Frugality and Firms' Financial Flexibility: Evidence from Natural Disasters

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Abstract

Firms headquartered in frugal countries tend to use shorter maturity debt. We hypothesize that when financing conditions worsen, having a larger share of debt due sooner increases firms' need to readjust. We use natural disasters to identify periods when financing conditions worsen. We account for the economic impact of the disaster on firms' growth opportunities by estimating disaster-specific cumulative abnormal returns (DisasterCARs). Controlling for DisasterCARs, we find that firms in frugal and less frugal countries issue similarly the year before the disasters, but afterwards the affected firms in frugal countries raise debt of shorter maturity, smaller stock proceeds, attempt to tap non-local capital markets, and invest less, suggesting that frugality can reduce firms' financial flexibility.

Keywords: Debt Maturity, Frugality, Natural Disasters, Culture

JEL Classification: F3, G15, G3, G41, Z1

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Frugality plays an important cultural role for economic decisions.[1] In consumer behavior, frugality explains how individuals carefully use goods and manage their daily expenditures to achieve long-term financial goals (Lastovicka et al., 1999). In their review article of how culture affects economic outcomes, Guiso, Sapienza, and Zingales (2006; GSZ hereafter) provide compelling evidence that even after controlling for standard macroeconomic life-cycle variables, differences in frugality, defined as the tendency of a country's residents to encourage children to learn thriftiness and savings at home, can help to explain the differences in national savings rates. In a study of corporate managers, Anderson and Lillis (2011) find that frugal managers have a long-term orientation on profits and emphasize disciplined spending, resourcefulness in use and reuse, and deferred gratification. While these studies provide distinct insight into frugality, an important unanswered question is whether frugality affects firms' financial flexibility and ability to respond to financing shocks. This study attempts to fill this gap.

In this paper, we provide evidence that frugality can reduce firms' financial flexibility. We begin by illustrating that frugality is strongly associated with firms' debt maturity, as shown in Figure 1, which plots the median debt maturity and the average frugality for each of the forty-two countries in our sample from 1990 to 2013. To define frugality, we follow GSZ (2006) and use the World Value Survey (WVS) to measure the frugality of the country in which firms are headquartered. The strikingly negative cross-country correlation (-0.645) reveals that firms that are headquartered in more frugal countries tend to use shorter maturity debt, defined here as the ratio of a firm's long-term debt to the sum of long-term and short-term debt.[2]

We use the frugality measure in country-level regressions to establish that firms in more frugal countries have shorter debt maturity, but do not have significantly less leverage or hold more cash. Given

[1]In *The Wealth of Nations*, Adam Smith (1776) argued, "Every prodigal appears to be a public enemy, and every frugal [person] a public benefactor." At the heart of Smith's assertion was the insight that because people are prone to invest locally, the frugality of individuals within a society affects the capital supplied to markets.

[2]To provide context, because firms' debt maturity and leverage are highly correlated, many papers do not include them in the same regression. Over our sample period, the cross-country correlation between the median debt maturity and the median firm leverage, defined as the ratio of a firm's long-term debt to lagged total assets, is 0.669.

that shorter maturity debt leads to a greater likelihood of needing to readjust a firm's capital structure in any given year, we interpret the results as illustrative of firms in frugal countries facing reduced financial flexibility. Since many factors can drive financing outcomes, we test whether frugality leads firms to adopt different financing policies in response to disasters. We use natural disasters to identify local financing shocks. When disasters strike, external capital can grow costly. For example, in 1995, when a massive earthquake hit Kobe, Japan, the Nikkei fell by 75 percent the following day and had fully recovered a year later.[3] In addition to losses of human life and property, disasters also bring negative emotions and psychological trauma (Pelling, Ozerdem, Barakat, 2002; Edwards, 1998), that as the American Psychological Association notes, can be amplified by shared social connections and news media.[4] In this sense, disaster affected firms may face a temporary financing friction (Stein, 2003).

Almeida, Campello, Laranjeira, and Weisbenner (2012) have shown that shorter debt maturity affected firms' ability to respond to financing shocks during the Credit Crisis of 2007, and we show that the tendency of firms' in frugal countries to use short term debt affects their ability to respond to local financing shocks as well. We hypothesize that when financing conditions worsen, having a larger share of their debt due sooner increases firms' need to readjust.[5] We account for the economic impact of the disaster on firms' growth opportunities by estimating disaster-specific cumulative abnormal returns (DisasterCARs). Controlling for DisasterCARs, we find that frugal and less frugal issuers in our sample issue similarly the year before the disasters, but afterwards the affected firms in frugal countries raise debt of shorter maturity, smaller stock proceeds, and attempt to tap global capital markets, all behaviors that we interpret as consistent with firms facing reduced financial flexibility. Thus, we argue that frugality reduces financial flexibility.

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[3]La Monica, Paul, *CNNMoney*, March 16, 2011 (https://money.cnn.com/2011/03/16/news/international/thebuzz/index.htm)

[4]The American Psychological Association notes that shared social ties and news media can induce post-traumatic stress disorder, even for people who are not directly affected by an unexpected disaster. (http://www.apa.org/helpcenter/recovering-disasters.aspx).

[5]See, for example, the 2007–2009 Financial Crisis, as studied by Campello, et al. (2011), and Duchin, Ozbas, and Sensoy (2010), and many others.

The findings are new to the literature and raises the question of why do firms in frugal countries use shorter maturity debt. We believe that the negative relation could reflect investors' preference to be paid back sooner or managers taking some financing cards of the table, i.e. avoiding long-term debt. Since managers can cater to capital suppliers' preferences (see, for example, maturity-catering in Greenwood, Hanson, and Stein, 2015), we use the currency of firms' issuances to help determine whether the frugality of local investors or managers drives the financing behaviors that we document. Because non-US firms' issuances in USD are more attractive to non-local investors, we argue that the currency tests permit an additional level of identification in pinning down the economic channel through which frugality affects the corporate issuers in our sample.

We employ a framework similar to Bruno and Shin (2017), and test whether frugality drives affected firms outside of the United States to issue in USD at higher rates. We hypothesize that as financing conditions worsen, affected firms in frugal countries will attempt to access non-local investors by tapping global capital markets after the disasters. We find that they do. That is, affected firms in frugal countries issue bonds and stocks globally the year after the disasters, and not before, which we interpret as managers switching to non-local financing. The results suggest that the increased financing frictions are driven by local investors. The findings show that because capital markets are partially segmented, frugality can potentially amplify firms' financing frictions.

The currency results suggest that managers in frugal countries are not taking some financing cards off the table, but face financing choices that are limited locally. Because weaker contracting environments can also limit firms' financing choice, one might expect that differences in countries' contracting environments can explain differences frugality. We test this idea directly and regress frugality on different country-level proxies for contracting environments. We find that cross-country differences in frugality are not fully explained by differences in measures of countries' social trust and uncertainty avoidance (R-sq, 0.003), religious affiliations (R-sq, 0.388), legal origins (R-sq, 0.231), or shareholder and creditor

enforcements (R-sq of 0.025; see Internet Appendix Table A.1).[6] We interpret our results as illustrative of how frugality, an implicit social norm, can magnify firms' financing frictions, even when investor and creditor protections are comparable across countries.

All in all, our findings show how frugality can amplify publicly listed firms' financing frictions during disaster periods. The results are surprising, because as Myers (2001, 82) notes, "These companies have the broadest menu of financing choices and can adjust their capital structures at relatively low cost." So why might firms behave this way? We hypothesize that frugality reduces firms' ability to respond to financing shocks, but test a number of alternative explanations. First, we examine how firms in frugal countries invest in response to the disasters. Given that financing frictions can affect firms' investment decisions, our hypothesis predicts that firms in frugal countries reduce their investment activities as financing grows turbulent. Alternatively, the maturity matching hypothesis predicts that firms' maturity targets may be optimal, given how they invest. For example, if frugal mangers are more inclined to invest in assets in place versus growth options, financing the firm with short-term debt may be ideal (Myers, 1977; Hart and Moore, 1995). We show that in response to the disasters, firms in frugal countries reduce their total investment (the sum of capital expenditure and research development expense, relative to lagged total assets) and investment shares (the sum of capital expenditure and research development expense, relative to their sum plus cash and cash equivalents), but they increase their R&D shares (research and development expense, relative to the sum of capital expenditure and research development expense). We interpret the increased R&D shares as inconsistent with the maturity-matching hypothesis. Thus, we find the maturity-matching hypothesis to be an unlikely explanation for the results we document.

Second, we perform placebo tests to show that frugality does not randomly lead to firms engaging

[6]Alternatively, theories of gap-filling and government crowd-out impacting firms' maturity decisions (see, for example, Faulkender, 2005; Chernenko and Faulkender, 2011; Baker, Greenwood, and Wurlger, 2003) suggest that as market conditions change, the cross-country relation between corporate debt maturity and frugality would also change. But the cross-country correlation between the median debt maturity and frugality was roughly the same in the year 1995 (-0.761) as it was in the years 2000 (-0.807) and 2010 (-0.809), suggesting that the negative relation between frugality and firms' debt maturity is not driven by gap-filling or government crowd-out.

in the financing behaviors that we document in response to the disasters (i.e., raising more debt, issuing less equity, or reducing their maturity). Since country-level differences in frugality do not directly map into differences in countries' financial-contracting environments (as mentioned above), we interpret the placebo results as consistent with firms in frugal countries facing comparable agency conflicts (Jensen, 1986; Stulz, 1990) and rollover risks (Diamond, 1991). Additionally, we use the occurrence of a country's deadliest transportation disasters to identify alternative treatments. We show that many of the financing behaviors that we document occur in the alternative settings (i.e., affected firms in frugal countries raise larger debt proceeds, reduce their investment shares, and increase their R&D shares). Our transportation disasters data do not permit estimating DisasterCARs, so we interpret these results as illustrative of frugality reducing firms' financial flexibility in an alternative setting.

Last, firms in frugal countries may face reduced demand and growth prospects due to households' 'penny-pinching' behaviors. The essence of this argument, that frugality can reduce firms' growth prospects, can be found in Keynes (1936) and Mandeville (1714). We test this demand channel by comparing the DisasterCARs, sales growth, and future earnings growth of corporate issuers in frugal countries. We find that the association between frugality and the various measures are positive or not significant, which we interpret as evidence that corporate issuers in frugal countries are not facing reduced demand.

We add to a deep empirical literature that studies frugality (Knowles and Postlewaite, 2004; GSZ, 2003, 2006; Malmendier, Tate, and Yan, 2011; Schoar and Zuo, 2016; Cronqvist and Siegel, 2015). Through surveys and field interviews of CEOs and CFOs in Australia, Anderson and Lillis (2011) find strong parallels between corporate frugality and consumer frugality; as they note (2011, page 1364), "Through its focus on deferred gratification and waste avoidance, frugality is fundamentally linked to providing resources to fund real growth options, regardless of strategic orientation." We apply an alternative approach to studying frugality that associates the frugality of households (i.e., World Value Survey respondents) with the financing behaviors of firms from across many countries.

As a prosocial behavior, frugality is closely associated with self-reliance. For example, the frugal often emphasize the importance of "penny-pinching" (Garon, 2012) or curbing short-term expenditures to achieve idiosyncratic long-term goals (Lastovicka et al., 1999).[7] Anthropological research on community responses to disasters suggests that shared cultural values of self-reliance and resilience can lead to better disaster responses (Smith, 1996). Anecdotally, in their study of how residents of the Hakka community of Tung Shih, Taiwan, were able to recover from the deadly 1999 earthquake in which their township suffered the highest death toll, Jang and Wang (2009) note how residents identified the Hakka culture's emphasis on frugality and self-reliance as key factors that influenced their disaster recovery.

We contribute to the literature by showing how frugality, which is generally associated with communities having positive responses to disasters, can have negative effects on firms' capital raising needs when disasters strike. The idea that frugality can make bad times worse is also not new. Both Keynes (1936) and Mandeville (1714) argue that as frugal inclinations spread to the masses, in some cases, frugality can worsen economic downturns. While we arrive at similar implications, what is new in this paper, we argue, is the insight that, because capital markets are partially segmented, a shared cultural emphasis of frugality can potentially amplify firms' financing frictions.

We add to a significant body of literature that shows how differences in informal cultural and societal structures (i.e., cultural values and social norms) can have strong effects on economic behavior (see, for example, Stulz and Williamson, 2001; Zheng et al., 2012; Fan, Titman, and Twite, 2012). GSZ (2006) show that frugality helps to explain differences in actual national savings rates. Our work complements theirs and shows that, in addition to affecting how individuals save (GSZ, 2006), frugality strongly relates to firms' financial flexibility. Malmendier, Tate, and Yan (2011) show how different life experiences can be associated with managers' financing choices (see, for example, how "Great-Depression-Era birth-cohorts" avoid issuing equity or long-term debt). We find that firms in more frugal countries tap

[7]In *Thrift*, Andrew L. Yarrow (2014) notes that during mid-1920s, "Thrift proponents juxtaposed 'unnecessary' spending on luxuries and short-term pleasures with 'wise' spending on basic needs and goods serves that would make one's life better in the future."

global capital markets to issue bonds and stocks after the disasters, suggesting that in our setting, managers are not taking some financing cards off the table, but face financing choices that are limited locally.

We also contribute to the literature on corporate debt maturity. Maturity is one nonprice term that tends to both cluster within countries (see, for example, Gozzi et al., 2015; Fan, Titman, and Twite, 2012, among others) and that capital suppliers commonly use to limit their risk (Strahan, 1999; Qian and Strahan, 2007). Greenwood, Hanson, and Stein (2015) show how the US government's issuance behavior influences US corporate debt maturity. We add to the literature by identifying an economic setting that allows us to study incremental changes in firms' maturity structure across a large sample of countries.

We also contribute to a growing body of literature that studies the economics of natural disasters (Bloom and Davis, 2013; Stromberg, 2007; and Cavallo, Cavallo, and Rigobon, 2014). Natural disasters provide insightful experimental settings for a number of reasons. First, the economic impact of climate and weather-related events has been a growing concern among managers and investors.[8] Second, for fourteen countries in our sample, the cross-country correlation between residents' frugality and locals' stock market participation (as reported in Giannetti and Koskinen, 2010) is -0.494, suggesting that when disasters strike, the costs of raising external equity may be more acute in more frugal countries. Since a disaster being a tragic event for a country is distinct from a firm's capital-raising needs, we contribute to the literature by showing how disasters can spillover to firms' capital raising.

The remainder of the paper is as follows: section 2 describes the data and reports summary statistics. Section 3 outlines our empirical design. Section 4 presents the results. Section 5 details robustness checks. We conclude in Section 6.

Section 2. Data and Summary Statistics

[8]In a 2018 review of earnings-call transcripts of S&P 500 companies, one *Standard & Poor's Global Ratings* report notes that "in the past ten years . . . 'climate' and 'weather' combined were among the most frequently discussed topics among executives, even more common than 'Trump,' 'the dollar,' 'oil,' and 'recession.'" (https://www.spratings.com/documents/20184/4918240/The+Effects+of+Weather+Events+on+Corporate+Earnings+Are+Gathering+Force_Revised/6f654f4a-2be2-475f-a1cb-096f5b70201a)

We rely on five main sources of data: the World Values Survey (WVS) to measure frugality across countries; the Centre for Research on the Epidemiology of Disasters (CRED) to identify natural disasters; Worldscope and Datastream to measure accounting and return data; SDC to identify firm-level bond and stock issuance; and the World Bank to measure economic and financial development. In this section, we describe these data sources and provide summary characteristics by country and year, and for the full sample in Table 1, Panels A, B, and C, respectively. Table 2 documents the association between frugality and financing outcomes used in the analysis. Further details on all variables are provided in the data appendix.

Section 2.1 Frugality data

We follow GSZ (2006) to measure frugality across countries. We obtain responses to the WVS question A2: "Here is a list of qualities that children can be encouraged to learn at home. Which, if any, do you consider to be especially important?"[9] The survey allows respondents to choose from several responses; we code the response variable as "1" if the respondent lists as important "thrift, saving money, and things." As in GSZ (2006), we take $Frugality_J$, the country average, to measure frugality as the propensity for individuals within each country to encourage thrift and savings among children.

To construct our sample, we start with the fifty countries that, according to the S&P Global Fact Book, had the largest year-end stock market capitalization in the year 2000, roughly the midpoint of our sample period. Our final sample contains forty-two countries and includes: Argentina, Australia, Brazil, Bulgaria, Canada, Chile, China, Colombia, Cyprus, the Czech Republic, Egypt, Finland, France, Hungary, India, Indonesia, Israel, Italy, Japan, Malaysia, Mexico, the Netherlands, New Zealand, Norway, Pakistan, Peru, the Philippines, Poland, Romania, the Russian Federation, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, the United Kingdom, the United States, and Venezuela.

The cross-country average of $Frugality_J$ in our sample is 37.9 percent, meaning that for the average

[9]The World Value Surveys are conducted in five-year waves that begin in 1981 and conclude in 2014. The data are discussed in detail in GSZ (2003; 2006) and are publicly available at http://www.worldvaluessurvey.org/wvs.jsp.

country in our sample, approximately one in three of the people surveyed consider it particularly important to encourage thrift and savings among children. The propensity to encourage frugality varies widely, ranging from 59.8 percent in South Korea to 13.6 percent in Norway.

As discussed earlier, we may expect that differences in financial-contracting environments explain differences in frugality. To see if this is the case, Internet Appendix Table A1 reports ordinary least squares (OLS) regression results of $Frugality_j$, the country averages for frugality, on different country-level proxies of contracting environments. Model (1) includes trust (GSZ, 2006) and the Geert Hofstede Uncertainty Avoidance Index. Following Stulz and Williamson (2001), Model (2) consists of shares of religious affiliations in 1995 obtained from the World Religion Database of Religious Affiliations (as in GSZ, 2006). Model (3) contains indicator variables for a country's legal origin (as in La Porta et al., 2008), and Model (4) has the anti-self-dealing index (as reported in La Porta et al., 2006), creditor rights (as reported in Djankov et al., 2008), and the case-efficiency score (as in Djankov et al., 2006). All standard errors are robust to heteroscedasticity. The key finding from Internet Appendix Table A1 is that the R-sq of the models are low, ranging from 0.003 for trust and uncertainty avoidance to 0.388 for the shares of religious affiliations, suggesting that differences in financial contracting environments do not fully explain differences in frugality.

Section 2.2 Natural disasters data

We collect publicly available data on all natural disasters from January 1990 to December 2013 from the Emergency Events Database (EM-DAT) produced by the Centre for Research on Epidemiology of Disasters (CRED) at the Catholic University of Louvain, Belgium.[10] The EM-DAT identifies natural disasters by their approximate start date, location, and disaster type (i.e., droughts, earthquakes, fires, floods, mudslides, volcanoes, and so forth). The EM-DAT also includes detailed information on the direct

[10]The EM-DAT have been used widely within economics (for reviews of the economics of natural disasters, see Stromberg, 2007 and Cavallo and Noy, 2010). As Bloom and Davis (2013) discuss, the EM-DAT are provided by the CRED in an effort to produce standardized and comprehensive coverage of large-scale disasters; the data are available at http://www.emdat.be/advanced_search/index.html.

damages of each disaster (i.e., total deaths, total damages, and the estimated economic costs associated with each natural disaster). We use the total deaths and the approximate disaster start dates to identify the deadliest disaster events for each country-year. When disasters occur within the same month, we sum the deaths for the month and treat the event as one disaster event. We construct a panel of the largest disaster events that occurred each country-year, starting in 1990 and rolling through the end of the sample period. Using the disaster panel, we create $\text{Disaster}_{J,t}$, which takes a value of 1 during the month in which country *j* experiences its largest natural disasters to date. Across countries, there are 119 $\text{Disaster}_{J,t}$ events, ranging from none for Singapore to seven for New Zealand. The mortalities caused by the largest $\text{Disaster}_{J,t}$ events vary widely as well, ranging from zero deaths in Finland and Singapore to 165,708 in Indonesia. The total incidence of largest-to-date natural $\text{Disaster}_{J,t}$ events is highest in the baseline year, 1990 (17 events), and lowest in 2000 (zero events) and 2002 (zero events).

Section 2.3 Accounting, return, and earnings data

We collect annual accounting data in USD from the Worldscope database from 1990 to 2013. We exclude financial firms, identified by Worldscope as primary SIC codes starting with "6," and we require that total assets, price-to-book, and year-end stock market capitalization data be available the previous year. To minimize the effect of outliers, we winsorize all accounting variables at the 1 percent level. We consider the firm's country to be the country of its primary geographic segment as reported to Datastream. The final sample contains 442,554 firm-year observations. We label firm years in which firm *i* in country *j* experiences a $\text{Disaster}_{J,t}$ event as "treated" disaster years. Of these firm-year observations, 43,605 (or roughly one-tenth of the observations) are "treated" large-disaster years. The three largest countries in our sample (by firm-year observations) have the most "treated" large-disaster years (the United States, 12,915; Japan, 9,563; the United Kingdom, 5,401). For Cyprus, Egypt, Romania, and Singapore, "treated" large-disaster years equal zero; Singapore has no natural disasters, and, in the cases of Cyprus, Egypt, and Romania, the largest-disaster events predate the availability of the accounting data. As mentioned earlier, no countries in the sample experienced their largest disasters in the years 2000 and 2002; therefore, there

are no "treated" large disasters during those years.

Lastly, we also collect weekly stock returns in USD for each firm, country, and the world market portfolio from Datastream from 1990 to 2013. To measure the market-implied impact of a $Disaster_{J,t}$ event for firm *i* in country *j* in year *t*, we estimate $Disaster_{J,t}$ cumulative abnormal returns ($DisasterCARs_{i,j,t}$). Specifically, each calendar-year, we take weekly stock returns and estimate the following international market model:

$$R_{i,j,t} = a_i + B_{m,i}R_{j,t} + B_{w,i}R_{w,t} + \delta_{i,j,t}Disaster_{J,t} + e_{i,t} \quad \text{(Eq 1)}$$

where $R_{i,j,t}$ is the weekly return on firm *i*, while $R_{j,t}$ and $R_{w,t}$ are the weekly returns on the local and global market portfolios, respectively. To calculate $DisasterCARs_{i,j,t}$, we use $\delta_{i,j,t}$, the estimated coefficient of the $Disaster_{J,t}$ indicator. Since $Disaster_{J,t}$ only equals 1 during the month in which country *j* experiences its largest disaster to date, and 0 otherwise, $\delta_{i,j,t}$ produces DisasterCARs for each firm year in which a firm is in a "treated" country. Across the firms in the sample, the mean and median DisasterCARs are 0.130 percent and -0.013 percent, respectively. While the average DisastersCARs are positive, the median DisasterCARs are negative, indicating that abnormal stock returns are typically negative in response to the large disasters.[11]

Section 2.4 Bond and stock-issuance data

We collect new debt issuance and secondary stock offerings data from January 1990 to December 2013 from the SDC Platinum database provided by Thomson Reuters. For each country in the sample, we match issuances to the balance sheet data from Worldscope by the ultimate parent's CUSIP, SEDOL, and ISIN. We identify firms' issuances at the ultimate parent level to account for firms' potential use of offshore subsidiaries (see, for example, Bruno and Shin, 2017).

For the bond data, we use the SDC Platinum New Debt Issues database; the database identifies each debt issue's maturity date, issue date, proceeds, and currency of issuance (i.e., USD, local currency, and so forth). Using the database, we aggregate firms' total bond proceeds and calculate the value-weighted

[11]Many papers find that natural disasters can have positive effects on economic growth (see, for example, Albala-Betrand, 1993; Leiter et al., 2009; Skidmore and Toya, 2002), and many find evidence of the opposite (Raddatz, 2007; Noy, 2009; Hochrainer, 2009).

years to maturity of each calendar year to measure the quantity and maturity structure of each firms' new-debt-issuance year—that is, the calendar years in which firms issue new debt. For our sample, we are able to match 18,342 total new-debt-issuance years. We find that the value-weighted years-to-maturity of the debt issues, has a median value of 6.4 years.

The seasoned equity-offerings data are from the SDC Platinum All Public and Private Common Stock database. The database provides the filling date, issuance date, and the currency of each stock issue. For stock issuances, we repeat the previous steps outlined above. We have 27,017 total stock-issuance years matched to the firms in my sample.

Lastly, using the currency data of each firm's bond proceeds, we categorize the firm's bond-issuance year as being in USD if over 50 percent of the years' bond proceeds are raised in USD. We do the same for stock-issuance years.

Section 2.5 Economic and financial-development data

As measures of macroeconomic and financial development, we obtain real GDP growth and the ratio of each country's stock market capitalization to GDP from the World Bank. The GDP growth data are in USD year 2005 constant-dollars.

Section 2.6 What financing policies are associated with frugality?

In this section, we use regression analysis to document the association between frugality and firms' financial flexibility. The regressions are not causal; rather, they are intended to be illustrative. To examine how financial flexibility is associated with frugality, we estimate various forms of the following OLS panel regressions:

$$DebtMaturity_{i,j,k,t} = a + B_1 * \text{Frugality}_J + X_{i,j,t} + c_k + d_t + e_{j,t} \quad \text{(Eq 2)}$$

where the dependent variable is debt maturity of firm *i* of country *j* in industry *k* in year *t*; here, Frugality_J is previously defined. $X_{i,j,t}$ denotes time-varying control variables that we specify below. For the cross sectional regressions, we average the financing policies and control variables at the country level, regress the cross-country averages on frugality, and adjust standard errors for heteroscedasticity. In the panel-

regression models, we cluster standard errors by country-year, and include industry, and year-fixed effects denoted by the variables c, and d, respectively. The industry index, *k*, identifies the thirty-eight industries that reflect the Global Industry Classification Standard (GICS) used by Datastream.

To account for time-varying firm and market-level characteristics that can also affect firms' financing behavior, we include the following control variables: $Q_{i,j,t-1}$, $Cashflow_{i,j,t-1}$, the natural log of firms' total assets in USD millions ($lnTA_{i,j,t-1}$), $PPE_{i,j,t-1}$, the natural log of firms' age ($lnFirmAge_{i,j,t}$), $Leverage_{i,j,t-1}$, $GdpGrowth_{j,t-1}$, and $MktCapGdp_{j,t-1}$, all of which are lagged by one year to reduce endogeneity and are defined in the data appendix. The controls are intended to reflect a robust set of variables that have been shown to impact firms' financing activities (see Parsons and Titman, 2008).

Table 2 reports the regression results. The dependent variables are firms' debt maturity, leverage, and cash holdings. Each column labels the financing variable of interest; columns report results for country-average (Column 1 through 3) and panel regressions with industry and year fixed effects (Column 4 through 6). There are two results of note. First, in the country-average regressions, the estimated coefficient on $Frugality_J$ is significantly negative in the debt maturity equation (Column 1), and not significantly associated with the leverage and cash holding dependent variables (Columns 2, 3). As discussed in the introduction, the results show that firms in frugal countries use shorter maturity debt (Column 1), but maintain comparable leverage and cash holdings (Columns 2, 3). Thus, firms in frugal countries will face a greater likelihood of needing to readjust their capital structure in any given year. Second, in the panel regressions, the estimated coefficient on $Frugality_J$ is significantly negative in the debt maturity and leverage equations (Columns 4, 5), and neither economically nor statistically distinguishable from zero when we examine firms' cash holdings (Column 6). The findings reiterate that firms in frugal countries are using proportionately less long-term debt, both relative to short-term debt and relative to total assets, and not holding higher levels of cash. Taken together, we interpret the regression analysis as illustrative of firms in frugal countries facing reduced financial flexibility. To determine whether frugality reduces firms' financial flexibility, we next examine whether frugality affects firms' ability to respond to financing shocks.

Section 3. Empirical Design

The main goal of this paper is to explore whether frugality's affects corporate financing frictions. Our hypothesis is that through their reliance on short-term debt, firms in frugal countries face limited financial flexibility and that these effects are more apparent during disaster years. As detailed in the previous section, we document that firms in frugal countries tend to use shorter maturity debt and maintain comparable leverage and cash holdings. Having short-term debt that is maturing increases firms' need to obtain new funding on a yearly basis. Shorter debt maturity, combined with attempting to raise more debt and not more equity, would potentially increase the likelihood that firms encounter the costs associated with financial distress; therefore, we associate raising debt of shorter maturity and smaller stock proceeds as behaviors that are consistent with frugality reducing firms' financial flexibility during disaster periods.

The capital-raising dependent variables of interest are the natural log of firms' bond and stock proceeds and the value-weighted years-to-maturity of firms' new debt issues. Within this experimental framework, our hypothesis predicts that if frugality intensifies corporate financing frictions, firms in frugal countries will raise larger bond proceeds and smaller stock proceeds, and will issue new debt with a relatively shorter maturity structure during disaster years.

To test this hypothesis, we estimate various forms of the following OLS panel regressions:

$$ln(Bond\ Proceeds)_{i,j,k,t} = a + B_1 * Disaster_{J,t} * Frugality_J + B_2 * Disaster_{J,t} + B_3 * DisasterCAR_{i,j,t} + X_{i,j,t} + b_j + c_k + d_t + e_{j,t} \quad \text{(Eq 3)}$$

where the dependent variable is the natural log of the total proceeds of new debt issues of firm *i* of country *j* in industry *k* in year *t*; here, $Disaster_{J,t}$ identifies "treated" firm years; $Frugality_J$, $DisasterCAR_{i,j,t}$, and $X_{i,j,t}$ all previously defined. All the regression models include country, industry, and year-fixed effects denoted by the variables b, c, and d, respectively. The industry index, *k*, identifies the thirty-eight industries that reflect the Global Industry Classification Standard (GICS) used by Datastream. All standard errors are clustered by country-year.

The main coefficient of interest in Equation (3) is B_1, the interaction between $Frugality_J$, the frugality of country *j*, and $Disaster_{J,t}$, the occurrence of a large natural disaster striking country *j* in year *t*. Since the baseline regressions include country, industry, and year-fixed effects, B_1 can be interpreted as identifying whether "treated" issuers in frugal countries raise capital differently. Within our empirical specification, a positive (negative) sign on B_1 for *Bond Proceeds* would indicate that when large natural disasters occur, firms in frugal countries raise larger (smaller) bonds proceeds, all else equal.

Section 4. Empirical Findings

Section 4.1 Does frugality affect the quantity and maturity of firms' issuances?

In this section, we use disasters to quantify frugality's incremental effect on the quantity and maturity of firms' issuances. Table 3 reports the estimated coefficients for each equation. Each column labels the dependent variable of interest; the columns report baseline results (Columns 1, 4, 6), add the time-varying controls (2, 5, 8), and the pre- and post-$Disaster_{J,t}$ interactions terms into the regression models (Columns 3, 6, 9). All models contain country, industry, and year-fixed effects; all standard errors are clustered by country-year.

The table shows that when large natural disasters occur, corporate issuers in frugal countries raise larger amounts of debt and smaller amounts of equity, and issue shorter maturity bonds. First, the estimated coefficient for the $Disaster_{J,t}$*$Frugality_J$ interaction variable is significantly positive in all the bond-proceeds equations (Columns 1, 2, 3) and significantly negative in the stock-proceeds equations that include the time-varying controls (Columns 5, 6). The estimated coefficients in Columns (3, 6) imply that when a country experiences a large natural disaster, a one standard deviation increase in $Frugality_J$ (0.1161) is associated with firms in that country raising bond proceeds (1.3084) that are (1.3084)*(0.1161) = 15.2 percentage points greater and stock proceeds (-0.8483) that are (-0.8483)*(0.1161) = -9.9 percentage points smaller. Second, in each maturity equation, the estimated coefficients on the $Disaster_{J,t}$*$Frugality_J$ interaction variables are negative and significant (Columns 7, 8, 9), indicating that firms in frugal countries issue bonds

with a significantly shorter maturity during large-disaster years. In Column (9), the coefficient estimates imply that when large natural disasters strike, a one standard deviation increase in $Frugality_J$ leads to firms issuing bonds with maturity that is (-7.6789)*(0.1161) = -0.9 years shorter. [12]

Figures 2 and 3 plot the point estimates, the 95 percent confidence intervals of $Disaster_{J,t}$*$Frugality_J$, and the pre- and post-$Disaster_{J,t}$ interactions terms for the quantity and maturity equations estimated in Columns (3, 6) and (9), respectively. The plots show that for the quantity and maturity equations, the estimated coefficients on the pre-$Disaster_{J,t}$*$Frugality_J$ interaction terms are not distinguishable from zero (Columns 3, 6, 9), indicating that prior to the disasters, frugal and less frugal corporate issuers issue similarly. The findings suggest that frugality leads affected firms to issue debt with a shorter maturity structure and to raise less equity during the disasters periods, which we interpret as consistent with frugality reducing firms' financial flexibility. The results demonstrate how differences in frugality lead to differences in the quantity and maturity of the capital that firms raise, such that issuers in frugal countries face reduced financial flexibility.

Economically, these differences can be large. To provide context, we can compare what the estimates imply for the typical firm in our sample that is located in a country where the residents are least frugal, Norway ($Frugality_J$ = 13.6 percent), and the most, South Korea ($Frugality_J$ = 59.8 percent). For each country, we can multiply the median firms' bond and stock proceeds by residents' frugality, and then multiply that product by the coefficients estimated in Columns (3, 6). From Table 1, Panel A, we observe that for Norway, the median firms' bond and stock proceeds are US$140 million and US$23.6 million, respectively. If we tally the estimates for Norway, they imply that during a large-disaster year, the typical firms' bond and stock proceeds would be US$24.9 million larger and US$-2.7 million smaller, respectively.

[12]One potential explanation for the maturity results might be that differences in governments' financing needs influence firms' maturity decisions (Greenwood, Hanson, and Stein, 2010). To address this concern, in untabulated results, we augment the maturity equation estimated in Column (9) with government debt to GDP ratios, inflation rates, and national-savings rates, all obtained from the World Bank. Within this reduced sample size, we remove the country fixed-effects from the model and find the significantly negative relation holds, suggesting differences in governments' financing needs do not entirely drive the maturity findings.

In South Korea, the median firms' bond and stock proceeds are US$78 million and US$9 million, respectively. Applying the same methodology to South Korea, the estimates correspond to the typical firms' bond and stock proceeds being US$61 million larger and US$-4.9 million smaller during a large-disaster year. For the maturity results, the point estimates in Column (9) imply that during a large-disaster year, if we were able to pick up a firm in Norway ($Frugality_J$ = 13.6 percent) and drop it in South Korea ($Frugality_J$ = 59.8 percent), its bonds would be due (-7.6789)*(0.598 – 0.136) = -3.5 years sooner. To place this in context, in our sample, the median value-weighted years-to-maturity is roughly 6.4 years. Since raising larger amounts of debt with a shorter maturity and smaller stock proceeds both reduce firms' financial flexibility, the findings demonstrate that firms in frugal countries can face significant reductions in their financial flexibility during disasters years.

Collectively, the quantity and maturity findings in Table 3 suggest that during large-disaster years, firms in frugal countries raise larger amounts of debt and smaller amounts of equity, and that on an incremental basis, the negative relation between corporate maturity and frugality worsens during these periods. We interpret the findings as consistent with frugality reducing firms' financial flexibility during large-disaster periods.

Section 4.2 Does frugality drive firms to issue globally?

Next, we test whether frugality leads firms to raise capital globally in response to disaster events. As mentioned earlier, the main idea is that when firms face local financing shocks, we would expect to observe that they attempt to tap capital markets globally. One manner in which firms can raise capital globally is by choosing to issue securities that are denominated in USD, instead of in their local currency. Within this context, our hypothesis predicts that when large natural disasters occur, firms in frugal countries will be more likely to sell USD-denominated securities, because they are more constrained at home.

To test this hypothesis, we implement a framework similar to Bruno and Shin (2017). We use a multinomial logit to test whether frugality increase the likelihood that the majority of non-US firms' bond or stock proceeds in disaster "treated" countries are in USD:

$$None|\ LCL|\ USD_{i,j,k,t} = a + B_1*\text{Disaster}_{J,t}*\text{Frugality}_J + B_2*\text{Disaster}_{J,t} + B_3*\text{DisasterCAR}_{i,j,t} \quad \text{(Eq 4)}$$
$$+X_{i,j,t} + b_j + c_k + d_t + e_{j,t}$$

where the dependent variable Issuance-Currency$_{i,j,k,t}$ categorizes the issuance year of firm *i* of country *j* in industry *k* in year *t* into one of the three outcomes: (1) *LCL* (*Local Currency*) when the majority of firm *i*'s issuance proceeds are not in USD, (2) *USD* when the majority of firm *i*'s issuance proceeds are in USD, or (3) *None* when firm *i* issues no securities (the base case). All the other variables in Equation (4) are previously defined.

Table 4 reports the multinomial logit regression results. Panel A contains the currency results for firms' bond issuances; Panel B contains the currency results for firms' stocks issuances. As before, each column labels the corresponding issuance outcome—that is, *LCL* (outcome 1) or *USD* (outcome 2), relative to no issuance (the base case). Models (1, 2, 3) report baseline results, results with time-varying controls, and the pre- and post-Disaster$_{J,t}$ indicator variables, respectively. All models contain country, industry, and year-fixed effects, and all standard errors are clustered by country-year.

The key takeaway from Table 4 is that in the *USD* equations, the estimated coefficient on the post-Disaster$_{J,t}$*Frugality$_J$ interaction terms are positive and significant for firms' bond and stock issuances (Panel A, Model 3; Panel B, Model 3). The results suggest that when a country experiences a large natural disaster, frugality is strongly associated with the likelihood that non-US firms issue USD-denominated bonds and stocks in the year after the large disaster occurs. Strikingly, the table shows that for the *USD* columns, the estimated coefficients on the pre-Disaster$_{J,t}$*Frugality$_J$ interaction terms are not distinguishable from zero in both panels (Panel A, Model 3; Panel B, Model 3). The result shows that non-US firms in frugal countries are more likely to raise USD-denominated bonds and stocks after the disasters, and not before.[13] We interpret the currency issuance results as indicating that managers in frugal countries

[13]One potential explanation for the currency-timing results might be that differences in inflation rates can also influence firms' currency choices (Bruno and Shin, 2017). To examine this concern, in untabulated results, we augment Model (3) of Panels A and B with inflation rates obtained from the World Bank. Within the reduced sample, we estimate individual logit regressions and find that the significantly positive relation holds for both equations, suggesting that the documented patterns in firms' currency-timing are not totally driven by differences in inflation

attempt to access non-local financing after local financing conditions worsen.

One might be tempted to conclude that affected firms in frugal countries are therefore less financially constrained, because after the disasters they issue globally. We note, that while affected firms presumably had access to global capital markets before the disasters, we find that they are only likely to issue USD-denominated securities after the disasters occur and not before. While firms can access global capital markets for many reasons, we interpret the distinct pattern in the timing of firms' USD-denominated issuances as illustrating that as firms in frugal countries face financing conditions that are constrained locally, those that are able issue internationally, do such.

To quantify the economic magnitude of frugality on non-US firms' currency choices during the disaster periods, we can apply the non-US sample statistics provided in Table 1, Panel C, to the point estimates in the table. For the bond equations, the coefficient estimates in the *USD Bond* column of Panel A, Model (3) imply that, in the year following a large natural disaster, a one standard deviation increase in Frugality_{J} (0.1202) increases the log of the odds ratio that firms issue USD bonds (2.7205) by (2.7205)*(0.1202) = 32.7 percentage points. To provide perspective, the *USD Bond* column's coefficient estimates imply that one standard deviation increases in $\text{Leverage}_{i,j,t-1}$ (0.1835) and $\text{GdpGrowth}_{j,t-1}$ (0.0352) are associated with an increase in the log of the odds ratio that a non-US firm issues USD-denominated bonds of (1.4039)*(0.1835) = 25.8 and (6.7980)*(0.0352) = 23.9 percentage points, respectively.

The coefficient estimates in the *USD SEO* column of Panel B, Model (3) show an identical pattern in the timing of the USD-denominated stocks issuances made by non-US firms in frugal countries. The significantly positive estimated coefficient on the $\text{post-Disaster}_{J,t}$*$\text{Frugality}_{J}$ interaction term implies that a one standard deviation increase in Frugality_{J} (0.1202) is associated with an increase in the log of the odds ratio that firms issue USD stocks (5.1454) by (5.1454)*(0.1202) = 61.9 percentage points; the column's coefficient estimates imply that a one standard deviation increase in $\text{Leverage}_{i,j,t-1}$ (0.1835) and $\text{GdpGrowth}_{j,t-1}$ (0.0352) would correspond with an increase in the log of the odds ratio that a non-US firm

rates.

issues USD-denominated stocks of (0.6499)*(0.1835) = 11.9 and (6.2770)*(0.0352) = 22.1 percentage points, respectively.

Also of note, the *USD SEO* columns are the only stock issuance equations in which we find that the estimated coefficients on the DisasterCARs are positive and significant (Panel B, Models 1, 2, 3), suggesting that non-US firms with relatively higher disaster-specific CARS are more likely to raise equity globally and not locally. We interpret the stock issuance results as suggestive that in response to the disasters, managers in frugal countries are not taking financing cards off the table, but they may face financial choices that are limited by the frugality of local investors.

Altogether, the findings in Table 4 highlight the effect of frugality on firms' capital raising. While firms can issue USD-denominated securities for many reasons, the distinct pattern in the timing of how non-US firms are more likely to issue USD-denominated bonds and stocks in the year after a large natural disaster occurs, and not the year before, support the hypothesis that frugality can intensify firms' financing frictions when natural disasters occur.

Section 4.3 Alternative Hypothesis: Are firms maturity matching?

The approach in the previous sections studied frugality's impact on firms' ability to readjust to financing shocks (i.e., coefficient estimates on $Disaster_{J,t}$*$Frugality_J$ capture the incremental impact of frugality on firms' capital-raising decisions in response to deadly disasters). We documented that firms in frugal countries have shorter debt maturity, and showed that they issue relatively shorter maturity debt when deadly disasters strike. In this section, we test whether our documented financing behaviors are consistent with firms maturity matching (Myers, 1977; Hart and Moore, 1995). Maturity matching predicts that firms' debt maturity coincides with their investment in growth opportunities versus assets in place. For example, if firms in frugal countries are more inclined to invest in assets in place, then financing the firm with short-term debt may be ideal (Myers, 1977; Hart and Moore, 1995).

Since firms in frugal countries use relatively more short-term debt, to the extent that firms would match the maturity of their investments and debt, under the maturity-matching hypothesis we would expect

to observe managers shift resources from growth opportunities to assets in place. We test this hypothesis by comparing firms' investment policies around deadly disasters. The investment policies include: firms' total investment, investment share, and R&D share, all previously defined. We include firms' total investment share, because firms can save by reallocating from investment to cash and cash equivalents (Bernanke, 1983; McDonald and Siegel, 1986; Bloom, Bond, and Van Reen, 2007). In this regard, maturity-matching predicts that firms in frugal countries would reduce their total investment, total investment shares, and R&D shares. Our hypothesis also predicts that firms would reduce their total investment and investment shares, but it does not have a clear prediction for firms' R&D shares.

Table 5 presents OLS panel regressions results that test the hypotheses. The dependent variables are firms' total investment, investment share, and R&D share. The regression models replace the country and industry-fixed effects in Equation (3) with firm-fixed effects. In this empirical specification, the identification comes from variation *within* firms' investment behaviors—that is, coefficient estimates on $\text{Disaster}_{J,t}$*Frugality_{J} capture how firms in frugal countries invest differently when large disasters occur. We note that our results remain quantitatively and qualitatively comparable if we use the country and industry-fixed effects as in our previous regressions. As before, each column labels the dependent variable of interest; the columns report baseline results (Columns 1, 4, 6), time-varying controls (Columns 2, 5, 8), and the pre- and post-$\text{Disaster}_{J,t}$ interaction terms (Columns 3, 6, 9). All the regression models include firm and year-fixed effects and cluster standard errors by country-year.

The table shows that firms in frugal countries tend to reduce their total investment and investment share and increase their R&D share at higher rates when large natural disasters strike. In every equation, the estimated coefficients on the $\text{Disaster}_{J,t}$*Frugality_{J} interaction terms have their predicted signs and are economically significant. First, the coefficient estimates in Columns (3) suggest that during disaster years, a one standard deviation increase in Frugality_{J} (0.1161) leads to firms reducing their total investment by (-0.0707)*(0.1161) = -0.8 percentage points that year, and (-0.0382)*(0.1161) = -0.4 percentage points the year following. Second, the point estimates in Column (6) imply that an equal increase in frugality would

lead to firms reducing their investment share by (-0.2543)*(0.1161) = -3.0 percentage points during the disaster year, and by (-0.1751)*(0.1161) = -2.0 percentage points the year after. The investment reductions are large when compared to the median total investment rate and investment share for the firms in our sample, which is 3.4 percent and 28.4 percent, respectively. The results suggest that differences in frugality leads to firms' adopting reduced investment policies during large disaster periods, and support the shared prediction of both our hypothesis and the maturity-matching hypothesis.

Noticeably, the R&D share equations in Columns (7, 8, 9) show that while frugality is associated with firms cutting their total investment during disaster years, firms in more frugal countries invest in RDX relative to CAPEX at much higher rates during these periods. The estimated coefficients on both the pre-$Disaster_{J,t}$*$Frugality_J$ and post-$Disaster_{J,t}$*$Frugality_J$ interactions terms in Column (9) are significantly positive, indicating that firms in frugal countries allocated larger shares of their investment capital to R&D in the year before the disasters and continued to do so through the disaster periods.[14] The R&D share results do not support the maturity-matching hypothesis.

One potential concern with the investment results is that firms' financing choices are not completely random. To address this concern, in Table 5, Panel B, we match firms by their propensity to issue securities. The main idea is to generate two samples of firms with comparable capital-raising behavior and to conduct the experiment within this matched sample. Column (1) reports the logit regression results; the dependent variable takes a value of "1" if the firm issues bonds or stocks during year *t*. The independent variables include the time-varying controls and country, industry, and year-fixed effects. Using the full sample of data, we find that firms that are younger, with higher $Q_{j,t-1}$, lower $Cashflow_{i,j,t-1}$, larger $lnTA_{i,j,t-1}$, higher $PPE_{i,j,t-1}$, higher $Leverage_{i,j,t-1}$, and that are in countries with higher GDP growth are more likely to issue securities. The control group is matched to the "treated" observations using the nearest-neighbor

[14]One concern with the R&D share might be the inconsistency with which CAPEX and RDX are reported across countries. To address this concern, in untabulated results, we restrict the sample to firms that report positive CAPEX and RDX this year and the year prior; within this sample, the R&D share results hold, suggesting that the inconsistency of CAPEX and RDX reporting does not fully drive the R&D share results.

matching with replacement, when the absolute difference in propensity scores between the matched observations is less than or equal to 0.01.

Among matched firms, we find strong evidence that frugality amplifies firms' financing frictions and that the firms in our sample are not maturity matching. Columns (2) through (10) of Panel B show that the findings of Panel A hold within the matched sample. The size and sign of the estimated coefficients on the $Disaster_{J,t}$*$Frugality_J$ interaction terms and the post-$Disaster_{J,t}$*$Frugality_J$ interaction terms are consistent with those in Panel A. In Columns (4, 7, 10) the coefficient estimates on the $Disaster_{J,t}$*$Frugality_J$ and the pre- and post-$Disaster_{J,t}$ interactions terms indicate that frugality is strongly associated with firms reducing their total investment and investment shares and increasing their R&D shares during large-disaster years, and continuing all three behaviors in the year that follows. Remarkably, none of the estimated coefficients on the pre-$Disaster_{J,t}$*$Frugality_J$ interaction terms are distinguishable from zero, suggesting that the firms in the matched sample invest similarly prior to the disaster events.

Panel C of Table 5 reports the results for the differences between the "treated" and control groups before and after matching. The table shows the importance of matching. Among matched firms, "treated" firms tend to exhibit lower DisasterCARs and $Cashflow_{i,j,t-1}$, higher $PPE_{i,j,t-1}$ and $ln(FimAge)_{i,j,t-1}$, and are from countries with slightly lower $Frugality_J$. Importantly, the economic significance of all these differences between the groups becomes much smaller after the matching. Moreover, the differences in $ln(TA)_{i,j,t-1}$, $Leverage_{i,j,t-1}$, GDP growth, market capitalization to GDP ratios, and $Disaster_{J,t}$ frequencies are not distinguishable between the "treated" and matched firms.

Overall, the investment findings bring to light how frugality can intensify firms' financing frictions when large disasters occur. The results suggest that when deadly disasters strike, firms in frugal countries reduce their total investment and investment shares, but increase their R&D shares, which we interpret as not supportive of the maturity-matching hypothesis.

Section 5. Robustness

Section 5.1 Placebo Tests

Table 6 reports placebo tests intended to examine whether firms in frugal countries raise capital and invest differently during random periods. The main idea is that if frugality generally leads firms to raise more debt, issue less equity, reduce debt maturity, and invest differently, then we would expect to observe the behaviors that we document in this paper during these random periods as well. If we do not find these financing behaviors in the placebo setting, it implies that the disasters identify periods when frugality amplifies corporate financing frictions.

To test this hypothesis, we use the EM-DAT to reassign the deadliest natural disasters across all country-years in the sample period. With the randomly assigned disasters, we estimate disaster-specific CARs and retest the capital-raising and investment results. Columns (1, 2, 3) examine issuance characteristics; the dependent variables are the natural log of firms' bond and stock proceeds and the value-weighted years-to-maturity of firms' new-debt issues; the equations repeat the issuance models estimated in Table 3, Columns (3, 6, 9). Columns (4, 5, 6) investigate firms' investment behaviors; the dependent variables are firms' total investment, investment share, and R & D share; the models correspond to the regressions estimated in Table 5, Panel A, Columns (3, 6, 9). As before, all the issuance regressions include country, industry, and year-fixed effects; the investment regressions include firm and year-fixed effects, and all standard errors are clustered by country-year.

The table shows that during the random periods, frugality does not intensify firms' financing frictions. Using the placebo treatments, we find no significant association between frugality and the quantity of the debt or equity that firms raise (Columns 1, 2) or the investment behaviors that firms adopt (Columns 4, 5, 6). Interestingly, we find a positive association between corporate maturity and residents' frugality during the placebo periods (Column 3), suggesting that firms in frugal countries issue debt with a longer maturity structure during these random periods. The results are consistent with our evidence that firms in more frugal and less frugal countries face comparable creditor and investor protections, and demonstrate that the financing and investing behaviors we document are in response to the large natural disasters.

On the whole, the placebo tests show that during random periods, frugality is not associated with firms raising more debt, issuing less equity, reducing their corporate maturity, and investing differently. The results suggest that the documented behaviors are in response to the large natural disasters, and support our hypothesis that the disasters identify periods when frugality amplifies corporate financing frictions.

Section 5.2 Alternative treatment tests

In Table 7, we use the EM-DAT to identify the deadliest transportation disasters as alternative "treated" large-disaster years. The main idea is to examine the effect of frugality on firms' capital raising and investment decisions during alternative disaster periods. Similar to before, we use the annual deaths due to transportation disasters that are provided by the EM-DAT. Starting in 1990, we define $\text{Transport}_{J,t}$, which takes a value of 1 during the years in which country *j* experiences its deadliest transportation disasters to date. Because the transportation-disaster data are at annual frequency, we do not estimate disaster-specific CARs. As before, all regressions include country, industry, or firm-fixed effects; all models include year-fixed effects, and all standard errors are clustered by country-year.

The table reports results for the quantity and maturity of firms' issuances (Columns 1, 2, 3) and investment behaviors (Columns 4, 5, 6). As before, the issuance models follow the specifications estimated in Table 3, Columns (3, 6, 9), respectively. Similarly, the investment models repeat the specifications estimated in Table 5, Panel A, Columns (3, 6, 9), respectively. The table shows that during the alternative "treated" large-disaster years, firms in frugal countries are significantly less likely to issue stocks and tend to raise larger debt proceeds. We find no association between frugality and the maturity of firms' issuances during the alternative disaster periods. For the investment results, the table shows that during the alternative "treated" large-disaster years, firms in frugal countries reduce their total investment and investment share and increase their R&D share at significantly higher rates. While the maturity results do not support our hypothesis, we interpret the increased bond proceeds, reduced investment shares, and increased R&D shares in response to the transportation disasters as illustrative of how frugality can intensify corporate financing frictions in an alternative disaster setting.

Section 5.3 The Demand Channel: Does frugality reduce the demand for firms' output?

One explanation for the results that we document might be that corporate issuers in frugal countries face lower growth prospects during the disaster periods. As discussed earlier, it seems reasonable to consider that residents' frugality might lower firms' growth prospects during large-disaster years. To test the demand-channel, we regress three different measures of issuing firms' growth prospects on the models used in Table 3. Specifically, we use DisasterCARs, sales growth, and we look ahead at firms' future earnings growth. We test this alternative hypothesis in Internet Appendix Table A.2. We estimate OLS panel regressions that include country, industry, and year fixed effects. We find that the coefficient estimate on the $Disaster_{J,t}$*$Frugality_J$ interaction variable are either significantly positive or indistinguishable from zero. We interpret the growth opportunities results as suggesting that, all else equal, in our sample, corporate issuers in frugal countries do not experience reduce growth prospects during the disaster periods.

Section 6. Conclusion

Using the country-level frugality measure of GSZ (2006), we documented that firms in frugal countries tend to have shorter corporate maturity. Almeida, Campello, Laranjeira, and Weisbenner (2012) have shown that shorter debt maturity affected firms' ability to respond to financing shocks during the Credit Crisis of 2007, and we showed that given the tendency to use short-term debt, firms in frugal countries find it difficult to respond to local financing shocks as well. Using large natural disasters to identify exogenous periods in which financing readjustment can be difficult, we found that frugality can affect how firms issue new debt, engage in secondary stock offerings, and invest. We showed that during large-disaster periods, as corporate issuers in frugal countries raised larger amounts of debt and smaller amounts of equity, the negative relation between frugality and debt maturity worsened on an incremental basis. We found that firms in frugal countries are more likely to attempt to access the global capital market the year after the large disasters occur, and not before. We interpret the global issuance results as consistent with firms in frugal countries switching to non-local financing when their local choices are limited.

We found strong evidence that frugality could have real effects on firms' investment decisions during disaster periods. We showed that while firms in frugal countries tend to cut their total investment at relatively higher rates when large disasters occur, they increase their R&D shares, which we interpret as evidence that the negative relation we document between frugality and debt maturity is not driven by maturity matching. We do not find that frugality randomly leads firms to raise shorter maturity debt, avoiding equity markets, and cutting investment. Lastly, in an alternative disaster setting, we found that frugality seemed to affect firms' capital raising and investment behaviors in a similar manner to the effects that we document. Altogether, the findings suggest that during large-disaster periods, as financing grows turbulent, frugality can intensify firms' financing frictions.

Data Appendix Table: Variable Definitions and Sources

Frugality$_J$. I follow Guiso, Sapienza, and Zingales (2006) and from the World Values Survey (WVS), I take the average tendency for individuals in each country to identify teaching children "thrift, saving money, and things" as important. (Source, WVS)

Disaster$_{J,t}$. Disaster identifies country-years in which a country experiences the largest natural disaster to date, starting in January of 1990 and rolling through the end of the sample period. (Source, Centre for Research on the Epidemiology of Disasters)

DisasterCAR$_{i,j,t}$. *DisasterCAR*$_{i,j,t}$ labels the cumulative abnormal return during the disaster-month for firm *i* in country *j* at time *t*. Each year, I estimate $R_{i,j,t} = a_i + B_{m,i}R_{j,t} + B_{w,i}R_{w,t} + \delta_{i,j,t}Disaster_{J,t} + e_{i,t}$, where $R_{i,j,t}$ is the weekly return on firm *i*, while $R_{j,t}$ and $R_{w,t}$ are the weekly returns on the local and global market portfolios, respectively. To calculate DisasterCARs, I use the estimated coefficient of the indicator, *Disaster*$_{J,t}$, which is equal to 1 during the month in which country *j* experiences its largest disaster to date, and 0 otherwise. All returns are in USD. (Source, Datastream)

New-Debt Issue$_{i,j,t}$. *New-Debt Issue* is the reported bond issuance-year matched at the ultimate-parent level to each firm in the sample. (Source, SDC Platinum Database)

Years-to-Maturity$_{i,j,t}$. *Years-to-Maturity* is the value-weighted years-to-maturity of the new debt issuance matched at the ultimate-parent level to each firm in the sample. Proceeds are in USD millions. (Source, SDC Platinum Database)

Seasoned Equity Offering$_{i,j,t}$ (*SEO).* SEO is the reported stock issuance-year matched at the ultimate-parent level to each firm in the sample. (Source, SDC Platinum Database)

$Q_{i,j,t-1}$. *Q* is defined as the ratio of total assets less book equity plus year-end stock market capitalization relative to the book value of total assets. (Sources, Worldscope and Datastream)

Cash$_{j,t-1}$. *Cash* is defined as cash and cash equivalents scaled by the lagged book value of total assets. (Source, Worldscope)

Cashflow$_{i,j,t-1}$. *Cashflow* is defined as earnings before interest, taxes, depreciation, and amortization scaled by the lagged book value of total assets. (Source, Worldscope)

lnTA$_{i,j,t-1}$. *lnTA* is the natural log of the lagged book value of total assets in USD millions. (Source, Worldscope)

PPE$_{i,j,t-1}$. *PPE* is defined as the ratio of property, plant, and equipment scaled by the lagged book value of total assets. (Source, Worldscope)

lnFirmAge$_{i,j,t}$. *lnFirmAge* is defined as the natural log of the difference between the firm's start date (Bdate) and year *t*. (Source, Datastream)

Leverage$_{i,j,t-1}$. *Leverage* is defined as the ratio of long-term debt scaled by the lagged book value of total assets. (Source, Worldscope)

DebtMaturity$_{i,j,t-1}$. *DebtMaturity* is defined as the ratio of long-term debt to the sum of long-term and short-term debt. (Source, Worldscope)

Investment$_{i,j,t}$. *Investment* is defined as the ratio of CAPEX and R&D expense scaled by the lagged book value of total assets. (Source, Worldscope)

InvestmentShare$_{i,j,t}$. *InvestmentShare* is defined as the ratio of CAPEX and R&D expense to the sum of CAPEX, R&D expense, and cash and cash equivalents. (Source, Worldscope)

$R\&DShare_{i,j,t}$. *R&D share* is defined as the ratio of R&D expense to the sum of CAPEX and R&D expense. (Source, Worldscope)

$GdpGrowth_{j,t-1}$. *GdpGrowth* labels the annual percentage growth rate of GDP using market prices based on constant local currency in 2005 US dollars. (Source, World Bank)

$MarketCapGdp_{j,t-1}$. *MarketCapGdp* labels the ratio of stock market capitalization to GDP. (Source, World Bank)

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Table 1. Summary Statistics and Characteristics by Country and Year

For each of the forty-two countries in the sample, we report country-level and firm-level summary statistics from 1990 to 2013. Panel A reports summary statistics by country; Panel B reports summary statistics by year; Panel C reports summary statistics across all countries and years. **Frugality** reports the country average to the World Value Survey question "Do you consider it important to encourage children to learn thrift and savings?" Following Guiso, Sapienza, and Zingales (2006), we code the variable as 1 if the respondent lists as important "Thrift, saving money, and things" and take the country's average response over the World Value Surveys. **Disaster**$_{J,t}$ identifies country-years in which a country experiences the largest natural disaster to date, starting in January of 1990 and rolling through the end of the sample period. **Disaster Deaths** reports the total number of deaths that were recorded for the largest natural disaster for each country over the sample period. Natural disasters are obtained from the Centre for Research on the Epidemiology of Disasters. **Firm-years** reports the number of firm-years for which total assets are available.We exclude all financial firms, identified as primary SIC code, starting with "6." We require firms to have total assets, price-to-book, and year-end stock market capitalization data available the previous year. **Disaster "treated" years** reports the total number of firm-year observations for which each country experiences its largest natural disasters to date. **DisasterCAR**$_{i,j,t}$ labels the cumulative abnormal return for firm *i* in country *j* in year *t* during the month in which country *j* experiences its largest natural disasters to date. To measure the market response to the disaster events, each year we estimate the following international market model specification for each firm: $R_{i,j,t} = a_i + B_{m,i}R_{j,t} + B_{w,i}R_{w,t} + LargestDisaster_{j,t}\delta_{i,j,t} + e_{i,t}$, where $R_{i,j,t}$ is the weekly return on firm *i*, while $R_{j,t}$ and $R_{w,t}$ are the weekly returns on the local and global market portfolios, respectively. To calculate DisasterCARs, we use the estimated coefficient of the indicator, $\delta_{i,j,t}$, which is equal to 1 during the month in which the country *j* experiences its largest disaster each year, and 0 otherwise. This produces DisasterCARs for each year. I report the average and median DisasterCARs for the years in which a country experiences its largest natural disasters to date. All returns are in USD and downloaded via Datastream. **Debt Maturity** reports the time-series median of the firm-level ratio long-term debt to the sum of long- and short-term debt. **New Debt Issue** is the total number of bond issuance years matched to each firm in the sample. **Years-to-Maturity** reports the time-series median of the value-weighted years-to-maturity of the new debt issuance matched to each firm in the sample. **SEO** is the total number of seasoned equity issuance years matched to each firm in the sample. Bond and stock proceeds are measured in USD millions. Equity and bond issuance data are obtained from SDC and matched to financial data using the ultimate parents' primary issuers' CUSIP, SEDOL, and ISIN. All firm accounting data are in USD and downloaded via Worldscope. All accounting variables are Winsorized at the 1 percent and 99 percent levels.

Country Table 1 Panel A: Frugality, Natural Disasters, Firm Characteristics, and Capital Issuances by Country

Country$_J$	Frugality$_J$ (Mean)	Disaster$_J$ Events (Count)	Largest Disaster$_J$ (Date)	Largest Disaster$_J$ (Type)	Disaster Deaths (Max)	Firm-Years (Count)	Disaster-Treated-Years (Count)	Disaster CARs (%) (Mean)	Disaster CARs (%) (P50)	Debt Maturity (P50)	New Debt Proceeds (P50)	Years-to-Maturity (P50)	SEO Proceeds (P50)
Argentina	0.268	3	04/2013	Flood	52	1,228	79	-0.286	-0.081	0.541	100	4.3	86
Australia	0.243	3	01/2009	Heat wave	347	20,670	2,043	-0.704	-0.846	0.674	300	5.6	5
Brazil	0.284	5	01/2011	Flood	900	768	164	0.422	0.240	0.752	589	6.0	200
Bulgaria	0.427	2	01/2012	Cold wave	30	1,258	201	-0.744	-0.063	0.526	-	-	17
Canada	0.282	3	01/1998	Storm	28	15,031	581	0.201	0.168	0.707	291	8.4	7
Chile	0.330	2	02/2010	Earthquake	562	2,912	182	-0.093	-0.005	0.705	156	13.1	58
China	0.571	3	05/2008	Earthquake	87,476	19,748	1,753	2.716	2.520	0.098	128	3.7	98
Colombia	0.324	3	01/1999	Earthquake	1,186	545	40	-0.418	0.000	0.593	152	9.5	35
Cyprus	0.361	-	08/1998	Heat wave	52	776	0	-	-	0.497	731	3.0	13
Czech Republic	0.453	3	07/2003	Heat wave	418	461	77	-0.071	-0.263	0.482	208	6.0	294
Egypt	0.188	-	11/1994	Flood	600	964	0	-	-	0.410	193	6.5	20
Finland	0.280	2	01/1990	Storm	0	2,392	150	-0.421	-0.562	0.690	197	5.1	55
France	0.428	4	08/2003	Heat wave	19,490	15,536	2,266	-0.651	-0.862	0.577	755	6.3	52
Hungary	0.392	5	07/2007	Heat wave	500	621	136	0.689	-0.011	0.472	495	3.6	200
India	0.467	3	01/2001	Earthquake	20,005	19,014	721	-1.195	-1.273	0.554	59	5.0	17
Indonesia	0.490	3	12/2004	Earthquake	165,708	3,959	255	-0.957	0.000	0.442	81	5.0	49
Israel	0.198	2	12/2010	Forest Fire	44	4,148	486	-0.582	-0.332	0.582	150	7.8	18
Italy	0.394	4	07/2003	Heat wave	20,089	4,939	709	-0.467	-0.395	0.485	368	5.1	102
Japan	0.445	5	03/2011	Earthquake	19,846	65,403	9,563	0.599	0.246	0.430	152	5.0	17
Malaysia	0.557	2	12/1996	Storm	270	11,247	359	-0.961	-0.707	0.335	79	5.0	8
Mexico	0.348	2	09/1999	Flood	636	2,322	141	-0.135	0.009	0.734	194	5.9	131
Netherlands	0.454	3	07/2006	Heat wave	1,000	3,915	461	-0.742	-0.532	0.635	682	7.1	101
New Zealand	0.301	7	02/2011	Earthquake	181	1,834	332	0.153	0.019	0.834	120	7.0	11
Norway	0.136	5	11/2011	Storm	4	2,130	325	-0.866	-0.923	0.834	140	7.0	27
Pakistan	0.517	2	10/2005	Earthquake	73,338	1,982	85	0.987	0.558	0.374	24	7.0	17
Peru	0.191	2	08/2007	Earthquake	818	1,337	130	-0.021	-0.406	0.500	24	3.0	32
Philippines	0.390	3	11/2013	Storm	7,354	3,028	206	0.267	0.018	0.421	150	6.4	22
Poland	0.532	5	11/2009	Cold wave	298	3,118	425	-0.257	-0.342	0.407	336	6.0	19
Romania	0.506	-	07/1991	Flood	108	990	0	-	-	0.210	-	-	77
Russian Federation	0.545	1	06/2010	Heat wave	55,736	504	52	0.447	0.528	0.585	238	4.0	59
Singapore	0.428	-	-	None	0	8,097	0	-	-	0.327	95	4.1	8
South Africa	0.284	3	12/1995	Flash Flood	207	415	9	2.449	0.856	0.631	725	6.8	125
South Korea	0.598	2	071998	Flash Flood	403	17,778	377	0.488	0.076	0.310	78	3.0	11
Spain	0.228	4	08/2003	Heat wave	15,090	2,939	480	-0.529	-0.808	0.542	709	6.6	106
Sweden	0.391	4	12/2013	Storm	7	6,210	1,002	-0.288	-0.235	0.712	310	4.9	16
Switzerland	0.342	3	07/2003	Heat wave	1,039	4,899	582	0.134	-0.048	0.697	225	7.1	89
Taiwan	0.585	3	09/1999	Earthquake	2,264	17,152	425	0.730	0.658	0.274	92	5.1	11
Thailand	0.557	1	12/2004	Tsunami	8,345	7,397	363	0.111	0.091	0.331	88	4.1	10
Turkey	0.333	3	08/1999	Earthquake	17,127	3,754	108	-0.735	-0.696	0.278	223	5.1	31
United Kingdom	0.271	4	07/2013	Heat wave	760	36,390	5,401	-0.368	-0.245	0.621	645	7.4	11
United States	0.293	3	08/2005	Storm	1,833	124,349	12,915	0.023	-0.160	0.785	324	9.7	65
Venezuela	0.421	2	12/1999	Flash Flood	30,000	394	21	-1.081	-0.465	0.423	226	10.6	15
Total	0.379	119	12/2004	Earthquake	165,708	442,554	43,605	0.129	-0.013	0.529	232	6.4	18

Table 1 Panel B: Large Natural Disasters, Firm Characteristics, and Capital Issuances by Year

Year	Countries$_J$ (Count)	Disaster$_J$ Events (Count)	Firm-Years (Count)	Disaster-Treated-Years (Count)	Debt Maturity (P50)	New Debt Issues (Count)	New Debt Issues Proceeds (USD Millions) (P50)	New Debt Issues Proceeds (USD Millions) (Sum)	Years-to-Maturity (P50)	SEOs (Count)	SEOs Proceeds (USD Million) (P50)	SEOs Proceeds (USD Million) (Sum)
1990	27	17	6,021	3,263	0.639	277	160	75,134	5.0	71	54	5,600
1991	29	6	6,731	2,723	0.617	505	125	167,563	5.8	187	46	27,774
1992	30	7	7,636	567	0.607	523	130	174,006	7.0	197	41	17,578
1993	34	9	8,222	5,082	0.612	598	149	255,773	7.1	329	50	42,740
1994	35	5	9,045	465	0.625	535	102	188,429	5.0	346	50	32,581
1995	36	7	10,768	6,362	0.615	649	125	310,303	5.4	431	47	45,675
1996	37	9	11,943	912	0.611	797	138	375,814	5.2	554	50	68,485
1997	38	6	13,420	182	0.590	906	147	484,721	6.6	538	53	71,190
1998	39	5	14,358	840	0.601	885	194	677,579	7.0	427	63	89,656
1999	39	11	16,841	2,037	0.577	783	199	710,029	6.2	631	56	120,462
2000	39	0	18,299	0	0.542	733	200	728,014	5.0	790	52	161,736
2001	38	3	19,178	416	0.523	854	224	971,199	5.5	662	32	112,701
2002	39	0	20,083	0	0.523	765	225	772,886	5.8	839	19	92,037
2003	39	8	20,951	3,270	0.507	811	230	946,656	7.0	1,005	16	112,225
2004	38	2	20,876	558	0.516	739	224	861,210	7.1	1,277	20	134,703
2005	39	4	21,704	6,426	0.508	647	250	721,463	7.1	1,201	19	153,428
2006	41	2	24,286	171	0.501	674	300	977,855	7.3	1,434	18	154,394
2007	42	2	26,424	138	0.505	747	350	1,125,515	7.1	2,024	14	160,962
2008	42	1	27,390	1,544	0.487	714	298	760,491	5.4	1,603	9	116,724
2009	42	2	27,492	2,012	0.499	951	351	1,183,711	6.1	2,579	11	232,402
2010	41	4	26,979	724	0.500	955	335	1,171,282	7.0	2,659	10	252,948
2011	41	4	27,793	3,627	0.483	953	382	1,172,182	6.4	2,385	10	163,588
2012	42	1	28,132	187	0.464	1,128	399	1,409,229	7.0	2,261	10	184,113
2013	42	4	27,982	2,099	0.467	1,213	326	1,237,930	6.8	2,587	14	276,071
Total	909	119	442,554	43,605	0.529	18,342	232	17,500,000	6.4	27,017	18	2,829,771

Table 1 Panel C: Large Natural Disasters, Firm Characteristics, and Capital Issuances, Summary Statistics

Full Sample	Mean	P50	Sd	Count
$Frugality_J$	0.3821	0.3330	0.1161	442,554
$Disaster_{J,t}$	0.0985	0.0000	0.2980	442,554
$DisasterDeaths_{J,t}$	771	0.0000	6,955	405,260
$DisasterCAR_{i,j,t}$(%) ($Disaster_{J,t}$=1)	0.1291	-0.0131	4.6674	20,492
$New\ Debt\ Issues_{i,j,t}$	0.0414	0.0000	0.1993	442,529
$New\ Debt\ Proceeds_{i,j,t}$	953	232	7137	18,342
$LCL\ Debt\ Proceeds_{i,j,t}$ (Non-U.S.)	544	143	1716	9,199
$USD\ Debt\ Proceeds_{i,j,t}$ (Non-U.S.)	1310	299	3446	1,588
$Years\text{-}to\text{-}Maturity_{i,j,t}$	7.6969	6.4049	5.7699	18,342
$SEOs_{i,j,t}$	0.0700	0.0000	0.2551	442,554
$SEO\ Proceeds_{i,j,t}$	105	18	552	27,017
$LCL\ SEO\ Proceeds_{i,j,t}$ (Non-U.S.)	88	11	600	20,747
$USD\ SEO\ Proceeds_{i,j,t}$ (Non-U.S.)	223	81	449	510
$Debt\ Maturity_{i,j,t}$	0.5029	0.5289	0.3505	359,393
$Investment_{i,j,t}$	0.0760	0.0328	0.1280	442,554
$Investment\ share_{i,j,t}$	0.3537	0.2839	0.3057	385,054
$R\&D\ share_{i,j,t}$	0.1758	0.0000	0.3106	371,247
$Q_{i,j,t}$	1.9762	1.1511	3.2270	388,203
$Cashflow_{i,j,t}$	0.0229	0.0879	0.4210	366,520
$lnTA_{i,j,t}$	5.1805	5.1603	2.2864	388,211
$PPE_{i,j,t}$	0.2974	0.2481	0.2490	384,525
$lnFirmAge_{i,j,t}$	2.1400	2.3026	0.8892	442,510
$Leverage_{i,j,t}$	0.1499	0.0689	0.2101	388,381
$GdpGrowth_{j,t}$	0.0315	0.0274	0.0313	424,412
$MktCapGdp_{j,t}$	0.9505	0.9408	0.4319	424,356

Non-US Sample	Mean	P50	Sd	Count
$Frugality_J$	0.4168	0.4446	0.1202	318,205
$DisasterCAR_{i,j,t}$(%) ($Disaster_{J,t}$=1)	0.1728	0.0002	4.0069	14,532
$Debt\ Maturity_{i,j,t}$	0.4540	0.4595	0.3330	264,319
$Investment_{i,j,t}$	0.0661	0.0298	0.1116	318,205
$Investment\ share_{i,j,t}$	0.3236	0.2454	0.2973	289,637
$R\&D\ share_{i,j,t}$	0.1477	0.0000	0.2852	266,488
$Q_{i,j,t}$	1.6122	1.1006	2.1750	280,998
$Cashflow_{i,j,t}$	0.0651	0.0891	0.2685	266,308
$lnTA_{i,j,t}$	5.2170	5.1227	2.1416	281,002
$PPE_{i,j,t}$	0.3183	0.2832	0.2440	279,135
$lnFirmAge_{i,j,t}$	2.1526	2.3026	0.8600	318,198
$Leverage_{i,j,t}$	0.1328	0.0636	0.1835	281,010
$GdpGrowth_{j,t}$	0.0339	0.0281	0.0352	300,063
$MktCapGdp_{j,t}$	0.8627	0.7996	0.4489	300,007

Table 2. What financing policies are associated with frugality?

This table presents cross sectional and panel OLS regression results of the relation between firms' financing policies and frugality, defined as a country's propensity to encourage teaching "thrift, saving money, and things" to children, from 1990 to 2013. Using firm-level long term debt, short term debt, and cash and cash equivalent holdings (CASH), we estimate the following OLS cross sectional regression:

$$Capital\ Structure_{i,j,k,t} = a + \text{Frugality}_{J_{j,t}} + \text{X}_{i,j,t} + b_j + c_k + d_t + e_{j,t}$$

The dependent variable is the capital structure of firm *i* in country *j* in industry *k* in year *t*. Using stock and bond proceeds, we examine the following issuance characteristics: (1) debt maturity, the ratio of long-term debt to the sum of long and short-term debt, (2) leverage, the ratio of long-term debt to lagged total assets, and (3) cash, the ratio of CASH to lagged total assets. $Frugality_J$ is the average country response to the World Value Survey question "Do you consider it important to encourage children to learn thrift and savings?" as in Guiso, Sapienza, and Zingales (2006). Columns 1 through 3 report cross sectional regressions at the country level; Columns 4 through 6 panel regressions. For the cross sectional regressions, we average the financing policies and control variables at the country level, and regress the cross-country averages on frugality. All macroeconomic data are obtained from the World Bank. All firm-level accounting variables are in USD, downloaded via World Scope, and Winsorized at the 1 percent level. Cultural values are obtained from the World Values Survey. All panel regression models include country, industry, and year fixed effect; all panel models report standard errors clustered by country-year. The cross-sectional models report standard errors adjusted for heteroscedasticity. ***,**,* denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 2 OLS

	(1)	(2)	(3)	(4)	(5)	(6)
	Country-Averages			Full Sample		
Dependent Variable	Debt Maturity	Leverage	Cash	Debt Maturity	Leverage	Cash
$Frugality_J$	-0.2065***	-0.1089	-0.0653	-0.6887***	-0.2678***	-0.0001
	(0.062)	(0.087)	(0.054)	(0.035)	(0.020)	(0.017)
$Q_{i,j,t-1}$	0.0625***	0.0355	-0.0053	0.0004	0.0065***	0.0230***
	(0.021)	(0.021)	(0.017)	(0.001)	(0.000)	(0.001)
$Cashflow_{i,j,t-1}$	0.1889	0.1645	-0.5333***	0.0817***	-0.0265***	0.0201***
	(0.172)	(0.168)	(0.121)	(0.004)	(0.002)	(0.006)
$lnTA_{i,j,t-1}$	0.0016	0.0087	0.0074	0.0295***	0.0193***	-0.0061***
	(0.009)	(0.008)	(0.007)	(0.002)	(0.001)	(0.001)
$PPE_{i,j,t-1}$	0.3243***	-0.0943	-0.2296***	0.1152***	0.1857***	-0.2101***
	(0.093)	(0.080)	(0.069)	(0.005)	(0.006)	(0.005)
$lnFirmAge_{i,j,t}$	-0.0647**	-0.0065	-0.0118	-0.0005	-0.0155***	-0.0200***
	(0.025)	(0.023)	(0.022)	(0.002)	(0.001)	(0.001)
$Leverage_{i,j,t-1}$	1.2993***		-0.0636	0.5842***		-0.1373***
	(0.165)		(0.163)	(0.018)		(0.004)
$GdpGrowth_{j,t-1}$	-2.5808***	-0.5483	0.7864**	-0.4326***	0.1626	-0.3114***
	(0.480)	(0.479)	(0.337)	(0.161)	(0.114)	(0.093)
$MktCapGdp_{j,t-1}$	0.0509***	-0.0096	0.0167	0.0420***	0.0033	0.0210***
	(0.016)	(0.014)	(0.010)	(0.008)	(0.005)	(0.004)
Constant	0.3407***	0.1412	0.2722***	0.4529***	0.1054***	0.2813***
	(0.098)	(0.089)	(0.077)	(0.045)	(0.021)	(0.017)
Observations	40	40	40	285,798	325,267	305,739
R-squared	0.889	0.288	0.734	0.336	0.159	0.251
Cluster	None	None	None	Country-Year	Country-Year	Country-Year
Country Eff	N	N	N	N	N	N
Industry Eff	N	N	N	Y	Y	Y
Year Eff	N	N	N	Y	Y	Y

Table 3. Does frugality affect the quantity and maturity of firms' issuances?

This table presents results from OLS panel regressions of the relation between firms' bond proceeds, stock proceeds, and bond maturity around large natural disasters and frugality, defined as a country's propensity to encourage teaching "thrift, saving money, and things" to children, from 1990 to 2013. Using bond and stock issuances, we estimate the following OLS panel regression:

$$ln(Issuance\ Proceeds),\ Years\ to\ Maturity_{i,j,k,t} = a + \text{Frugality}_J * \text{Disaster}_{j,t} + \text{Disaster}_{j,t} + \text{DisasterCAR}_{i,j,t} + \text{X}_{i,j,t} + b_j + c_k + d_t + e_{j,t}$$

The dependent variable is the natural log of the total proceeds of new debt issues, the natural log of total proceeds of SEOs, and the value-weighted years to maturity of the new debt issues of firm *i* in country *j* in industry *k* in year *t*. Proceeds are in USD millions. As before, $Disaster_{j,t}$ identifies country-years in which a country experiences the largest natural disaster to date, starting in January of 1990 and rolling through the end of the sample period. $Frugality_J$ is the average country response to the World Value Survey question "Do you consider it important to encourage children to learn thrift and savings?" as in Guiso, Sapienza, and Zingales (2006). $\text{DisasterCAR}_{i,j,t}$ labels the cumulative abnormal return during the disaster-month for firm *i* in country *j* at time *t*. Columns 1 through 3 identify new-debt issue proceeds; Columns 4 through 6 and 7 through 8 do the same for SEO proceeds, and the value-weighted years to maturity of the new debt issues, respectively. All other variables are previously defined. As before, all issuance data are obtained from SDC. All macroeconomic data are obtained from the World Bank. All firm-level accounting variables are in USD, downloaded via World Scope, and Winsorized at the 1 percent level. Firm-level and market-level returns are obtained from Datastream and in USD. Cultural values are obtained from the World Values Survey. Natural disasters are obtained from the Centre for Research on the Epidemiology of Disasters. All models include country, industry, and year fixed effects. All standard errors are clustered by country-year. ***,**,* denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 3 OLS Panel

Issuance Characteristic	(1) ln(Debt Proceeds)	(2) ln(Debt Proceeds)	(3) ln(Debt Proceeds)	(4) ln(SEO Proceeds)	(5) ln(SEO Proceeds)	(6) ln(SEO Proceeds)	(7) Years-to-Maturity	(8) Years-to-Maturity	(9) Years-to-Maturity
$Disaster_{J,t}$*$Frugality_J$	1.4349*	1.3357***	1.3084**	0.0340	-0.9217**	-0.8483**	-6.7459**	-6.6320**	-7.6789***
	(0.736)	(0.477)	(0.518)	(0.655)	(0.405)	(0.428)	(2.847)	(2.604)	(2.612)
$Disaster_{J,t}$	-0.5274*	-0.4562**	-0.4141**	0.0977	0.3647**	0.3761**	2.2456**	2.5148**	2.9522***
	(0.280)	(0.183)	(0.198)	(0.238)	(0.146)	(0.161)	(1.098)	(1.026)	(1.043)
$DisasterCAR_{i,j,t}$	-1.5540	3.2066***	3.4121***	2.6490***	1.4385***	1.4995***	-1.2030	5.5171	3.9378
	(1.409)	(1.162)	(1.196)	(0.867)	(0.467)	(0.471)	(4.396)	(5.435)	(5.318)
$PreDisaster_{J,t}$*$Frugality_J$			0.4964			-0.2656			0.9885
			(0.338)			(0.539)			(1.574)
$PostDisaster_{J,t}$*$Frugality_J$			0.9739***			-0.2716			-1.2171
			(0.354)			(0.385)			(2.339)
$PreDisaster_{J,t}$			-0.1897			0.1171			-0.9198
			(0.137)			(0.181)			(0.647)
$PostDisaster_{J,t}$			-0.3492***			0.2110			0.0097
			(0.132)			(0.138)			(0.890)
$Q_{i,j,t-1}$		0.0945***	0.0933***		0.1013***	0.1013***		0.0685	0.0746
		(0.018)	(0.018)		(0.004)	(0.004)		(0.074)	(0.077)
$Cashflow_{i,j,t-1}$		0.1248	0.1300		0.0320	0.0381		0.6439	0.3723
		(0.131)	(0.139)		(0.026)	(0.026)		(0.470)	(0.502)
$lnTA_{i,j,t-1}$		0.6291***	0.6296***		0.6079***	0.6051***		0.3647***	0.3394***
		(0.013)	(0.014)		(0.009)	(0.009)		(0.046)	(0.047)
$PPE_{i,j,t-1}$		-0.2413***	-0.2341***		-0.2185***	-0.1883***		2.4642***	2.5067***
		(0.046)	(0.050)		(0.039)	(0.035)		(0.313)	(0.335)
$lnFirmAge_{i,j,t}$		-0.0729***	-0.0762***		-0.1327***	-0.1355***		0.2760***	0.2525***
		(0.016)	(0.018)		(0.014)	(0.013)		(0.065)	(0.068)
$Leverage_{i,j,t-1}$		0.5836***	0.5886***		0.0444	0.0312		-0.4677	-0.3764
		(0.055)	(0.058)		(0.041)	(0.041)		(0.299)	(0.315)
$GdpGrowth_{j,t-1}$		1.8408***	2.1438**		1.6011*	0.7400		-1.4900	-4.2492
		(0.705)	(0.837)		(0.866)	(0.769)		(3.737)	(4.320)
$MktCapGdp_{j,t-1}$		0.3520***	0.3106***		0.1307*	0.1334*		-0.7919**	-0.8272***
		(0.068)	(0.071)		(0.073)	(0.074)		(0.322)	(0.312)
Constant	4.9851***	-0.4191***	-0.4320***	3.0357***	-0.0490	-0.0322	8.2883***	6.1378***	6.8949***
	(0.212)	(0.160)	(0.162)	(0.191)	(0.162)	(0.171)	(0.765)	(1.264)	(1.170)
Observations	18,252	15,780	14,643	26,937	21,497	19,346	18,273	15,796	14,659
Country FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Controls	N	Y	Y	N	Y	Y	N	Y	Y
Adjusted R-Squared	0.299	0.600	0.597	0.305	0.673	0.672	0.278	0.297	0.298

Table 4. Does frugality drive firms to issue globally?

This table presents results from multinomial logit regressions of the relation between the currency of firms' bond and stock issuances around large natural disasters and frugality, defined as a country's propensity to encourage teaching "thrift, saving money, and things" to children, from 1990 to 2013. Using the currency of bond and stock issuances, we estimate the following multinomial logit regression:

$$None|Local\ Currency\ Issuance|USD\ Issuance_{i,j,k,t} = a + \text{Frugality}_J * \text{Disaster}_{j,t} + \text{Disaster}_{j,t} + \text{DisasterCAR}_{i,j,t} + \text{X}_{i,j,t} + b_j + c_k + d_t + e_{j,t}$$

The dependent variable takes three values: (1) when the majority of a firm's proceeds are in local currency; (2) when the majority of a firm's proceeds are in USD; (3) when there is no capital issuance (the base case). Panel A reports results for new debt issues; Panel B does the same for stock issuance. Proceeds in local currencies, and USD are obtained from SDC. As before, $Disaster_{j,t}$ identifies country-years in which a country experiences the largest natural disaster to date, starting in January of 1990 and rolling through the end of the sample period. $Frugality_J$ is the average country response to the World Value Survey question "Do you consider it important to encourage children to learn thrift and savings?" as in Guiso, Sapienza, and Zingales (2006). $\text{DisasterCAR}_{i,j,t}$ labels the cumulative abnormal return during the disaster-month for firm *i* in country *j* at time *t*. The sample excludes firms from the United States, where the local currency is USD. The corresponding dependent variables are indicated in each column. All other variables are defined in the data appendix. As before, all issuance data are obtained from SDC. All macroeconomic data are obtained from the World Bank. All firm-level accounting variables are in USD, downloaded via World Scope, and Winsorized at the 1 percent level. Firm-level and market-level returns are obtained from Datastream and are in USD. Cultural values are obtained from the World Values Survey. Natural disasters are obtained from the Centre for Research on the Epidemiology of Disasters. All models include country, industry, and year fixed effects. All standard errors are clustered by country-year. ***,**,* denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 4, Panel A: Bonds

	(1) Multinomial Logit		(2) Multinomial Logit		(3) Multinomial Logit	
Sample	Exclude US		Exclude US		Exclude US	
Type of issuance	Local Debt	USD Debt	Local Debt	USD Debt	Local Debt	USD Debt
$Disaster_{J,t}$*$Frugality_J$	1.8190*	3.1569*	1.5911*	0.3037	2.0742**	0.9243
	(1.058)	(1.619)	(0.952)	(1.362)	(0.995)	(1.238)
$Disaster_{J,t}$	-0.5834	-0.8028	-0.4749	0.1123	-0.7026*	-0.1034
	(0.431)	(0.649)	(0.374)	(0.510)	(0.398)	(0.452)
$DisasterCAR_{i,j,t}$	-0.0485	1.8239	-0.4112	-0.5031	0.1124	1.9933
	(1.442)	(2.671)	(1.390)	(5.236)	(1.295)	(4.717)
$PreDisaster_{J,t}$*$Frugality_J$					3.0522***	-0.0415
					(1.178)	(1.159)
$PostDisaster_{J,t}$*$Frugality_J$					1.7133*	2.7205**
					(0.876)	(1.192)
$PreDisaster_{J,t}$					-1.1794**	0.2073
					(0.483)	(0.501)
$PostDisaster_{J,t}$					-0.6280*	-1.0552**
					(0.357)	(0.465)
$Q_{i,j,t-1}$			0.0795***	0.0990***	0.0694***	0.0968***
			(0.016)	(0.020)	(0.017)	(0.020)
$Cashflow_{i,j,t-1}$			0.3776**	-0.0309	0.4364**	0.0560
			(0.185)	(0.293)	(0.198)	(0.298)
$lnTA_{i,j,t-1}$			0.8337***	1.0351***	0.8405***	1.0309***
			(0.021)	(0.037)	(0.021)	(0.039)
$PPE_{i,j,t-1}$			-0.0777	-0.7475***	0.0027	-0.6136***
			(0.098)	(0.190)	(0.103)	(0.178)
$lnFirmAge_{i,j,t}$			0.1694***	-0.0181	0.1830***	-0.0115
			(0.031)	(0.044)	(0.030)	(0.046)
$Leverage_{i,j,t-1}$			1.6920***	1.4096***	1.6510***	1.4039***
			(0.112)	(0.163)	(0.113)	(0.168)
$GdpGrowth_{j,t-1}$			2.7818	6.6649***	3.6708**	6.7980***
			(1.832)	(2.333)	(1.635)	(2.201)
$MktCapGdp_{j,t-1}$			-0.4626***	0.6803***	-0.3131**	0.7279***
			(0.163)	(0.187)	(0.130)	(0.187)
Constant	-6.0546***	-4.3853***	-11.2233***	-11.9318***	-12.1280***	-12.2831***
	(0.601)	(0.874)	(0.700)	(0.848)	(0.687)	(0.913)
Observations	318,048	318,048	249,217	249,217	230,359	230,359
Country FE	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Controls	N	N	Y	Y	Y	Y
Pseudo R-Squared	0.122	0.122	0.327	0.327	0.334	0.334

Table 4, Panel B: SEOs

	(1) Multinomial Logit		(2) Multinomial Logit		(3) Multinomial Logit	
Sample	Exclude U.S.		Exclude U.S.		Exclude U.S.	
Type of issuance	Local SEO	USD SEO	Local SEO	USD SEO	Local SEO	USD SEO
$Disaster_{J,t}$*$Frugality_J$	-0.7898	3.1995**	-1.3472	2.4594	-1.2215	2.9648
	(0.989)	(1.594)	(0.901)	(1.912)	(0.905)	(1.838)
$Disaster_{J,t}$	0.1829	-1.2104**	0.3717	-1.1629*	0.1642	-1.3055**
	(0.308)	(0.555)	(0.301)	(0.609)	(0.285)	(0.618)
$DisasterCAR_{i,j,t}$	-1.5252**	7.8863**	-1.0664	14.2269***	-0.3466	11.8156***
	(0.711)	(3.704)	(0.958)	(2.527)	(0.710)	(2.546)
$PreDisaster_{J,t}$*$Frugality_J$					-0.7155	-1.2306
					(1.028)	(2.110)
$PostDisaster_{J,t}$*$Frugality_J$					-0.0715	5.1454***
					(0.804)	(1.577)
$PreDisaster_{J,t}$					0.0036	-0.0450
					(0.339)	(0.814)
$PostDisaster_{J,t}$					-0.2836	-1.5928**
					(0.276)	(0.672)
$Q_{i,j,t-1}$			0.0243***	0.0968***	0.0233***	0.0979***
			(0.006)	(0.016)	(0.006)	(0.017)
$Cashflow_{i,j,t-1}$			-0.6654***	-0.7709***	-0.6717***	-0.6932***
			(0.048)	(0.128)	(0.052)	(0.142)
$lnTA_{i,j,t-1}$			-0.0411**	0.3547***	-0.0377**	0.3556***
			(0.017)	(0.043)	(0.018)	(0.046)
$PPE_{i,j,t-1}$			0.2678***	0.1551	0.2652***	0.2086
			(0.090)	(0.291)	(0.097)	(0.312)
$lnFirmAge_{i,j,t}$			-0.3045***	-0.3479***	-0.3188***	-0.3492***
			(0.026)	(0.086)	(0.026)	(0.091)
$Leverage_{i,j,t-1}$			0.7473***	0.6254**	0.7227***	0.6499**
			(0.079)	(0.261)	(0.084)	(0.259)
$GdpGrowth_{j,t-1}$			-0.7935	5.8568	0.7704	6.2770**
			(1.548)	(3.659)	(1.466)	(2.527)
$MktCapGdp_{j,t-1}$			0.1671	0.0968	0.1835	0.2545
			(0.130)	(0.331)	(0.136)	(0.338)
Constant	-7.8207***	-6.8798***	-5.8796***	-7.5380***	-5.7914***	-7.7094***
	(0.518)	(1.349)	(0.594)	(1.205)	(0.636)	(1.170)
Observations	318,048	318,048	249,217	249,217	230,359	230,359
Country FE	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Controls	N	N	Y	Y	Y	Y
Pseudo R-Squared	0.195	0.195	0.211	0.211	0.216	0.216

Table 5. Are firms maturity matching?

This table presents results from OLS panel regressions of the relation between firms' investment policies around large natural disasters and frugality, defined as a country's propensity to encourage teaching "thrift, saving money, and things" to children, from 1990 to 2013. Using firm-level capital expenditures (CAPEX), research and development expense (RDX), and cash and cash equivalent holdings (CASH), we estimate the following OLS panel regression:

$$InvestmentPolicy_{i,j,k,t} = a + \text{Frugality}_J * \text{Disaster}_{j,t} + \text{Disaster}_{j,t} + \text{DisasterCAR}_{i,j,t} + \text{X}_{i,j,t} + b_i + c_t + e_{j,t}$$

The dependent variable is the investment policy of firm *i* in country *j* in industry *k* in year *t*. Using CAPEX, RDX, and CASH, we examine the following investment policies: (1) total investment, the ratio of CAPEX and RDX relative to lagged total assets; (2) investment share, the ratio of CAPEX and RDX to the sum of CAPEX, RDX, and CASH; (3) R&D share, the ratio of RDX to the sum of CAPEX and RDX. we set CAPEX and RDX equal to zero when missing. As before, $Disaster_{j,t}$ identifies country-years in which a country experiences the largest natural disaster to date, starting in January of 1989 and rolling through the end of the sample period. $Frugality_J$ is the average country response to the World Value Survey question "Do you consider it important to encourage children to learn thrift and savings?" as in Guiso, Sapienza, and Zingales (2006). $\text{DisasterCAR}_{i,j,t}$ labels the cumulative abnormal return during the disaster-month for firm *i* in country *j* at time *t*. Columns 1 through 3 report total investment; Columns 4 through 6 and 7 through 8 do the same for investment share, and the R&D share, respectively. All other variables are previously defined. The analysis in Panel B uses a propensity score matched sample that uses the full sample of data to estimate the model displayed in Column 1 of Panel B. The control group is matched to "treated" observations (those that issue stocks or bonds in year $t = 1$) using nearest-neighbor matching with replacement matching, when the absolute difference in propensity scores between the matched observations is less than or equal to 0.01. The logit includes country, industry, and year fixed effects. The corresponding columns and control variables are indicated in each column. Panel C shows the means of the various characteristics of the treated and control samples and their differences for the full sample and for the matched sample used in Panels A and B, respectively. As before, all issuance data are obtained from SDC. All macroeconomic data are obtained from the World Bank. All firm-level accounting variables are in USD, downloaded via World Scope, and Winsorized at the 1 percent level. Firm-level and market-level returns are obtained from Datastream and in USD. Cultural values are obtained from the World Values Survey. Natural disasters are obtained from the Centre for Research on the Epidemiology of Disasters. All OLS models include firm and year fixed effects. The standard errors for all OLS models are clustered by country-year. ***,**,* denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 5, Panel A

Investment Policy	(1) CAPEX +RDX	(2) CAPEX +RDX	(3) CAPEX +RDX	(4) Investment Share	(5) Investment Share	(6) Investment Share	(7) RDX Share	(8) RDX Share	(9) RDX Share
$Disaster_{J,t}$*$Frugality_J$	-0.0617**	-0.0665***	-0.0707***	-0.1977**	-0.2191**	-0.2543***	0.2478**	0.2131**	0.2528***
	(0.028)	(0.022)	(0.022)	(0.094)	(0.086)	(0.087)	(0.101)	(0.097)	(0.096)
$Disaster_{J,t}$	0.0236**	0.0233***	0.0240***	0.0582*	0.0658**	0.0748**	-0.0772**	-0.0660**	-0.0764**
	(0.010)	(0.007)	(0.007)	(0.031)	(0.029)	(0.029)	(0.031)	(0.030)	(0.030)
$DisasterCAR_{i,j,t}$	0.0384	0.0196	0.0277	0.0308	-0.0053	0.0218	-0.0742	-0.0696	-0.0630
	(0.025)	(0.020)	(0.020)	(0.046)	(0.045)	(0.046)	(0.058)	(0.062)	(0.066)
$PreDisaster_{J,t}$*$Frugality_J$			-0.0319			-0.0645			0.1916**
			(0.024)			(0.094)			(0.088)
$PostDisaster_{J,t}$*$Frugality_J$			-0.0382*			-0.1751**			0.1750***
			(0.022)			(0.085)			(0.067)
$PreDisaster_{J,t}$			0.0110			0.0158			-0.0563**
			(0.008)			(0.032)			(0.028)
$PostDisaster_{J,t}$			0.0114			0.0508*			-0.0535**
			(0.007)			(0.029)			(0.021)
$Q_{i,j,t-1}$		0.0081***	0.0082***		-0.0012***	-0.0015***		-0.0019***	-0.0018***
		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)
$Cashflow_{i,j,t-1}$		-0.0038	-0.0025		0.0071*	0.0075*		-0.0236***	-0.0248***
		(0.003)	(0.003)		(0.004)	(0.004)		(0.003)	(0.003)
$lnTA_{i,j,t-1}$		-0.0193***	-0.0200***		0.0109***	0.0098***		-0.0013	-0.0010
		(0.001)	(0.001)		(0.002)	(0.003)		(0.002)	(0.002)
$PPE_{i,j,t-1}$		-0.0023	-0.0022		0.2647***	0.2623***		-0.0449***	-0.0428***
		(0.005)	(0.005)		(0.012)	(0.013)		(0.007)	(0.007)
$lnFirmAge_{i,j,t}$		-0.0218***	-0.0221***		-0.0158***	-0.0176***		0.0013	0.0001
		(0.002)	(0.002)		(0.006)	(0.007)		(0.004)	(0.004)
$Leverage_{i,j,t-1}$		-0.0010	-0.0023		0.0368***	0.0368***		0.0051*	0.0035
		(0.002)	(0.002)		(0.005)	(0.005)		(0.003)	(0.003)
$GdpGrowth_{j,t-1}$		0.0919**	0.1011***		0.5095***	0.4996***		-0.1724*	-0.1595*
		(0.036)	(0.036)		(0.133)	(0.139)		(0.092)	(0.091)
$MktCapGdp_{j,t-1}$		0.0052*	0.0060**		0.0114	0.0216*		0.0260***	0.0229**
		(0.003)	(0.003)		(0.012)	(0.012)		(0.010)	(0.009)
Constant	0.1150***	0.1898***	0.1955***	0.3811***	0.2413***	0.2563***	0.1661***	0.1785***	0.1691***
	(0.010)	(0.007)	(0.007)	(0.031)	(0.020)	(0.019)	(0.016)	(0.011)	(0.010)
Observations	442,516	348,196	325,023	385,020	305,843	285,315	371,222	297,686	277,981
Firm FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y
Controls	N	Y	Y	N	Y	Y	N	Y	Y
Adjusted R-Squared	0.442	0.506	0.514	0.593	0.621	0.625	0.801	0.813	0.812

Table 5, Panel B: Matched

Dependent Variable	(1) Issuance Indicator$_{i,j,t}$	(2) CAPEX +RDX	(3) CAPEX +RDX	(4) CAPEX +RDX	(5) Investment Share	(6) Investment Share	(7) Investment Share	(8) RDX Share	(9) RDX Share	(10) RDX Share
Disaster$_{J,t}$*Frugality$_J$		-0.0758**	-0.1023***	-0.0964***	-0.2924**	-0.2773***	-0.3081***	0.1532***	0.1497***	0.1472***
		(0.035)	(0.034)	(0.036)	(0.117)	(0.107)	(0.117)	(0.054)	(0.055)	(0.053)
Disaster$_{J,t}$		0.0289**	0.0386***	0.0351**	0.0891**	0.0794**	0.0896**	-0.0476***	-0.0465***	-0.0436**
		(0.012)	(0.013)	(0.014)	(0.037)	(0.034)	(0.038)	(0.018)	(0.018)	(0.017)
DisasterCAR$_{i,j,t}$		0.0938	0.0467	0.0586	-0.0391	-0.0121	0.0701	-0.0565	-0.0587	-0.0140
		(0.059)	(0.086)	(0.080)	(0.110)	(0.108)	(0.095)	(0.124)	(0.124)	(0.113)
PreDisaster$_{J,t}$*Frugality$_J$				0.0124			-0.0065			0.0479
				(0.031)			(0.134)			(0.056)
PostDisaster$_{J,t}$*Frugality$_J$				-0.0643***			-0.2013*			0.1020***
				(0.023)			(0.116)			(0.038)
PreDisaster$_{J,t}$				-0.0064			0.0023			-0.0138
				(0.011)			(0.042)			(0.017)
PostDisaster$_{J,t}$				0.0205**			0.0520			-0.0329***
				(0.008)			(0.038)			(0.012)
Q$_{i,j,t-1}$	0.0348***		0.0105***	0.0107***		-0.0015**	-0.0019**		-0.0019***	-0.0016**
	(0.002)		(0.001)	(0.001)		(0.001)	(0.001)		(0.001)	(0.001)
Cashflow$_{i,j,t-1}$	-0.5186***		-0.0078**	-0.0065*		0.0060	0.0052		-0.0109***	-0.0136***
	(0.015)		(0.003)	(0.004)		(0.004)	(0.005)		(0.004)	(0.004)
lnTA$_{i,j,t-1}$	0.2955***		-0.0253***	-0.0255***		0.0220***	0.0209***		-0.0036*	-0.0027
	(0.003)		(0.002)	(0.003)		(0.004)	(0.004)		(0.002)	(0.002)
PPE$_{i,j,t-1}$	0.0673**		-0.0085	-0.0089		0.2411***	0.2355***		-0.0471***	-0.0433***
	(0.027)		(0.012)	(0.015)		(0.019)	(0.023)		(0.009)	(0.008)
lnFirmAge$_{i,j,t}$	-0.1255***		-0.0217***	-0.0210***		-0.0072	-0.0073		-0.0012	-0.0043
	(0.008)		(0.003)	(0.003)		(0.008)	(0.009)		(0.005)	(0.005)
Leverage$_{i,j,t-1}$	0.7207***		-0.0087*	-0.0105**		0.0202**	0.0235***		0.0058	0.0054
	(0.025)		(0.005)	(0.005)		(0.008)	(0.009)		(0.005)	(0.005)
GdpGrowth$_{j,t-1}$	2.4547***		0.0430	0.0336		0.6630***	0.5655***		-0.0632	-0.0560
	(0.365)		(0.050)	(0.055)		(0.176)	(0.197)		(0.068)	(0.055)
MktCapGdp$_{j,t-1}$	0.0058		0.0124**	0.0117**		-0.0086	0.0015		0.0060	0.0093*
	(0.030)		(0.005)	(0.005)		(0.016)	(0.017)		(0.007)	(0.006)
Constant	-5.5083***	0.1205***	0.2486***	0.2543***	0.4416***	0.2321***	0.2525***	0.1453***	0.1844***	0.1722***
	(0.201)	(0.004)	(0.016)	(0.018)	(0.025)	(0.031)	(0.030)	(0.011)	(0.016)	(0.013)
Observations	350,966	73,339	73,339	66,672	66,199	66,199	60,192	66,004	66,004	60,119
Model from Panel A	NA	1	2	3	4	5	6	4	5	6
Firm FE	N	Y	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Controls	Y	N	Y	Y	N	Y	Y	N	Y	Y
Adjusted R-Squared	0.131	0.481	0.528	0.543	0.599	0.613	0.619	0.820	0.820	0.827

Table 5, Panel C: Differences between Treatment and Control Samples

Variable	(1) Sample	(2) Control	(3) Treatment	(4) Difference
$Frugality_J$	full	0.3790	0.3560	0.0225***
	matched	0.3610	0.3560	0.0050***
$Disaster_{J,t}$	full	0.0925	0.0906	0.0019
	matched	0.0878	0.0906	-0.0028
$DisasterCAR_{i,j,t}$	full	0.0002	-0.0000	0.0002***
	matched	0.0001	-0.0000	0.0002*
$Q_{i,j,t-1}$	full	1.9300	2.1590	-0.2293***
	matched	2.1430	2.1590	-0.0159
$Cashflow_{i,j,t-1}$	full	0.0302	-0.0444	0.0746***
	matched	-0.0263	-0.0444	0.0181***
$lnTA_{i,j,t-1}$	full	5.1160	5.8900	-0.7744***
	matched	5.8800	5.8900	-0.0098
$PPE_{i,j,t-1}$	full	0.2960	0.3490	-0.0534***
	matched	0.3350	0.3490	-0.0143***
$lnFirmAge_{i,j,t}$	full	2.3030	2.3420	-0.0385***
	matched	2.3310	2.3420	-0.0102*
$Leverage_{i,j,t-1}$	full	0.1490	0.2090	-0.0592***
	matched	0.2080	0.2090	-0.0004
$GdpGrowth_{j,t-1}$	full	0.0311	0.0279	0.0032***
	matched	0.0279	0.0279	0.0001
$MktCapGdp_{j,t-1}$	full	0.9480	0.9820	-0.0336***
	matched	0.9790	0.9820	-0.0025

Table 6. Placebo Disaster Treatments

This table presents results from OLS panel regressions of the relation between firms' capital-raising and investment behaviors around randomly generated disasters and frugality, defined as a country's propensity to encourage teaching "thrift, saving money, and things" to children, from 1990 to 2013. Using firm-level issuances and investment, we estimate forms of the following regression:

$$Outcome_{i,j,k,t} = a + \text{Frugality}_J * \text{PlaceboDisaster}_{j,t} + \text{PlacebDisaster}_{J,t} + \text{PlaceboDisasterCAR}_{i,j,t} + \text{X}_{i,j,t} + b_j + c_k + d_t + e_{j,t}$$

The dependent variable is the issuance or investment outcome of firm *i* in country *j* in industry *k* in year *t*. *Frugality*$_J$ is the average country response to the World Value Survey question "Do you consider it important to encourage children to learn thrift and savings?" as in Guiso, Sapienza, and Zingales (2006). *PlaceboDisaster*$_{j,t}$ identifies random country-years, starting in January of 1990 and rolling through the end of the sample period. *PlaceboDisasterCAR*$_{i,j,t}$ labels the cumulative abnormal return during the random disaster-month for firm *i* in country *j* at time *t*. All other variables are defined in the data appendix. Columns 1, 2, 3 repeat the OLS regressions in Table 3 (Columns 3, 6, 9). The dependent variables are the natural log of bond proceeds, the natural log of stock proceeds, and the value-weighted years-to-maturity, respectively. Columns 4, 5, 6 repeat the OLS regressions in Table 5 (Panel A, Columns 3, 6, 9). The dependent variables are firms' total investment, investment share, and R&D share, respectively. As before, we set CAPEX and RDX equal to zero when missing. All issuance data are obtained from SDC; all bond and stock proceeds are in USD millions. All macroeconomic data are obtained from the World Bank. All firm-level accounting variables are in USD and downloaded via World Scope and Winsorized at the 1 percent level. Firm-level and market-level returns are obtained from Datastream and in USD. Cultural values are obtained from the World Values Survey. Natural disasters are obtained from the Centre for Research on the Epidemiology of Disasters. All issuance models include country, industry, and year-fixed effects; the investment models include firm and year-fixed effects. All standard errors are clustered by country-year. ***,**,* denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 6

Sample	(1) All	(2) All	(3) All	(4) All	(5) All	(6) All
Dependent Variable	ln(Debt Proceeds)	ln(SEO Proceeds)	Years-to-Maturity	CAPEX +RDX	Investment Share	RDX Share
Placebo-Disaster$_{J,t}$*Frugality$_J$	-0.1359	-0.1258	1.1618*	-0.0024	0.0003	0.0055
	(0.160)	(0.193)	(0.627)	(0.007)	(0.021)	(0.015)
Placebo-Disaster$_{J,t}$	-0.0062	0.0269	-0.6419**	0.0015	0.0019	0.0007
	(0.065)	(0.080)	(0.262)	(0.003)	(0.007)	(0.004)
Placebo-DisasterCAR$_{i,j,t}$	-0.3486	0.0722	-3.2533	-0.0054	0.0212	0.0164
	(0.550)	(0.427)	(2.085)	(0.016)	(0.030)	(0.017)
PrePlaceboDisaster$_{J,t}$*Frugality$_J$	-0.0652	-0.2347	1.6315	0.0101	0.0248	-0.0583**
	(0.244)	(0.345)	(1.021)	(0.013)	(0.037)	(0.023)
PostPlaceboDisaster$_{J,t}$*Frugality$_J$	-0.1233	-0.2240	1.5552	-0.0126	-0.0231	0.0184
	(0.236)	(0.332)	(1.028)	(0.011)	(0.034)	(0.025)
PrePlaceboDisaster$_{J,t}$	0.0705	-0.0317	-0.7907*	-0.0045	-0.0028	0.0179**
	(0.098)	(0.142)	(0.438)	(0.005)	(0.013)	(0.008)
PostPlaceboDisaster$_{J,t}$	0.0373	0.0601	-0.9755**	0.0045	0.0117	-0.0061
	(0.096)	(0.140)	(0.444)	(0.005)	(0.013)	(0.009)
Q$_{i,j,t-1}$	0.0961***	0.0965***	0.0653	0.0081***	-0.0012***	-0.0019***
	(0.018)	(0.007)	(0.073)	(0.000)	(0.000)	(0.000)
Cashflow$_{i,j,t-1}$	0.1167	0.0718**	0.7818*	-0.0038	0.0071*	-0.0236***
	(0.128)	(0.036)	(0.473)	(0.003)	(0.004)	(0.003)
lnTA$_{i,j,t-1}$	0.6290***	0.6913***	0.3569***	-0.0193***	0.0112***	-0.0014
	(0.013)	(0.011)	(0.044)	(0.001)	(0.003)	(0.002)
PPE$_{i,j,t-1}$	-0.2397***	-0.2308***	2.4089***	-0.0024	0.2643***	-0.0454***
	(0.046)	(0.060)	(0.320)	(0.005)	(0.012)	(0.007)
lnFirmAge$_{i,j,t}$	-0.0760***	-0.1815***	0.2738***	-0.0217***	-0.0154**	0.0011
	(0.016)	(0.015)	(0.066)	(0.002)	(0.006)	(0.004)
Leverage$_{i,j,t-1}$	0.5787***	-0.0434	-0.5107*	-0.0010	0.0367***	0.0053**
	(0.056)	(0.047)	(0.303)	(0.002)	(0.005)	(0.003)
GdpGrowth$_{j,t-1}$	2.0008***	2.2659*	-0.6413	0.0878**	0.4883***	-0.1627*
	(0.738)	(1.252)	(3.734)	(0.036)	(0.132)	(0.087)
MktCapGdp$_{j,t-1}$	0.3607***	0.1006	-0.6695**	0.0034	0.0014	0.0290***
	(0.075)	(0.103)	(0.324)	(0.004)	(0.014)	(0.011)
Constant	-0.3590**	-0.5261***	6.0676***	0.1909***	0.2387***	0.1805***
	(0.176)	(0.198)	(1.175)	(0.007)	(0.022)	(0.013)
Observations	15,803	24,413	15,819	348,196	305,843	297,685
Country FE	Y	Y	Y	N	N	N
Industry FE	Y	Y	Y	N	N	N
Firm FE	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Adjusted R-Squared	0.601	0.658	0.279	0.505	0.620	0.813

Table 7. Alternative Disaster Treatments with Large Transportation Disasters

This table presents results from multinomial logit and OLS panel regressions of the relation between firms' capital-raising and investment behaviors around large transportation disasters and frugality, defined as a country's propensity to encourage teaching "thrift, saving money, and things" to children, from 1990 to 2013. Using firm-level issuances and investment, we estimate forms of the following regression:

$$Outcome_{i,j,k,t} = a + \text{Frugality}_J * \text{Transport}_{J,t} + \text{Transport}_{J,t} + \text{X}_{i,j,t} + b_j + c_k + d_t + e_{j,t}$$

The dependent variable is the issuance or investment outcome of firm *i* in country *j* in industry *k* in year *t*. The variable $Transport_{J,t}$ identifies country-years in which a country experiences the largest transport disaster to date, starting in January of 1990 and rolling through the end of the sample period. As before, $Frugality_J$ is the average country response to the World Value Survey question "Do you consider it important to encourage children to learn thrift and savings?" as in Guiso, Sapienza, and Zingales (2006). Panel A reports issuance, quantity, and maturity results. Columns 1, 2, 3 repeat the OLS regressions in Table 3 (Columns 3, 6, 9). The dependent variables are the natural log of bond proceeds, the natural log of stock proceeds, and the value-weighted years-to-maturity, respectively. Columns 4, 5, 6 repeat the OLS regressions in Table 5 (Panel A, Columns 3, 6, 9). The dependent variables are firms' total investment, investment share, and R&D share, respectively. As before, we set CAPEX and RDX equal to zero when missing. All issuance data are obtained from SDC, and all bond and stock proceeds are in USD millions. All macroeconomic data are obtained from the World Bank. All firm-level accounting variables are in USD and downloaded via World Scope and Winsorized at the 1 percent level. Firm-level and market-level returns are obtained from Datastream and in USD. Cultural values are obtained from the World Values Survey. Transportation disasters are obtained from the Centre for Research on the Epidemiology of Disasters. The issuance models include country, industry, and year-fixed effects; the investment models include firm and year-fixed effects. All standard errors are clustered by country-year. ***,**,* denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table 7

Sample	(1) All	(2) All	(3) All	(4) All	(5) All	(6) All
Dependent Variable	ln(Debt Proceeds)	ln(SEO Proceeds)	Years-to-Maturity	CAPEX +RDX	Investment Share	RDX Share
$Transport_{J,t}$*$Frugality_J$	2.6182***	1.7111	-6.7536	-0.0872**	-0.3752**	0.3400*
	(0.692)	(1.332)	(4.274)	(0.043)	(0.179)	(0.188)
$Transport_{J,t}$	-0.8378***	-0.5582	1.8007	0.0296*	0.1191**	-0.0999*
	(0.241)	(0.466)	(1.361)	(0.016)	(0.058)	(0.054)
$PreTransport_{J,t}$*$Frugality_J$	0.2048	-0.2268	-2.6508*	0.0042	0.0404	0.0096
	(0.254)	(0.405)	(1.360)	(0.012)	(0.050)	(0.028)
$PostTransport_{J,t}$*$Frugality_J$	0.4286*	0.3688	-1.0503	-0.0106	-0.0535	0.0518**
	(0.236)	(0.412)	(0.968)	(0.013)	(0.046)	(0.026)
$PreTransport_{J,t}$	-0.1248	0.1419	0.9500*	-0.0033	-0.0133	-0.0018
	(0.101)	(0.163)	(0.563)	(0.004)	(0.016)	(0.009)
$PostTransport_{J,t}$	-0.1937**	-0.0433	0.5719	0.0057	0.0254	-0.0143*
	(0.095)	(0.158)	(0.410)	(0.005)	(0.015)	(0.008)
$Q_{i,j,t-1}$	0.1054***	0.0953***	0.0734	0.0082***	-0.0015***	-0.0018***
	(0.016)	(0.007)	(0.077)	(0.000)	(0.000)	(0.000)
$Cashflow_{i,j,t-1}$	0.1029	0.0734*	0.4455	-0.0025	0.0075*	-0.0250***
	(0.135)	(0.040)	(0.513)	(0.003)	(0.004)	(0.003)
$lnTA_{i,j,t-1}$	0.6294***	0.6869***	0.3375***	-0.0199***	0.0102***	-0.0013
	(0.014)	(0.012)	(0.047)	(0.001)	(0.003)	(0.002)
$PPE_{i,j,t-1}$	-0.2276***	-0.1920***	2.4529***	-0.0024	0.2619***	-0.0425***
	(0.050)	(0.059)	(0.344)	(0.005)	(0.013)	(0.007)
$lnFirmAge_{i,j,t}$	-0.0809***	-0.1903***	0.2461***	-0.0219***	-0.0171***	-0.0001
	(0.018)	(0.015)	(0.070)	(0.002)	(0.006)	(0.004)
$Leverage_{i,j,t-1}$	0.5890***	-0.0458	-0.4237	-0.0026	0.0357***	0.0052**
	(0.058)	(0.050)	(0.309)	(0.002)	(0.005)	(0.003)
$GdpGrowth_{j,t-1}$	1.8135**	2.8865**	-2.1596	0.0939***	0.4617***	-0.1234
	(0.715)	(1.238)	(3.740)	(0.035)	(0.131)	(0.092)
$MktCapGdp_{j,t-1}$	0.3239***	0.0160	-0.8728***	0.0033	0.0082	0.0264***
	(0.074)	(0.096)	(0.328)	(0.003)	(0.012)	(0.010)
Constant	-0.4010**	-0.6357***	6.7469***	0.1960***	0.2539***	0.1614***
	(0.165)	(0.213)	(1.157)	(0.008)	(0.021)	(0.013)
Observations	14,662	21,852	14,678	325,043	285,332	277,995
Country FE	Y	Y	Y	N	N	N
Industry FE	Y	Y	Y	N	N	N
Firm FE	N	N	N	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y
Controls	Y	Y	Y	Y	Y	Y
Adjusted R-Squared	0.598	0.655	0.282	0.514	0.625	0.812

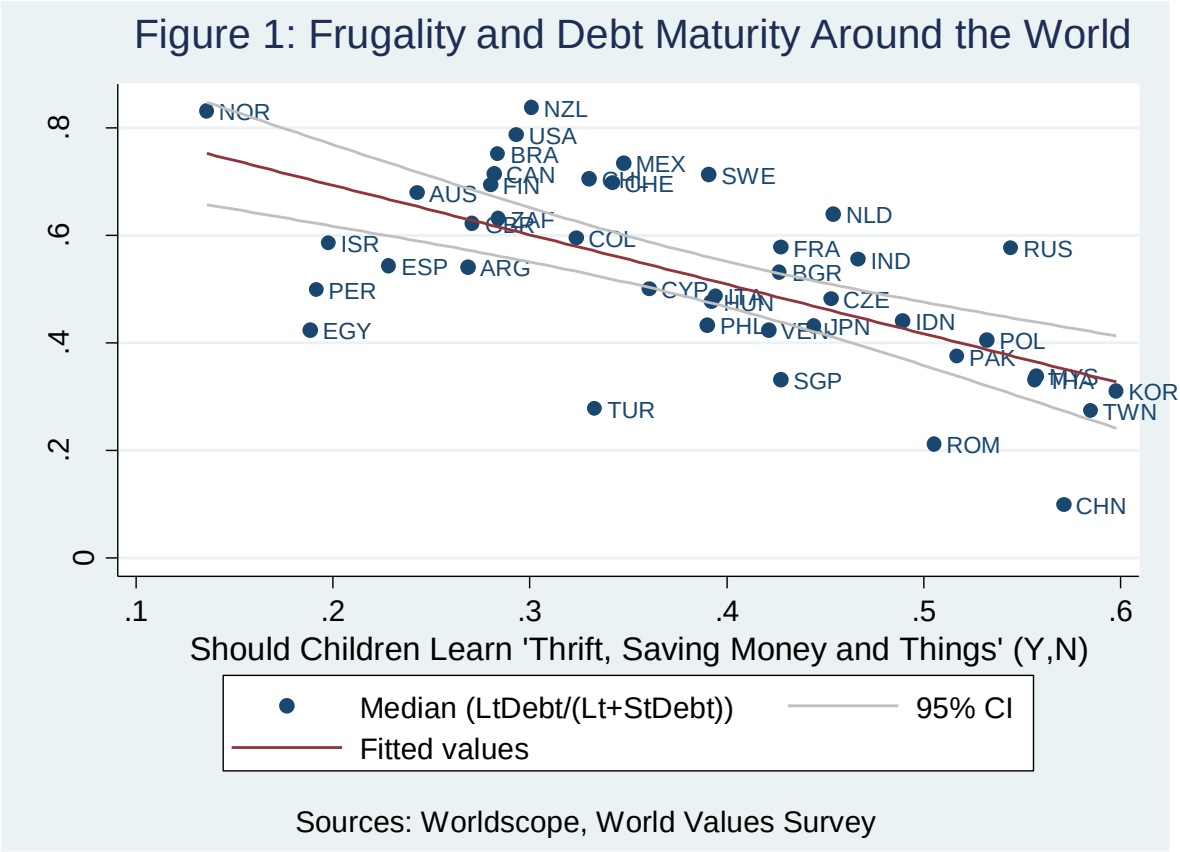

Figure 1: Median Firm's Debt Maturity and Frugality, 1990–2013

This figure plots the relation between a country's median debt maturity and frugality from 1990 to 2013. At the firm level, we obtain accounting data for nonfinancial firms from Worldscope and measure debt maturity as the ratio of a firm's long-term debt to the sum of long term and short-term debt. We assign firms to home countries by Worldscope's primary geographic segment ("GEOGN"). To measure frugality, we follow Guiso, Sapienza, and Zingales (2006), and we take the average tendency for a country's respondents to the World Value Survey to identify teaching "thrift, saving money, and things" to children as especially important. At the country level, the correlation between debt maturity and frugality is -0.645.

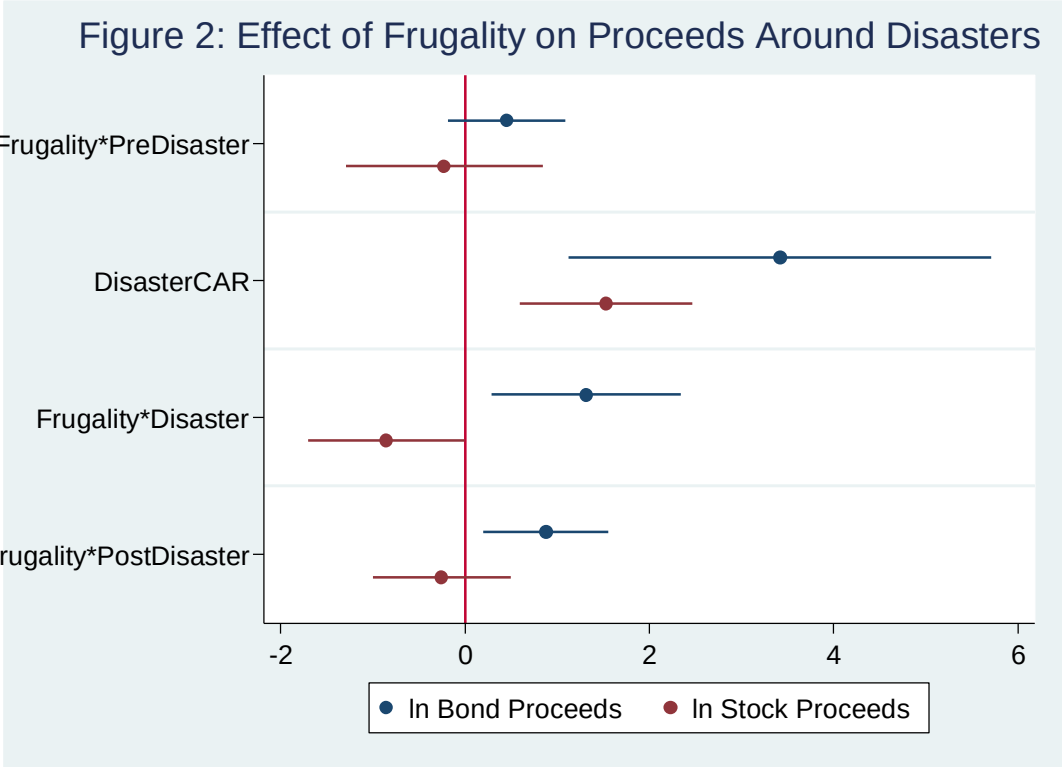

Figure 2: Effect of Frugality on Bond and Stock Proceeds around Natural Disasters

This figure plots coefficient estimates measuring the effect of frugality on the natural of log bond and stock proceeds around large natural disasters. Estimates are from the OLS panel regressions of Table 3, Models (3) and (6). Plotted are the coefficient estimates of $Frugality_J$*$Disaster_{J,t}$ and $DisasterCAR_{i,j,t}$, and their 95% confidence intervals (from standard errors clustered by country-year). Using firm-level bond and stock proceeds, we estimate the following regression:

$$ln(Issuance\ Proceeds)_{i,j,k,t} = a + \mathrm{B}_1 * \mathrm{Frugality}_J * \mathrm{Disaster}_{J,t} + \mathrm{B}_2 * \mathrm{Disaster}_{J,t} + B_3 * \mathrm{DisasterCAR}_{i,j,t} + + \mathrm{X}_{i,j,t} + b_j + c_k + d_t + e_{j,t}$$

where the dependent variable is the natural log of the total proceeds of new debt issues and SEOs of firm *i* in country *j* in industry *k* in year *t*. Proceeds are in USD millions, matched at the ultimate parent-level and obtained from SDC. $Frugality_J$ is the average country response to the World Value Survey question "Do you consider it important to encourage children to learn thrift and savings?" as in Guiso, Sapienza, and Zingales (2006). $Disaster_{J,t}$ identifies country-years in which a country experiences the largest natural disaster to date, starting in January of 1990 and rolling through the end of the sample period. $DisasterCAR_{i,j,t}$ labels the cumulative abnormal return during the disaster-month for firm *i* in country *j* at time *t*. Natural disasters are obtained from the Centre for Research on the Epidemiology of Disasters. $X_{i,j,t}$ labels control variables that are used in Table 3, Models (3) and (6).

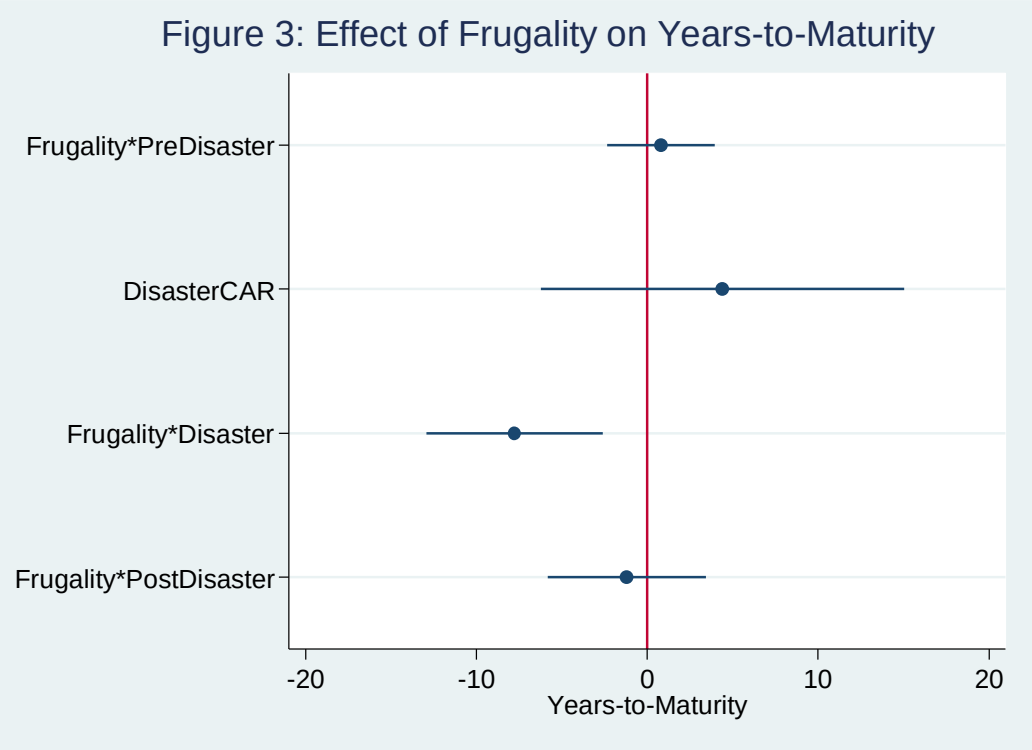

Figure 3: Effect of Frugality on Years-to-Maturity around Natural Disasters

This figure plots coefficient estimates measuring the effect of frugality on the value-weighted years-to-maturity of firms' bond issuances around large natural disasters. Estimates are from the OLS panel regressions of Table 3, Model (9). Plotted are the coefficient estimates of $Frugality_J$*$Disaster_{J,t}$ and $DisasterCAR_{i,j,t}$, and their 95% confidence intervals (from standard errors clustered by country-year). Using firm-level value-weighted bond proceeds, we estimate the following regression:

$$YearstoMaturity_{i,j,k,t} = a + \mathrm{B}_1 * \mathrm{Frugality}_J * \mathrm{Disaster}_{J,t} + \mathrm{B}_2 * \mathrm{Disaster}_{J,t} + B_3 * \mathrm{DisasterCAR}_{i,j,t} + + \mathrm{X}_{i,j,t} + b_j + c_k + d_t + e_{j,t}$$

where the dependent variable is the value-weighted years-to-maturity of the bond proceeds of the new debt issues of firm *i* in country *j* in industry *k* in year *t.* Proceeds are in USD millions, matched at the ultimate parent-level and obtained from SDC. $Frugality_J$ is the average country response to the World Value Survey question "Do you consider it important to encourage children to learn thrift and savings?" as in Guiso, Sapienza, and Zingales (2006). $Disaster_{J,t}$ identifies country-years in which a country experiences the largest natural disaster to date, starting in January of 1990 and rolling through the end of the sample period. $DisasterCAR_{i,j,t}$ labels the cumulative abnormal return during the disaster-month for firm *i* in country *j* at time *t.* Natural disasters are obtained from the Centre for Research on the Epidemiology of Disasters. $X_{i,j,t}$ labels control variables that are used in Table 3, Model (9).

Appendix Table A.1 Do differences in contracting environments explain differences in frugality?

This table presents results from cross-sectional OLS regressions of the relation between frugality, defined as the cultural view toward savings and measures of culture, legal origin, and institutional quality across countries. Using country-level frugality, we estimate the following OLS regression:

$$Frugrality_J = a + \text{Culture}_J + \text{Legal Origin}_J + \text{Institutional Quality}_J + e_J$$

The dependent variable $Frugality_J$ is the average country response to the World Value Survey question "Do you consider it important to encourage children to learn thrift and savings?" as in Guiso, Sapienza, and Zingales (2006). The independent variables include different measures of culture, legal origin, and institutional quality. Column 1 includes Trust and Uncertainty Avoidance as independent variables. $Trust_J$ reports the average country response to the World Value Survey question "Do you think people can be trusted?" as in Guiso, Sapienza, and Zingales (2006). *Uncertainty Avoidance* is the Geert Hofstede Uncertainty Avoidance Index and obtained from https://geert-hofstede.com/national-culture.html. Column 2 includes the shares of religious affiliations in 1995 as in Guiso, Sapienza, and Zingales (2006), with no religious affiliation being the omitted group. Religious affiliations are from the World Religion Database Religious Affiliations. Column 3 includes indicator variables for a country's legal origin as in La Porta et al. (2008), with German legal origin being the omitted group. Column 4 includes measures of institutional quality. The measures include: *Anti-Self-Dealing*, the anti-self-dealing index as reported in La Porta et al. (2006); *Creditor Rights*, the creditor rights aggregate score as reported in Djankov et al. (2007); and the *Case A Efficiency* score as in Djankov et al. (2006). Cultural values on frugality and trust are obtained from the World Values Survey. All standard errors are robust to heteroscedasticity. ***,**,* denote significance at the 1 percent, 5 percent, and 10 percent levels, respectively.

Table A.1

VARIABLES	(1) Frugality$_J$ Culture	(2) Frugality$_J$ Religion	(3) Frugality$_J$ Legal Origin	(4) Frugality$_J$ Institutions
Do You Think People Can Be Trusted? (Y/N)	-0.0469			
	(0.159)			
Uncertainty Avoidance	-0.0002			
	(0.001)			
Christianity: Roman Catholics, percentage adherents		-0.1273*		
		(0.075)		
Christianity: Protestants, percentage adherents		-0.2339**		
		(0.102)		
Christianity: Eastern Orthodox, percentage adherents		-0.0198		
		(0.086)		
Judaism: Total percentage adherents		-0.3141***		
		(0.062)		
Islam: Total percentage adherents		-0.0609		
		(0.099)		
Buddhism: Total percentage adherents		0.1205		
		(0.102)		
Hindu: Total percentage adherents		0.0309		
		(0.073)		
Legor_French			-0.1226***	
			(0.040)	
Legor_Scandinavian			-0.2139***	
			(0.070)	
Legor_English			-0.1168**	
			(0.046)	
Anti-Self-Dealing Index				-0.0109
				(0.095)
Creditor Rights				0.0156
				(0.018)
Case Efficiency				-0.0005
				(0.001)
Constant	0.4097***	0.4637***	0.4827***	0.3807***
	(0.089)	(0.061)	(0.030)	(0.049)
Observations	41	42	42	39
Omitted Group	NA	No Religion	Legal German	NA
R-squared	0.003	0.388	0.231	0.025

Appendix Table A.2 Does frugality reduce corporate issuers' growth opportunities?

This table presents results from OLS panel regressions of the relation between firms' DisasterCARs, sales growth, and future earnings growth rates around large natural disasters and frugality, defined as a country's propensity to encourage teaching "thrift, saving money, and things" to children, from 1990 to 2013. Using firm-level abnormal returns, sales growth, and earnings per share growth rates, we estimate the following OLS panel regression:

$$DisasterCAR_{i,j,t} = a + \text{Frugality}_J * \text{Disaster}_{j,t} + \text{Disaster}_{j,t} + + \text{X}_{i,j,t} + b_j + c_k + d_t + e_{j,t}$$

The dependent variables $\text{DisasterCAR}_{i,j,t}$ label the cumulative abnormal return during the disaster-month for firm *i* in country *j* in industry *k* in year *t*. To measure the market response to the disaster events, each year I estimate the following international market model specification: $R_{i,j,t} = a_i + B_{m,i}R_{j,t} + B_{w,i}R_{w,t} + LargestDisaster_{j,t}\delta_{i,j,t} + e_{i,t}$, where $R_{i,j,t}$ is the weekly return on firm *i*, while $R_{j,t}$ and $R_{w,t}$ are the weekly returns on the local and global market portfolios, respectively. To calculate DisasterCARs, I use the estimated coefficient of the indicator, $\delta_{i,j,t}$, which is equal to 1 during the month in which the country experiences its largest disaster of the year, and 0 otherwise. *Sales Growthi,j,t* measures the natural log of firm *i*'s total sales in year *t*, divided by firm *i*'s total sales in year *t-1*. $Growth_{i,j,t+1}$ measures the percentage change in I/B/E/S reported trailing twelve-month earnings-per-share for the current fiscal year end to be reported (FY1) and the year after FY1 (FY2). We label the realized future growth rates in earnings-per-share as the future growth rates for each firm. All earnings-per-share measures are in USD. As before, $Disaster_{j,t}$ identifies country-years in which a country experiences the largest natural disaster to date, starting in January of 1990 and rolling through the end of the sample period. $Frugality_J$ is the average country response to the World Value Survey question "Do you consider it important to encourage children to learn thrift and savings?" as in Guiso, Sapienza, and Zingales (2006). Columns 1 through 2 report results for DisasterCARs; Columns 3 through 5 and 6 through 8 do the same for sales growth and realized future earnings-per-share growth rates, respectively. The analysis reports results for the sample of firms that issue stocks or bond during the year. $X_{i,j,t}$ labels control variables for firm *i* in country *j* at time *t*. All other variables are defined in the data appendix. As before, all issuance data are obtained from SDC. All macro-economic data are obtained from the World Bank. All firm-level accounting variables are in USD and downloaded via World Scope and Winsorized at the 1 percent level. Firm-level and market-level returns are obtained from Datastream and in USD. Cultural values are obtained from the World Values Survey. Natural disasters are obtained from the Centre for Research on the Epidemiology of Disasters. We do not include country fixed effects in the DisasterCAR modes; all other models include country, industry and year fixed effects. All standard errors are clustered by country-year. ***,**,* denote significance at the 1 percent, 5 percent, and 10 percent level, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sample	Issuers	Issuers	Issuers	Issuers	Issuers	Issuers	Issuers	Issuers
Dependent Variable	DisasterCARS	DisasterCARS	Sales Growth	Sales Growth	Sales Growth	EPS Growth$_{t+1}$	EPS Growth$_{t+1}$	EPS Growth$_{t+1}$
Disaster$_{J,t}$*Frugality$_J$	0.0273***	0.0290***	0.2716	0.1060	0.2014	0.8768*	1.2376***	1.2979***
	(0.010)	(0.010)	(0.171)	(0.229)	(0.201)	(0.466)	(0.463)	(0.462)
Disaster$_{J,t}$	-0.0100***	-0.0108***	-0.0535	0.0142	-0.0356	-0.3061*	-0.4067**	-0.4269**
	(0.004)	(0.004)	(0.062)	(0.079)	(0.066)	(0.169)	(0.169)	(0.167)
DisasterCAR$_{i,j,t}$			0.4389**	0.4336**	0.4113*	0.0314	-0.4966	-0.5192
			(0.203)	(0.203)	(0.215)	(1.356)	(1.363)	(1.360)
PreDisaster$_{J,t}$*Frugality$_J$					0.2528			0.7704*
					(0.218)			(0.399)
PostDisaster$_{J,t}$*Frugality$_J$					-0.5799			-0.2812
					(0.446)			(0.391)
PreDisaster$_{J,t}$					-0.1190			-0.2902*
					(0.091)			(0.167)
PostDisaster$_{J,t}$					0.1893			0.1447
					(0.138)			(0.150)
$Q_{i,j,t-1}$		0.0000*		0.0210***	0.0200***		0.0107	0.0109
		(0.000)		(0.003)	(0.003)		(0.009)	(0.008)
Cashflow$_{i,j,t-1}$		0.0002		-0.0148	-0.0143		0.1229**	0.1237**
		(0.000)		(0.016)	(0.018)		(0.051)	(0.051)
lnTA$_{i,j,t-1}$		0.0001		0.0036	0.0026		0.0117	0.0118
		(0.000)		(0.003)	(0.004)		(0.007)	(0.007)
PPE$_{i,j,t-1}$		-0.0000		-0.0112	-0.0140		-0.0443	-0.0414
		(0.000)		(0.022)	(0.024)		(0.061)	(0.061)
lnFirmAge$_{i,j,t}$		0.0001		-0.0401***	-0.0420***		-0.0162	-0.0163
		(0.000)		(0.004)	(0.005)		(0.017)	(0.017)
Leverage$_{i,j,t-1}$		-0.0003		0.1653***	0.1633***		-0.0888	-0.0923
		(0.000)		(0.019)	(0.020)		(0.056)	(0.056)
GdpGrowth$_{j,t-1}$		0.0079*		-0.8678**	-0.2692		1.0103	1.3403
		(0.004)		(0.436)	(0.353)		(1.029)	(1.055)
MktCapGdp$_{j,t-1}$		0.0001		0.0685*	0.0284		-0.2059***	-0.2268***
		(0.000)		(0.040)	(0.031)		(0.070)	(0.070)
Constant	0.0015	0.0006	0.1830**	0.1568	0.1593	-0.7291**	-0.9889***	-1.0286***
	(0.001)	(0.002)	(0.083)	(0.098)	(0.103)	(0.284)	(0.378)	(0.381)
Observations	47,461	38,707	41,943	34,737	31,748	23,708	20,023	20,023
Country FE	N	N	Y	Y	Y	Y	Y	Y
Industry FE	Y	Y	Y	Y	Y	Y	Y	Y
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Controls	N	Y	N	Y	Y	N	Y	Y
Adjusted R-Squared	0.011	0.011	0.039	0.055	0.052	0.010	0.011	0.011