Table 7.

Sales- and cash flow risk

This table presents the results of OLS regression of firm risk-related differential effect of LMR on cash holdings for subsamples based on the FFF status. We measure firm risk in terms of sales volatility (Columns 1-4) and cash flow volatility (Columns 5-8). We calculate sales (cash flow) volatility as the standard deviation of sales (cash flow), deflated by total assets, in the previous five years, with at least three out of five available firm-year-observations. Column 1 and 2, 5 und 6 (3 and 4, 7 and 8) show the results for Cash (CashToNetAssets) as dependent variable. All variables are defined in Table 15. All independent variables except LMR, Volatility, and Other Ultimate Owner are lagged by one period. All regression specifications include firm fixed effects, industry-year fixed effects, and country specific year trends. The t-Statistics in parentheses are based on robust standard errors, clustered at the country level. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variable	Cash		CashToNetAssets		Cash		CashToNetAssets	
Sample	FFF	Non-FFF	FFF	Non-FFF	FFF	Non-FFF	FFF	Non-FFF
Volatility Variable	Sales				Cash Flow			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LMR	0.004	-0.002	-0.001	-0.007	0.005**	-0.002	-0.000	-0.008
	(1.67)	(-0.97)	(-0.11)	(-1.24)	(2.16)	(-1.08)	(-0.04)	(-1.34)
LMR#Volatility	0.015***	-0.006***	0.042***	-0.018***	0.040***	-0.010***	0.157***	-0.031***
	(5.37)	(-5.77)	(6.30)	(-4.91)	(5.80)	(-2.95)	(6.30)	(-3.50)
Volatility	-0.058***	0.031***	-0.140***	0.093***	-0.142***	0.057**	-0.584***	0.183***
	(-5.31)	(9.43)	(-4.55)	(7.97)	(-4.14)	(2.88)	(-3.06)	(3.35)
$Size_{(t-1)}$	0.005	-0.029***	0.045*	-0.057**	0.005	-0.030***	0.044	-0.061**
	(0.82)	(-5.59)	(1.84)	(-2.44)	(0.83)	(-5.57)	(1.58)	(-2.43)
$Growth_{(t-1)}$	-0.003	0.005***	-0.016	0.026***	-0.003	0.005***	-0.017	0.026***
	(-1.13)	(4.67)	(-1.32)	(4.07)	(-1.13)	(4.77)	(-1.27)	(3.96)
$Leverage_{(t-1)}$	-0.107***	-0.079***	-0.267***	-0.195***	-0.104***	-0.081***	-0.259***	-0.202***
	(-4.91)	(-10.31)	(-3.22)	(-4.69)	(-4.84)	(-9.94)	(-3.09)	(-4.70)
$NWC_{(t-1)}$	-0.047*	-0.038*	-0.125**	-0.133*	-0.048*	-0.040*	-0.135*	-0.140**
	(-2.07)	(-1.80)	(-2.14)	(-2.05)	(-2.03)	(-1.91)	(-2.11)	(-2.14)
$Investments_{(t-1)}$	-0.062**	-0.049***	-0.209**	-0.099*	-0.059**	-0.049***	-0.201**	-0.100*
	(-2.28)	(-3.07)	(-2.63)	(-1.99)	(-2.28)	(-3.00)	(-2.61)	(-1.97)
$Dividends_{(t-1)}$	0.003	0.007***	0.000	0.013**	0.003	0.007***	0.001	0.013**
	(0.74)	(3.39)	(0.05)	(2.31)	(0.97)	(3.21)	(0.18)	(2.23)
$Cash\ Flow_{(t-1)}$	0.035*	0.008	0.100	-0.025	0.047**	0.007	0.131	-0.027
	(1.84)	(0.75)	(1.44)	(-0.56)	(2.26)	(0.63)	(1.70)	(-0.62)
Other Ultimate Owner		0.002		0.008		0.002		0.008
		(0.54)		(0.70)		(0.46)		(0.66)
$Inflation_{(t-1)}$	-0.213	-0.090	-0.053	0.059	-0.250	-0.093	-0.165	0.050
	(-0.84)	(-1.07)	(-0.07)	(0.20)	(-0.95)	(-1.09)	(-0.21)	(0.17)
$GDP\ Growth_{(t-1)}$	-0.030	-0.042	0.059	-0.103	-0.044	-0.045	0.024	-0.111
	(-0.42)	(-1.01)	(0.15)	(-0.68)	(-0.58)	(-1.08)	(0.06)	(-0.75)
$ln(GDP\ p.c.)_{(t-1)}$	0.050	0.087***	-0.003	0.067	0.057	0.088***	0.023	0.067
	(0.81)	(3.15)	(-0.01)	(0.64)	(0.89)	(3.20)	(0.08)	(0.66)
Firm Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Industry-Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES
Country Specific Year Trend	YES	YES	YES	YES	YES	YES	YES	YES
Clustered Standard Errors	YES	YES	YES	YES	YES	YES	YES	YES
Observations	6,085	21,248	6,085	21,248	6,050	21,158	6,050	21,158
R^2_{adj}	0.110	0.072	0.088	0.053	0.110	0.071	0.090	0.052

Table 8.

Socioemotional wealth motive

This table presents the results of OLS regression of firm SEW-related differential effect of LMR on cash holdings for subsamples based on the FFF status. We proxy SEW orientation by non-entrepreneurial firms (Columns 1 and 2) and inheritance law permissiveness (Columns 3 and 4). Non-Entrepreneurial Firms is a dummy variable equal to one if a FFF is in a second or higher generation, and zero otherwise. Inheritance Law Permissiveness Dummy is a dummy variable equal to one if inheritance law permissiveness in the top 75%-quartile, and zero otherwise. Inheritance law permissiveness variable is an average of five indicators of the permissiveness of inherence law. Columns 1 and 3, 2 and 4 show the results for Cash and CashToNetAssets as dependent variable, respectively. All variables are defined in Table 15. All independent variables except LMR, and dummy variables are lagged by one period. All regression specifications include firm fixed effects, industry-year fixed effects, and country specific year trends. The t-Statistics in parentheses are based on robust standard errors, clustered at the country level. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variable	Cash	CashToNetAssets	Cash	CashToNetAssets
Sample	FFF			
SEW-Measure	Non-Entrepreneurial Firms		Inheritance Law Permissiveness Dummy	
	(1)	(2)	(3)	(4)
LMR	0.006**	0.006	0.007***	0.010
	(2.61)	(0.57)	(3.33)	(0.93)
LMR#SEW-Measure	0.008**	0.026**	0.044***	0.172***
	(2.59)	(2.44)	(6.04)	(10.05)
$Size_{(t-1)}$	0.003	0.039*	0.003	0.037*
	(0.65)	(1.86)	(0.57)	(1.77)
$Growth_{(t-1)}$	-0.003	-0.013	-0.003	-0.013
	(-1.02)	(-1.09)	(-1.03)	(-1.09)
$Leverage_{(t-1)}$	-0.102***	-0.249***	-0.101***	-0.245***
	(-4.77)	(-3.04)	(-4.66)	(-3.00)
$NWC_{(t-1)}$	-0.045*	-0.122*	-0.045*	-0.124*
	(-1.76)	(-1.80)	(-1.79)	(-1.84)
$Investments_{(t-1)}$	-0.061**	-0.210**	-0.061**	-0.211**
	(-2.54)	(-2.81)	(-2.54)	(-2.80)
$Dividends_{(t-1)}$	0.004	0.001	0.004	0.002
	(0.98)	(0.12)	(1.03)	(0.22)
Cash $Flow_{(t-1)}$	0.040*	0.106	0.040*	0.107
	(1.97)	(1.39)	(2.00)	(1.42)
Cash Flow $Volatility_{(t-1)}$	0.019*	0.096*	0.017*	0.092*
	(1.93)	(1.78)	(1.91)	(1.83)
Other Ultimate Owner	-	-	-	-
$Inflation_{(t-1)}$	-0.170	0.171	-0.190	0.104
	(-0.68)	(0.23)	(-0.74)	(0.13)
GDP $Growth_{(t-1)}$	-0.009	0.141	-0.015	0.114
	(-0.13)	(0.36)	(-0.21)	(0.29)
$ln(GDP\ p.c.)_{(t-1)}$	0.036	-0.059	0.024	-0.111
	(0.63)	(-0.23)	(0.47)	(-0.45)
SEW-Measure	-0.040**	-0.139**	-	-
	(-2.50)	(-2.64)		
Firm Fixed Effects	Yes	Yes	Yes	Yes
Industry-Year Fixed Effects	48FF	48FF	48FF	48FF
Country Specific Year Trend	Yes	Yes	Yes	Yes
Clustered Standard Errors	Yes	Yes	Yes	Yes
Observations	6,215	6,215	6,215	6,215
R^2_{adj}	0.108	0.083	0.108	0.083

Table 9.

Economic significance of results

This table reports the economic significance of FFF-related differential effect of LMR on cash holdings based on regression coefficients from Table 2 and Table 6 and summary statistics in Table 1**,** Panel A, B, and C. Economic significance is assessed in terms of elasticity of cash holdings (y) towards each independent variable (x). Column 1 (2) show the results for Cash (CashToNetAssets) for the whole sample, column 3 (4) for the subsample of labor-intensive firms, and column 5 (6) for the subsample of domestic firms. All variables are defined in Table 15.

Dependent variable	Cash	CashTo NetAssets	Cash	CashTo NetAssets	Cash	CashTo NetAssets
Sample	All		LI Firms		Domestic Firms	
Economic Significance	Elasticity: dy/dx * (Ø[x]/Ø[y])					
	(1)	(2)	(3)	(4)	(5)	(6)
LMR	-0.110	-0.257	-0.202	-0.560	-0.388	-0.743
LMR#FFF	0.193	0.386	0.404	0.802	0.543	1.148
LMR + LMR#FFF	0.083	0.129	0.202	0.243	0.155	0.405
FFF	-0.041	-0.078	-0.090	-0.191	-0.140	-0.341
$Size_{(t-1)}$	-2.156	-2.214	-2.126	-3.035	-2.249	-1.644
$Growth_{(t-1)}$	0.052	0.121	0.042	0.063	0.060	0.207
$Leverage_{(t-1)}$	-0.125	-0.180	-0.125	-0.137	-0.140	-0.197
$NWC_{(t-1)}$	-0.006	-0.012	-0.005	-0.007	-0.003	-0.007
$Investments_{(t-1)}$	-0.031	-0.048	-0.032	-0.051	-0.033	-0.024
$Dividends_{(t-1)}$	0.021	0.022	0.014	0.015	0.017	-0.002
$Cash\ Flow_{(t-1)}$	0.003	0.002	0.001	0.004	0.003	0.003
$Cash\ Flow\ Volatility_{(t-1)}$	0.006	0.014	-0.001	0.005	0.007	0.016
Other Ultimate Owner	0.002	0.008	0.011	0.014	-0.006	-0.013
$Inflation_{(t-1)}$	-0.008	0.005	-0.009	-0.009	0.012	0.041
$GDP\ Growth_{(t-1)}$	-0.003	-0.001	-0.001	-0.003	-0.001	-0.003
$ln(GDP\ p.c.)_{(t-1)}$	6.285	2.978	5.175	13.163	0.694	0.761
Firm Fixed Effects	YES	YES	YES	YES	YES	YES
Industry-Year Fixed Effects	YES	YES	YES	YES	YES	YES
Country Specific Year Trend	YES	YES	YES	YES	YES	YES
Clustered Standard Errors	YES	YES	YES	YES	YES	YES
Observations	28,113	28,113	12,098	12,098	7,027	7,027

Table 10.

Endogeneity of Founding Family Firms – Instrumental Variable Approach

This table presents the results of instrumental variable regressions for cash holdings. We instrument both FFF dummy and LMR#FFF. Columns 1 and 2 show the result of first-stage regressions. The instruments are High Family Values, Individualism, and Inheritance Law Permissiveness and interaction term of each instrument with LMR. Columns 3 and 4 show the result of second-stage regression for Cash and CashtoNetAssets respectively. All independent variables except LMR, FFF, Other Ultimate Owner, and instruments are lagged by one period. All variables are defined in Table 15. All regression specifications include industry-year fixed effects. The t-Statistics in parentheses are based on robust standard errors, clustered at the country level. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

	First Stage		Second Stage	
Dependent Variable	FFF	FFF#LMR	Cash	CashTo NetAssets
	(1)	(2)	(3)	(4)
High Family Values	0.081	0.511		
	(1.13)	(1.31)		
High Family Values#LMR	-0.034**	-0.200**		
	(-1.99)	(-2.09)		
Individualism	-0.028***	-0.116***		
	(-3.36)	(-2.86)		
Individualism#LMR	0.006***	0.025***		
	(3.46)	(2.90)		
Inheritance Law Permissiveness	1.024*	4.632*		
	(1.90)	(1.74)		
Inheritance Law Permissiveness#LMR	-0.465***	-2.083***		
	(-3.13)	(-2.83)		
LMR	-0.100*	-0.108	-0.035**	-0.106**
	(-1.77)	(-0.39)	(-2.07)	(-2.25)
LMR#FFF			0.202**	0.566**
			(2.05)	(2.06)
FFF			-0.703*	-1.964*
			(-1.73)	(-1.75)
$Size_{(t-1)}$	-0.033***	-0.135***	-0.002	-0.003
	(-5.98)	(-4.27)	(-0.61)	(-0.33)
$Growth_{(t-1)}$	-0.002	-0.016*	0.020***	0.059***
	(-1.09)	(-1.84)	(11.01)	(9.25)
$Leverage_{(t-1)}$	0.106***	0.453***	-0.309***	-0.722***
	(3.12)	(2.80)	(-18.23)	(-12.80)
$NWC_{(t-1)}$	0.078***	0.377***	-0.102***	-0.281***
	(3.21)	(3.26)	(-6.02)	(-5.60)
$Investments_{(t-1)}$	-0.060	-0.227	0.049	0.296**
	(-1.07)	(-0.96)	(1.39)	(2.53)
$Dividends_{(t-1)}$	0.078***	0.323**	-0.020**	-0.088***
	(2.61)	(2.01)	(-2.31)	(-3.30)
$Cash\ Flow_{(t-1)}$	0.187***	0.742**	-0.146***	-0.697***
	(3.33)	(2.29)	(-6.03)	(-7.15)
$Cash\ Flow\ Volatility_{(t-1)}$	-0.012	-0.020	0.035***	0.096***
	(-0.51)	(-0.17)	(3.00)	(2.69)
Other Ultimate Owner	-0.370***	-1.639***	0.062***	0.185***
	(-4.82)	(-3.85)	(2.59)	(2.76)
$Inflation_{(t-1)}$	-1.672	-9.960*	0.137	1.592**
	(-1.60)	(-1.91)	(0.45)	(2.00)
$GDP\ Growth_{(t-1)}$	-0.521	-2.969*	0.137	0.434
	(-1.58)	(-1.72)	(1.17)	(1.20)
$ln(GDP\ p.c.)_{(t-1)}$	-0.280***	-1.237***	0.059***	0.149**
	(-6.37)	(-5.83)	(2.67)	(2.42)
Industry-Year Fixed Effects	YES	YES	YES	YES
Clustered Standard Errors	YES	YES	YES	YES
Observations	27,834	27,834	27,834	27,834
Kleibergen-Paap rk Wald F			3.111	3.111
P-valueof Hansen J Test			0.134	0.169

Table 11.

Endogeneity of Founding Family Firms – Propensity Score Matching

This table presents the OLS regression results of the FFF-related differential effect of LMR on cash holdings using a propensity score matched sample. For each FFF observation non-FFF observations in the same country were matched (nearest neighbor matching, without replacement) using the Fama-French 30 industry classification and the firm level variables Size, Leverage, Investments and ln(1+Firm Age). Column 1 (2) shows the results for Cash (CashToNetAssets) without a caliper restriction. Column 3 (4) shows the results for Cash (CashToNetAssets) using a caliper restriction of 0.0001. All variables are defined in Table 15. All independent variables except LMR, FFF, and Other Ultimate Owner are lagged by one period. All regression specifications include firm fixed effects, industry-year fixed effects, and country specific year trends. The t-Statistics in parentheses are based on robust standard errors, clustered at the country level. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variable	Cash		CashToNetAssets	
	(1)	(2)	(3)	(4)
LMR	-0.006**	-0.006**	-0.024**	-0.033***
	(-2.80)	(-2.53)	(-2.29)	(-4.84)
LMR#FFF	0.009***	0.010***	0.029***	0.034***
	(4.67)	(11.73)	(3.78)	(9.79)
FFF	-0.035**	-0.034*	-0.136**	-0.154**
	(-2.19)	(-1.87)	(-2.86)	(-2.97)
$Size_{(t-1)}$	-0.001	-0.007	0.029**	0.023
	(-0.12)	(-1.01)	(2.39)	(0.60)
$Growth_{(t-1)}$	0.002	0.003	0.008	0.013
	(0.78)	(1.25)	(0.71)	(0.86)
$Leverage_{(t-1)}$	-0.095***	-0.123***	-0.226***	-0.317***
	(-8.38)	(-5.82)	(-4.81)	(-6.00)
$NWC_{(t-1)}$	-0.061**	-0.067	-0.169**	-0.194
	(-2.37)	(-1.42)	(-2.49)	(-1.52)
$Investments_{(t-1)}$	-0.063**	-0.048	-0.192**	-0.175*
	(-2.75)	(-1.69)	(-2.72)	(-2.05)
$Dividends_{(t-1)}$	0.006**	0.004*	0.007	0.001
	(2.57)	(1.82)	(1.55)	(0.19)
$Cash\ Flow_{(t-1)}$	0.035**	0.023	0.063	0.038
	(2.42)	(1.19)	(1.19)	(0.47)
$Cash\ Flow\ Volatility_{(t-1)}$	0.021***	0.015***	0.102**	0.074**
	(3.17)	(3.30)	(2.28)	(2.40)
Other Ultimate Owner	-0.006	-0.013	-0.042**	-0.075***
	(-1.61)	(-1.64)	(-2.38)	(-3.58)
$Inflation_{(t-1)}$	-0.043	-0.282	0.593	1.204*
	(-0.26)	(-1.16)	(1.29)	(1.97)
$GDP\ Growth_{(t-1)}$	-0.074	-0.085	-0.030	0.014
	(-1.54)	(-1.13)	(-0.12)	(0.07)
$ln(GDP\ p.c.)_{(t-1)}$	0.057*	0.146**	0.020	0.099
	(1.79)	(2.90)	(0.17)	(1.17)
Caliper	NO	0.0001	NO	0.0001
Firm Fixed Effects	YES	YES	YES	YES
Industry-Year Fixed Effects	YES	YES	YES	YES
Country Specific Year Trend	YES	YES	YES	YES
Clustered Standard Errors	YES	YES	YES	YES
Observations	12,426	6,996	12,426	6,996
R^2_{adj}	0.076	0.123	0.049	0.080

Table 12.

Alternative explanations – Firm Characteristics

This table presents the results of OLS regressions accounting for alternative firm characteristics, explaining the main findings. In Panel A, the dependent variable is Cash (Columns 1 and 3) and CashToNetAssets (Columns 2 and 4). In Columns 1 and 2, regressions control for the interaction between LMR and R&D-intensive industries, where R&D-intensive industries are defined as median values for R&D expenses related to sales from the previous year for each industry from the 48-Fama-French industry classification in a particular country-year (note that main effect of R&D-intensive industries is included, but is omitted because of collinearity). In Columns 3 and 4, the regressions control for the main effect of intangible assets (Intangibility), defined as total intangible assets related to sales from the previous year and adjusted for median industry values, as well as the interaction between LMR and Intangibility. In Panel B, the dependent variable is Cash. The regressions control for the main effect and the interaction term between LMR and Size dummy in Column 1, Age dummy in Column 2, Dividend Payer in Column 3, Whited & Wu Index in Column 4, and Kaplan & Zingales measure of financial constraints in Column 5. All variables are defined in Table 15. All independent variables except LMR, FFF, and Other Ultimate Owner are lagged by one period. All regression specifications include firm fixed effects, industry-year fixed effects, and country specific year trends. The t-Statistics in parentheses are based on robust standard errors, clustered at the country level. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Panel A: High-Tech Firms

Dependent variable	Cash	CashTo NetAssets	Cash	CashTo NetAssets
Alternative Mechanism Variable	R&D-Intensity		Intangible Assets	
	(1)	(2)	(3)	(4)
LMR	-0.004**	-0.015***	-0.004**	-0.016**
	(-2.88)	(-4.00)	(-2.46)	(-2.73)
LMR#FFF	0.007***	0.024**	0.008***	0.025**
	(3.38)	(2.29)	(3.53)	(2.50)
FFF	-0.027***	-0.088***	-0.028***	-0.094***
	(-5.25)	(-3.92)	(-6.27)	(-4.64)
LMR#Alternative Mechanism	-0.000	-0.004	-0.000	-0.002
	(-0.04)	(-0.41)	(-0.06)	(-0.35)
Alternative Mechanism	0.000	0.019	-0.002	-0.003
	(0.03)	(0.47)	(-0.46)	(-0.18)
Controls	YES	YES	YES	YES
Firm Fixed Effects	YES	YES	YES	YES
Industry-Year Fixed Effects	YES	YES	YES	YES
Country Specific Year Trend	YES	YES	YES	YES
Clustered Standard Errors	YES	YES	YES	YES
Observations	28,113	28,113	28,067	28,067
R^2_{adj}	0.058	0.037	0.059	0.039

Panel B: Financial Constraints

Dependent variable	Cash	Cash	Cash	Cash	Cash
Financial Constraint	Size	Age	Dividend Payer	WW-Index	KZ-Index
	(1)	(2)	(3)	(4)	(5)
LMR	-0.004**	-0.004**	-0.005**	-0.013***	-0.005**
	(-2.45)	(-2.29)	(-2.83)	(-3.76)	(-2.58)
LMR#FFF	0.007***	0.008***	0.007***	0.008***	0.006***
	(3.42)	(3.42)	(3.31)	(3.26)	(3.04)
FFF	-0.027***	-0.028***	-0.027***	-0.026***	-0.013
	(-5.10)	(-5.59)	(-5.44)	(-4.00)	(-1.43)
LMR# Financial Constraint	0.000	-0.002	0.002	-0.015**	-0.000
	(0.16)	(-0.50)	(1.12)	(-2.80)	(-1.66)
Financial Constraint	0.002	0.015	-0.003	0.060*	-0.000
	(0.21)	(1.02)	(-0.40)	(2.01)	(-0.33)
Controls	YES	YES	YES	YES	YES
Firm Fixed Effects	YES	YES	YES	YES	YES
Industry-Year Fixed Effects	YES	YES	YES	YES	YES
Country Specific Year Trend	YES	YES	YES	YES	YES
Clustered Standard Errors	YES	YES	YES	YES	YES
Observations	28,113	28,086	28,113	26,035	23,988
R^2_{adj}	0.058	0.058	0.058	0.059	0.072

Table 13.
Alternative Explanations – Ownership-Related Characteristics

This table presents the results of OLS regressions accounting for alternative ownership-related characteristics, explaining the main findings. Column 1 presents the results of OLS regression of FFF-related and other ultimate owner-related differential effect of LMR on cash holdings using widely held firms as reference group. Columns 2 and 3 show the FFF-related differential effect using other ultimate owner as reference group. The table also reports results of Wald-test for coefficients from Column 1. In all regression specifications, Cash is used as dependent variable. All variables are defined in Table 15. All independent variables except LMR and all ownership-related variables are lagged by one period. All regression specifications include firm fixed effects, industry-year fixed effects, and country specific year trends. The t-Statistics in parentheses are based on robust standard errors, clustered at the country level. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variable		Cash		
Sample		Full	w/o Widely Held Firms	
Specification	*Coeff.*	(1)	(2)	(3)
LMR	λ_1	-0.001	-0.006*	-0.005
		(-0.58)	(-1.93)	(-1.63)
LMR#FFF	λ_2	0.005**	0.011***	0.010***
		(2.19)	(4.28)	(4.23)
FFF		-0.020***	-0.042**	-0.063
		(-3.25)	(-2.26)	(-0.24)
LMR# Other Ultimate Owner	λ_3	-0.005***		
		(-3.29)		
Other Ultimate Owner		0.020***		
		(2.98)		
Diff	H_0: $\lambda_1 = \lambda_1 + \lambda_2$	*p<0.028*		
Diff	H_0: $\lambda_2 = \lambda_3$	*p<0.000*		
Diff	H_0: $\lambda_1 + \lambda_2 = \lambda_1 + \lambda_3$	*p<0.000*		
Size(t-1)#FFF				0.007
				(1.64)
Growth(t-1)#FFF				-0.004
				(-0.93)
Leverage(t-1)#FFF				-0.016
				(-0.77)
NWC(t-1)#FFF				-0.001
				(-0.03)
Investments(t-1)#FFF				-0.022
				(-1.05)
Dividend Dummy(t-1)#FFF				-0.003
				(-0.75)
Cash Flow(t-1)#FFF				0.014
				(0.71)
Cash Flow Volatility(t-1)#FFF				0.046*
				(1.97)
Inflation(t-1)#FFF				-0.103
				(-0.81)
GDP Growth(t-1)#FFF				0.017
				(0.39)
ln(GDP p.c.)(t-1)#FFF				-0.004
				(-0.17)
Controls		YES	YES	YES
Firm Fixed Effects		YES	YES	YES
Industry-Year Fixed Effects		YES	YES	YES
Country Specific Year Trend		YES	YES	YES
Clustered Standard Errors		YES	YES	YES
Observations		28,113	15,185	15,185
R^2_{adj}		0.058	0.065	0.067

Table 14.
Sources of cash holding increases

This table presents the results of OLS regressions of mechanisms behind the increases in cash holdings in family firms, compared to non-family firms. The analyses are conducted using interaction terms between labor market regulations and family firms (LMR#FFF). The dependent variables are Cash Flow from Financing divided by Total Sales (t-1) (Column 1) and Cash Flow from Investment Activities divided by Total Sales (t-1) (column 2) as dependent variables. Representing the main ingredients of Cash Flow from Financing this table further shows the dependent variables Long Term Debt Issuance divided by Total Assets (t-1) (Column 3) and Dividend Payout divided by EBIT (t-1) (Column 4). All variables are defined in Table 15. All independent variables except LMR, FFF, and Other Ultimate Owner are lagged by one period. All regression specifications include firm fixed effects, industry-year fixed effects, and country specific year trends. The t-Statistics in parentheses are based on robust standard errors, clustered at the country level. *, **, *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variable	CFF	CFI	Debt Issuance	Dividends
	(1)	(2)	(3)	(4)
LMR	-0.034	-0.005	-0.021	0.008**
	(-1.34)	(-0.53)	(-1.10)	(2.17)
LMR#FFF	0.059**	0.002	0.010**	-0.016**
	(2.17)	(0.22)	(2.27)	(-2.77)
FFF	-0.376*	-0.034	-0.021	0.057**
	(-1.81)	(-0.59)	(-0.88)	(2.72)
$Size_{(t-1)}$	-0.127***	-0.000	-0.016**	0.035***
	(-3.31)	(-0.00)	(-2.80)	(7.92)
$Growth_{(t-1)}$	0.065***	0.020***	0.014	0.004**
	(4.18)	(3.44)	(1.48)	(2.79)
$Tangibility_{(t-1)}$	-0.577*	-0.325	0.054**	-0.011
	(-1.89)	(-1.41)	(2.15)	(-0.46)
$NWC_{(t-1)}$	0.033	0.187**	-0.151***	0.155***
	(0.21)	(2.33)	(-3.19)	(4.21)
$Cash_{(t-1)}$	0.235	0.962***	-0.176**	0.230***
	(0.62)	(3.66)	(-2.70)	(5.19)
Other Ultimate Owner	0.042	0.004	0.028	-0.000
	(1.61)	(0.44)	(1.40)	(-0.03)
$Inflation_{(t-1)}$	-2.044***	-0.750**	0.530	-0.568**
	(-2.96)	(-2.46)	(1.31)	(-2.90)
$GDP\ Growth_{(t-1)}$	-0.257	-0.163	0.092	0.671***
	(-0.63)	(-1.34)	(0.47)	(5.36)
$ln(GDP\ p.c.)_{(t-1)}$	1.539**	0.322**	0.069	-0.388***
	(2.61)	(2.52)	(0.47)	(-3.47)
Observations	27,856	27,918	24,320	26,628
R^2_{adj}	0.051	0.084	0.027	0.063

Table 15.
Definition of variables
This table presents variable definitions on a firm level (Panel A), country level (Panel B) and for additional variables (Panel C).

Variables	Definition
Panel A: Firm level variables	
Family Firm Dummy (FFF)	An indicator variable that equals one if an individual or a family owns at least 25% of a firm's voting rights and is related by blood or marriage to the founder of the company.
Other Ultimate Owner	An indicator variable that equals one if a global ultimate owner owns at least 25% of a firm's voting rights but is not classified as founding family firm.
Cash	Cash and short-term investments divided by the book value of total assets.
CashToNetAssets	Cash and short-term investments divided by the book value of total assets net of cash and short-term investments.
Ln(CashToNetAssets)	The natural logarithm of one plus the ratio of CashToNetAssets.
$Cash^{Net\ of\ Debt}$	Cash and short-term investments net of long-term debt divided by the book value of total assets.
Size	The natural logarithm of the book value of total assets.
Growth	The market-to-book ratio, defined as the book value of total assets minus the book value of equity plus the market value of equity, divided by the book value of total assets.
Leverage	Book value of total debt divided by the book value of total assets.
NWC	Working capital net of cash divided by the book value of total assets.
Investment	The sum of capital expenditures, acquisitions, and R&D expenditures divided by the book value of total assets.
Dividends	An indicator variable that equals one if a firm pays cash dividends in a particular year, and zero otherwise.
Cash Flow	Earnings after interests, dividends, and taxes but before depreciation divided by the book value of total assets.
Cash Flow Volatility	The standard deviation of industry cash flow calculated as follows: the firm–year standard deviation of cash flow for the previous five years (minimum three years). Industry cash flow volatility is then calculated as the average of the firm cash flow standard deviations for each country-industry in each year, classified by 48 Fama-French industries.
Panel B: Country level controls	
LMR	The arithmetic mean of the ratings of four sub indicators of the Economic Freedom of the World (EFW) index by the Fraser Institute: hiring regulations and minimum wages, hiring and firing regulations, centralized collective bargaining, and mandated cost of worker dismissal. The indicators are normalized to range from 0 to 10. The index is defined as ten minus the aggregate index.
ΔLMR^{LC}	A continuous variable that equals to the changes in LMR if the change is greater than the mean of absolute LMR changes in the sample (0.2 units), and zero otherwise.
$LMR^{LC\text{-}I}$	A categorical variable that is based on changes in LMR that are greater than the mean of absolute LMR changes in the sample (0.2 units). The variable is defined recursively starting in 2007 (sample beginning) and distinguish between changes that increased (+1) and those that decreased (-1) employment protection.
Inflation	The annual inflation rate.
GDP Growth	The real annual growth rate in gross domestic product.
ln(GDP pc.)	The natural logarithm of gross domestic product in constant 2010 U.S. dollars divided by total population.
Panel C: Additional variables	
Labor intensive firms	An indicator variable that equals one if a firm's labor intensity is above the median of the labor intensity in the affiliate industry (48-Fama French Industry Classification) in a particular year, and zero otherwise. The labor intensity for each firm is calculated as the number of employees divided by total assets.

Domestic Firms	An indicator variable that equals one if a firm does not report any foreign assets in the previous three years. Ratio of local assets is computed as total assets minus international assets divided by total assets.
Sales Volatility	The firm–year standard deviation of sales to total assets calculated for the previous five years. In case that fewer than five years of lagged data are available, the standard deviation is calculated over all available years, but is set to missing if fewer than 3 years are available.
Cash Flow Volatility	The firm–year standard deviation of cash flow to total assets calculated for the previous five years. In case that fewer than five years of lagged data are available, the standard deviation is calculated over all available years, but is set to missing if fewer than 3 years are available.
Non-Entrepreneurial FFF	An indicator equal to one if the family firm is in the second-or-higher generation, and zero otherwise.
Inheritance Law Permissiveness	The average of five indicators of the permissiveness of inherence law that differ depending on the surviving of spouse and the total number of children (Ellul et al., 2010)
Gini Coefficient	Gini Coefficient from OECD.
Corporate Tax	Corporate Tax rate from OECD.
Unionization	Natural logarithm of the trade union density rate from OECD.
Business Confidence	Yearly growth of the business confidence indicator from OECD.
Macro-Economic Uncertainty	One year ahead macroeconomic uncertainty index of Rossi & Sekhposyan (2015).
Crisis Dummy	An indicator variable that equals one for the years 2008 and 2009 and zero otherwise.
Age	Natural logarithm of (1+Age). Age is based on founding year, hand-collected or from Thomson Reuters
R&D-Intensity	An indicator variable that equals to one if industry-year median values for R&D expenses to sales from the previous year belong to the upper quartile and zero otherwise.
Intangible Assets	Intangible capital to sales from the previous year, adjusted for median industry values in a particular country-year.
Size-Dummy	An indicator variable equal to one for firms that are smaller (in terms of total assets) than the sample median and zero otherwise, following (Schmalz, 2016).
Age-Dummy	An indicator variable, based on founding year, hand-collected or from Thomson Reuters, equal to one for firms that are younger than 15 years (following Karpuz et al. (2020)) and zero otherwise.
Dividend Payer-Dummy	An indicator variable equal to one for firms that do not pay dividends in a particular year and zero otherwise.
Whited and Wu Index	Whited and Wu Index of Financial constraints following Whited & Wu (2006).
Kaplan and Zingales Index	Kaplan and Zingales Index of Financial constraints following Kaplan & Zingales (1997) and Lamont et al. (2001).
CFF	Net cash flow from financing activities to sales from the previous year.
CFI	Net cash flow from investing activities to sales from the previous year.
Debt Issuance	Cash inflows from the issuance of long-term debt to the total assets from previous year.
Dividends	Total cash dividends to operating profit of the previous period. The dividend ratio higher than one is replaced with one. Firm-observations with negative operating profit but positive cash dividends are excluded.